Reasoning

UNIT 2

CHAPTER 1 NUMBER AND LETTER SERIES

EXERCISES

Practice Problems 1

Directions for questions 1 to 25: Complete the following series.

1. 17, 19, 23, 29, 31, 37, _____
(A) 41 (B) 43 (C) 40 (D) 42

2. 225, 196, 169, _____, 121, 100, 81
(A) 156 (B) 144 (C) 136 (D) 125

3. 64, 125, 216, 343, _____
(A) 64 (B) 424 (C) 317 (D) 512

4. 54, 66, 82, 102, 126, _____
(A) 146 (B) 130 (C) 154 (D) 144

5. 7, 11, 20, 36, 61, _____, 146
(A) 25 (B) 91 (C) 97 (D) 92

6. 8, 16, 48, 96, 288, 576, _____
(A) 1152 (B) 1728
(C) 1052 (D) 1428

7. 125, 375, 377, 1131, 1133, _____
(A) 3399 (B) 1136
(C) 1135 (D) 1234

8. 12, 35, 106, 317, 952, _____
(A) 2851 (B) 2855
(C) 1851 (D) 1849

9. 2, 4, 7, 35, 42, 462, _____
(A) 5016 (B) 470
(C) 4712 (D) 475

10. $13\frac{1}{3}$, 15, $\frac{120}{7}$, 20, 24, _____
(A) 30 (B) 36 (C) 40 (D) $37^1/_3$

11. 6, 15, 35, 77, 143, 221, _____
(A) 357 (B) 437 (C) 323 (D) 383

12. 29, 29, 27, 23, 25, 19, 23, 17, _____, _____
(A) 19, 13 (B) 19, 15 (C) 21, 13 (D) 19, 13

13. 24, 625, 26, 729, 28, 841, _____
(A) 30 (B) 29 (C) 900 (D) 961

14. 3731, 2923, 1917, 1311, _____
(A) 117 (B) 119 (C) 917 (D) 75

15. 11, 28, 327, 464, _____
(A) 525 (B) 5625 (C) 5125 (D) 5250

16. 6, 24, 60, 120, 210, _____
(A) 336 (B) 343 (C) 368 (D) 322

17. 132, 182, 306, 380, 552, 870, _____
(A) 930 (B) 1010 (C) 992 (D) 1142

18. KPD, LOE, MNF, NMG, _____
(A) ONF (B) OLH (C) MLH (D) MNH

19. BEP, CIQ, DOR, FUS, GAT, _____
(A) HEV (B) HIT (C) IET (D) IEU

20. GKF, IPC, LTY, PWT, UYN, _____
(A) ABZ (B) XBX (C) XAH (D) AZG

21. QLR, JPD, RNU, GNC, SPX, DLB, _____
(A) TRA (B) AJA (C) BTU (D) KJE

22. GTB, CYV, YDP, _____, QND
(A) DIV (B) UIJ (C) DDV (D) UVV

23. ABDH, BDHP, CFLX, DHPF, _____
(A) EKNT (B) TNEK (C) EJTN (D) JNTE

24. TCFK, RADI, OXAF, JSVA, _____
(A) DMPU (B) DMOT
(C) CMOT (D) CLOT

25. KJAM, GGWJ, _____, YAOD, UXKA
(A) CDUI (B) DFTC
(C) DCTF (D) CDSG

Practice Problems 2

Directions for questions 1 to 23: Complete the following series.

1. 12, 6, 6, 9, 18, 45, _____
(A) 135 (B) 1475 (C) 1075 (D) 105

2. 25, 49, 121, 225, 529 _____
(A) 625 (B) 676 (C) 729 (D) 784

3. 5, 12, 13, 7, 14, 17, 9, 16, 19, 11, 18, 23, _____, _____, _____
(A) 25, 27, 25 (B) 20, 25, 27
(C) 17, 23, 29 (D) 13, 20, 29

4. 81, $64\frac{4}{5}$, 54, $46\frac{2}{7}$, $40\frac{1}{2}$, _____
(A) $38\frac{2}{3}$ (B) 34 (C) $32\frac{1}{3}$ (D) 36

5. 14, 19, 35, 59, 131, 179, _____
(A) 299 (B) 279 (C) 381 (D) 344

6. $1+\sqrt{2}$, $3+2\sqrt{2}$, $7+5\sqrt{2}$, $17+12\sqrt{2}$, _____
(A) $39+27\sqrt{2}$ (B) $41+29\sqrt{2}$
(C) $43+31\sqrt{2}$ (D) None of these

7. 9, 35, 91, 189, 341, _____
(A) 438 (B) 559 (C) 593 (D) 497

8. 8, 18, 50, 98, 242, _____
(A) 338 (B) 288 (C) 316 (D) 356

9. 4, 57, 104, 147, 188, 225, _____
(A) 257 (B) 254 (C) 256 (D) 255

10. 4, 8, 24, 120, 840, _____
(A) 5040 (B) 5880 (C) 7560 (D) 9240

11. 100, 512, 1296, 1024, _____

(A) 729 (B) 1331 (C) 64 (D) 2401

12. $6+\sqrt{216}$, $7+\sqrt{343}$, $8+\sqrt{512}$, $9+\sqrt{729}$, _____
(A) $10+\sqrt{100}$ (B) $10+\sqrt{1000}$
(C) $100+\sqrt{1000}$ (D) $100+\sqrt{10}$

13. 234, 6912, 182736, 5481108, 162243324, _____
(A) 486729972 (B) 486464972
(C) 486729648 (D) 486672992

14. 4, 48, 180, 448, _____
(A) 648 (B) 900 (C) 1210 (D) 1584

15. 1024, 4096, 64, _____, 4
(A) 64 (B) 32 (C) 16 (D) 8

16. 1, 8, 27, 16, 125, 36, 343, 64, _____, _____.
(A) 729, 1000 (B) 81, 1000
(C) 729, 100 (D) 81, 100

17. 5, 12, 17, 29, 46, 75, 121, _____
(A) 185 (B) 196
(C) 192 (D) 188

18. HPK, IOL, KMN, NJQ, _____
(A) RFU (B) RHV
(C) QFT (D) QFH

19. CIP, DKS, FNW, IRB, MWH, _____
(A) RDN (B) PCN
(C) RCO (D) PDR

20. CSL, FPP, LMT, XJX, VGB, _____
(A) TFD (B) VDF
(C) VFD (D) RDF

21. HAP, JEQ, KIR, LOS, MUT, _____
(A) OAU (B) NAV
(C) NVU (D) NAW

22. MGBSP, WIKTL, NHCTQ, VHJSK, PJEVS, TFHQI, SMHYV, _____
(A) UGIRJ (B) QDFMG
(C) QCENF (D) QRLMT

23. BDCAG, DHFBN, HPLDB, PFXHD, FLVPH, _____
(A) LXRFP (B) LVTDN
(C) JTPDN (D) LZVRL

Directions for questions 24 and 25: Consider that the letters of the English alphabet are written in the order from left to right, i.e. from *A* to *Z*. Answer the following questions based on the arrangement.

24. The letter which is fifth to the left of the letter, which is third to the right of *K* is _____.
(A) J (B) I (C) N (D) L

25. Find the letter which is second to the right of the letter, which is fifth to the right of *N*.
(A) U (B) T
(C) R (D) S

HINTS/SOLUTIONS

Practice Problems 1

Solutions for questions 1 to 25:

1. The given numbers are consecutive prime numbers in increasing order starting with 17. Hence, the next number in the series is 41.

Hence, the correct option is (A).

2. The given numbers are squares of consecutive natural numbers in decreasing order starting with 15, i.e., the numbers 225, 196, 169, _____, 100, 81 can be written as 15^2, 14^2, 13^2, _____, 11^2, 10^2, 9^2. Hence, the missing number is 12^2, i.e., 144.

Hence, the correct option is (B).

3. The given numbers are cubes of consecutive natural numbers, in increasing order starting with 4, i.e., $4^3 = 64$.

64, 125, 216, 343, _____

$\Rightarrow 4^3, 5^3, 6^3, 7^3, \underline{83}$. Hence, 512 is the next number in the series.

Hence, the correct option is (D).

4. 54^{+12}, 66^{+16}, 82^{+20}, 102^{+24}, 126, _____

The difference is increasing by 4, starting with 12.

So, the next difference is 24 + 4 = 28.

Hence, the next number is 126 + 28 = 154.

Hence, the correct option is (C).

5. 7^{+4}, 11^{+9}, 20^{+16}, 36^{+25}, 61 _____, 146

The differences are squares of consecutive natural numbers, in increasing order starting with 2, i.e., $2^2 = 4$. Hence, the next number in the series is 61 + 36 = 97.

Hence, the correct option is (C).

6. $8^{\times 2}$, $16^{\times 3}$, $48^{\times 2}$, $96^{\times 3}$, $288^{\times 2}$, 576, _____

The numbers in the series are alternately being multiplied by two and three. Hence, the next number in the series is $576 \times 3 = 1728$.

Hence, the correct option is (B).

7. $125^{\times 3}$, 375^{+2}, $377^{\times 3}$, 1131^{+2}, 1133, _____

The numbers are being alternatively multiplied by three and two is added. Hence, the next number in the series in $1133 \times 3 = 3399$.

Hence, the correct option is (A).

8. $12^{\times 3 - 1}$, $35^{\times 3 + 1}$, 106,$^{\times 3 - 1}$, 317,$^{\times 3 + 1}$, 952, _____

The next number in the series is $952 \times 3 - 1 = 2855$.

Hence, the correct option is (B).

9. $2^{\times 2}$, 4^{+3}, $7^{\times 5}$, 35^{+7}, $42^{\times 11}$, 462

The numbers are alternately multiplied by and added to consecutive prime numbers in increasing order. Hence, the next number in the series is 462 + 13 = 475.

Hence, the correct option is (D).

10. The given series can be written as $\frac{120}{9}, \frac{120}{8}, \frac{120}{7}, \frac{120}{6}, \frac{120}{5}, \frac{120}{\underline{4}}; \frac{120}{4} = 30$.

Hence, the correct option is (A).

11. The given series can be written as product of two consecutive primes. 2×3, 3×5, 5×7, 7×11, 11×13, 13×17, 17×19

$\Rightarrow$ 6, 15, 35, 77, 173, 22, _____ $17 \times 19 = 323$.

Hence, the correct option is (C).

12. 29, 29, 27, 23, 25, 19, 23, 17, _____, _____

The given series is an alternate series. The numbers in the alternate positions starting with 29 in the first position form a series of consecutive odd numbers in decreasing order. i.e. 29, 27, 25, 23, 21. The remaining numbers form a series of prime numbers in decreasing order starting with 29 i.e. 29, 23, 19, 17, $\underline{13}$. Hence, the next two numbers in the series are 21 and 13 respectively.

Hence, the correct option is (C).

13. 24, 625, 26, 729, 28, 841, _____

$\Rightarrow 24, 25^2, 26, 27^2, 28, 29^2$, _____

The next number in the series is 30.

Hence, the correct option is (A).

14. $\underline{37}$ $\underline{31}$, $\underline{29}$ $\underline{23}$, $\underline{19}$ $\underline{17}$, $\underline{13}$ $\underline{11}$, _____

The given number are pairs of prime numbers in decreasing order starting with 37. The next number in the series is 75.

Hence, the correct option is (D).

15. $\underline{11}$, $\underline{28}$, $\underline{327}$, $\underline{464}$, _____

$\Rightarrow \underline{11}^3, \underline{22}^3, \underline{33}^3, \underline{44}^3$, _____

The next number in the series is $\underline{55}^3 = 5125$.

Hence, the correct option is (C).

16. 6, 24, 60, 120, 210, _____

$\Rightarrow 2^3 - 2, 3^3 - 3, 4^3 - 4, 5^3 - 5, 6^3 - 6$, _____

The next number in the series is $7^3 - 7 = 336$.

Hence, the correct option is (A).

17. 132, 182, 306, 380, 552, 870, _____

$\Rightarrow 11^2 + 11, 13^2 + 13 + 17^2 + 17, 19^2 + 19, 23^2 + 23, 29^2 + 29$, _____

The given numbers are in $n^2 + n$ form of consecutive prime numbers in increasing order, starting with 17. Hence, the next number in the series is $31^2 + 31 = 992$.

Hence, the correct option is (C).

18. The given series is a mixed series.

Pattern for the first letter :

$K^{+1}, L^{+1}, M^{+1}, N^{+1}, \underline{O}$

Pattern for the second letter :

P^{-1}, O^{-1}, N^{-1}, M^{-1}, L

Pattern for the third letter :

D^{+1}, E^{+1}, F^{+1}, G^{+1}, H

Hence, the next group in the series is OLH.

Hence, the correct option is (B).

19. The given series is a mixed series.

Pattern for the first letter :

Consecutive consonants starting with B.

Next letter in that series is H

Pattern for the second letter :

Consecutive vowels starting with E. The next letter in that series is E.

Pattern for the third letter :

Consecutive consonants starting with V.

Hence, the next group in the series is HEV.

Hence, the correct option is (A).

20. The given series is a mixed series.

Pattern for the first letter :

G^{+2}, I^{+3}, L^{+4}, P^{+5}, U^{+6}, A

Pattern for the second letter :

K^{+5}, P^{+4}, T^{+3}, W^{+2}, Y^{+1}, Z

Pattern for the third letter :

F^{-3}, C^{-4}, Y^{-5}, T^{-6}, N^{-7}, G

Hence, the required group is AZG.

Hence, the correct option is (D).

21. The alternate groups are in different series.

QLR, RNU, SP*X* are in one series.

The Pattern for the first letter :

Q^{+1}, R^{+1}, S^{+1}, T

The Pattern for the second letter :

L^{+2}, N^{+2}, P^{+2}, R

The Pattern for the third letter :

R^{+3}, U^{+3}, X^{+3}, A

Hence, the next group in the series is TRA.

Hence, the correct option is (A).

22. The given series is *a* mixed series.

Pattern for the first letter :

G^{-4}, C^{-4}, Y^{-4}, U^{-4}, Q

Pattern for the second letter :

T^{+5}, Y^{+5}, D^{+5}, I^{+5}, N

Pattern for the third letter :

B^{-6}, V^{-6}, P^{-6}, J^{-6}, D

Hence, the missing group is UIJ.

Hence, the correct option is (B).

23. This question can be solved easily if the relation between the letters within the group is observed. In this series the first letter in all the groups form a series of consecutive letters. Hence, the first letter in the next group is E. The other letters in each group are related as follows.

$A^{\times 2}$ $B^{\times 2}$ $D^{\times 2}$ H

$B^{\times 2}$ $D^{\times 2}$ $H^{\times 2}$ P

$C^{\times 2}$ $F^{\times 2}$ $L^{\times 2}$ *X*

$D^{\times 2}$ $H^{\times 2}$ $P^{\times 2}$ F

Hence, the next group is obtained as follows.

$E^{\times 2}$, $J^{\times 2}$ $T^{\times 2}$ N.

Hence, the correct option is (C).

24. The given series is a mixed series.

Pattern for the first letter :

T^{-2}, R^{-3}, O^{-5}, J^{-7}, C

Pattern for the second letter :

C^{-2}, A^{-3}, X^{-5}, S^{-7}, L

Pattern for the third letter :

F^{-2}, D^{-3}, A^{-5}, V^{-7}, O

Pattern for the fourth letter :

K^{-2}, I^{-3}, F^{-5}, A^{-7}, T

Hence, the next group in the series is CLOT.

Hence, the correct option is (D).

25. The given series is a mixed series.

Pattern for the first letter :

K^{-4}, G^{-4}, C^{-4}, Y^{-4}, U

Pattern for the second letter :

J^{-3}, G^{-3}, D^{-3}, A^{-3}, *X*

Pattern for the third letter :

A^{-4}, W^{-4}, S^{-4}, O^{-4}, K

Pattern for the fourth letter :

M^{-3}, J^{-3}, G^{-3}, D^{-3}, A

Hence, the missing group is CDSG.

Hence, the correct option is (D).

Practice Problems 2

Solutions for questions 1 to 23:

1. $12^{\times 0.5}$, $6^{\times 1}$, $6^{\times 1.5}$, $9^{\times 2}$, $18^{\times 2.5}$, $45^{\times 3}$, _____

The next number in the series is $45 \times 3 = 135$.

Hence, the correct option is (A).

2. The given series can be written as $(2n + 1)^2$, where *n* is prime.

$(2 \times 2 + 1)^2$, $(2 \times 3 + 1)^2$, $(2 \times 5 + 1)^2$, $(2 \times 7 + 1)^2$, $(2 \times 11 + 1)^2$, _____

5^2, 7^2, 11^2, 15^2, 23^2, $\underline{272}$.

25, 49, 121, 225, 529, $\underline{729}$.

Hence, the correct option is (C).

3. 5, 12, 13, 7, 14, 17, 9, 16, 19, 11, 18, 23, _____, _____, _____.

The given series is a mixture of three different series.

Every third number starting with 5 form a series of consecutive odd numbers in increasing order.

Every third number starting with 12 form a series of consecutive earn numbers. Similarly, every third number starting with 13 form a series of consecutive prime numbers.

5, 7, 9, 11, $\underline{13}$ (odd number series)

12, 14, 16, 18, $\underline{20}$ (even numbers series)

13, 17, 19, 23, $\underline{29}$ (prime numbers series)

Hence, the next numbers in the series are 13, 20 and 29.

Hence, the correct option is (D).

4. The given series can be written as $\frac{324}{4}, \frac{324}{5}, \frac{324}{6}, \frac{324}{7}, \frac{324}{8}, \underline{\frac{324}{9}}$.

$\frac{324}{9} = 36$.

Hence, the correct option is (D).

5. The given series can be written as $n^2 + 10$, where n is prime.

$2^2 + 10$, $3^2 + 10$, $5^2 + 10$, $7^2 + 10$, $11^2 + 10$, $13^2 + 10$, $\underline{172 + 10}$

$17^2 + 10 = 299$.

Hence, the correct option is (A).

6. The given series can be written as n, n^2, n^3, n^4, $\underline{n^5}$. $(1+\sqrt{2}), (1+\sqrt{2})^2, (1+\sqrt{2})^3, (1+\sqrt{2})^4, \underline{(1+\sqrt{2})^5}$,

$(1 + \sqrt{2})^5 = 41 + 29\sqrt{2}$.

Hence, the correct option is (B).

7. The given series can be written as the sum of the cubes of two consecutive numbers.

$1^3 + 2^3$, $2^3 + 3^3$, $3^3 + 4^3$, $4^3 + 5^3$, $5^3 + 6^3$, $\underline{6^3 + 7^3}$

9, 35, 91, 189, 341, $\underline{559}$.

Hence, the correct option is (B).

8. The given series can be written as $2n^2$, where n is prime.

2×2^2, 2×3^2, 2×5^2, 2×7^2, 2×11^2, 2×13^2

$2 \times 169 = 338$.

Hence, the correct option is (A).

9. The series can be written as 4^{+53}, 57^{+47}, 104^{+43}, 147^{+41}, 188^{+37}, 225^{+31}, $\underline{256}$.

Hence, the correct option is (C).

10. The given series can be written as:

$4^{\times 2}$, $8^{\times 3}$, $24^{\times 5}$, $120^{\times 7}$, $840^{\times 11}$, $\underline{9240}$

9240 is the next number.

Hence, the correct option is (D).

11. The given series can be expressed as:

10^2, 8^3, 6^4, 4^5, $\underline{2^6}$.

Here the powers are consecutive natural numbers and the bases are consecutive even numbers in descending order.

Hence $2^6 = 64$ is the next number.

Hence, the correct option is (C).

12. $6 + \sqrt{216}$, $7 + \sqrt{343}$, $8 + \sqrt{512}$, $9 + \sqrt{729}$, _____

$\Rightarrow 6 + \sqrt{6^3}, 7 + \sqrt{7^3}, 8 + \sqrt{8^3}, 9 + \sqrt{9^3}$, _____

The next surd in the series is $10 + \sqrt{10^3} = 10 + \sqrt{1000}$.

Hence, the correct option is (B).

13. The given series can be split as:

2|3|4, 6|9|12, 18|27|36, 54|81|108, 162|243|324

The first numbers are $2^{\times 3}$, $6^{\times 3}$, $18^{\times 3}$, $54^{\times 3}$, $162^{\times 3}$, $\underline{486}$

The middle numbers are $3^{\times 3}$, $9^{\times 3}$, $27^{\times 3}$, $81^{\times 3}$, $243^{\times 3}$, $\underline{729}$

The last numbers are $4^{\times 3}$, $12^{\times 3}$, $36^{\times 3}$, $108^{\times 3}$, $324^{\times 3}$, $\underline{972}$

$\therefore$ 486729972 is the required number.

Hence, the correct option is (A).

14. The given series can be expressed as $n^3 - n^2$ of even numbers.

$2^3 - 2^2$, $4^3 - 4^2$, $6^3 - 6^2$, $8^3 - 8^2$, $\underline{10^3} - \underline{10^2}$

$10^3 - 10^2 = 900$ is the next number.

Hence, the correct option is (B).

15. The given series can be written as:

32^2, 16^3, 8^2, $\underline{43}$, 2^2

The powers are alternate squares and cubes and the bases are halved in each term.

$4^3 = 64$ is the required number.

Hence, the correct option is (A).

16. 1, 8, 27, 16, 125, 36, 343, 64, _____

$\Rightarrow 1^2, 2^3, 3^3, 4^2, 5^3, 6^2, 7^3, 8^2$, _____

The given series consists of cubes of prime numbers and squares of non-prime numbers. Hence, the next two numbers in the series are $9^2 = 81$, and $10^2 = 100$.

Hence, the correct option is (D).

17. The given series is a Fibonocci series

5^+. $12^=$.+ 17^+, $= 29^=_+$, 46^+, $= 75^=_+$, $121 = \underline{196}$

Hence, the correct option is (B).

18. HPK, IOL, KMN, NJQ, _____

The given series is *a* combination series.

The pattern for the first letters of the series, is

H^{+1}, I^{+2}, K^{+3}, N^{+4}, $\underline{R}$.

The pattern for the second letters of the series is

P^{-1}, O^{-2}, M^{-3}, J^{-4}, $\underline{F}$.

The pattern for the third letters of the series is

K^{+1}, L^{+2}, N^{+3}, Q^{+4}, U.

Hence, RFU is the next term.

Hence, the correct option is (A).

19. CIP, DKS, FNW, IRB, MWH, _____

The given series is a combination series.

The pattern for the first letters of the series is

C^{+1}, D^{+2}, F^{+3}, I^{+4}, M^{+5}, R.

The pattern for the second letters of the series is

I^{+2}, K^{+3}, N^{+4}, R^{+5}, W^{+6}, C.

The pattern for the third letters of the series is

P^{+3}, S^{+4}, W^{+5}, B^{+6}, H^{+7}, O.

Hence, RCO is the next term.

Hence, the correct option is (C).

20. CSL, FPP, LMT, *X*JX, VGB, ____

The given series is combination series.

The pattern for the first letters of the series is

$C^{\times 2}$, $F^{\times 2}$, $L^{\times 2}$, $X^{\times 2}$, $V^{\times 2}$, R.

The pattern for the second letters of the series is

S^{-3}, P^{-3}, M^{-3}, J^{-3}, G^{-3}, D.

The pattern for the third letters of the series is

L^{+4}, P^{+4}, T^{+4}, X^{+4}, B^{+4}, F.

Hence, RDF is the next term.

Hence, the correct option is (D).

21. HAP, JEQ, KIR, LOS, MUT, ____

The given series is a combination series.

The pattern for the first letters of the series is

H, J, K, L, M, N. These letters are consecutive consonants.

The pattern for the second letters of the series is

A, E, I, O, U, A These are consecutive vowels.

The pattern for the third letters of the series is

P, Q, R, S, T, V These letters are consecutive consonants.

Hence, the correct option is (B).

22. MGBSP, WIKTL, NHCTQ, VHJSK, PJEVS, TFHQI, SMHYV, _____.

The given series is an alternate series.

MGBSP, NHCTQ, PJEVS, SMHYV is one series.

The pattern for the first letters of each term is

M^{+1}, N^{+2}, P^{+3}, S.

The pattern for the second letters of each term is

G^{+1}, H^{+2}, J^{+3}, M.

The pattern for the third letters of each term is

B^{+1}, C^{+2}, E^{+3}, H.

The pattern for the fourth letters of each term is

S^{+1}, T^{+2}, V^{+3}, Y.

The pattern for the fifth letter of each term is

P^{+1}, Q^{+2}, S^{+3}, V.

Similarly,

WIKTL, VHJSK, TFHQI, _____ is the other series.

The pattern for the first letters of each term is

W^{-1}, V^{-2}, T^{-3}, Q.

The pattern for the second letters of each term is

I^{-1}, H^{-2}, F^{-3}, C.

The pattern for the third letters of each term is

K^{-1}, J^{-2}, H^{-3}, E.

The pattern for the fourth letters of each term is

T^{-1}, S^{-2}, Q^{-3}, N.

The pattern for the fifth letters of each term is

L^{-1}, K^{-2}, I^{-3}, F.

Hence, QCENF is the next term.

Hence, the correct option is (C).

23. BDCAG, DHFBN, HPLDB, PFXHD, FLVPH, _____

The given series is a combination series.

The pattern for the first letters of each term is

$B^{\times 2}$, $D^{\times 2}$, $H^{\times 2}$, $P^{\times 2}$, $F^{\times 2}$, L.

The pattern for the second letters of each term is

$D^{\times 2}$, $H^{\times 2}$, $P^{\times 2}$, $F^{\times 2}$, $L^{\times 2}$, X.

The pattern for the third letters of each term is

$C^{\times 2}$, $F^{\times 2}$, $L^{\times 2}$, $X^{\times 2}$, $V^{\times 2}$, R.

The pattern for the forth letters of each term is

$A^{\times 2}$, $B^{\times 2}$, $D^{\times 2}$, $H^{\times 2}$, $P^{\times 2}$, F.

The pattern for the fifth letter of each series is

$G^{\times 2}$, $N^{\times 2}$, $B^{\times 2}$, $D^{\times 2}$, $H^{\times 2}$, P.

Hence, LXRFP is the next term.

Hence, the correct option is (A).

Solutions for questions 24 and 25:

When the letters are written from *A* to *Z*, from left to right, as we move towards right from a given letter the place value increases and the place value decreases while moving towards its left.

24. (K) 11 + 3 (right) – 5 (left) = 9

The ninth letter is I.

Hence, the correct option is (B).

25. (N) 14 + 5 (right) + 2(right) = 21

The 21st letter is U.

Hence, the correct option is (A).

CHAPTER 2 ANALOGIES

EXERCISES

Practice Problems 1

Directions for questions 1 to 25: Find the missing term.

1. 97 : 89 : : 43 : _____
(A) 37 (B) 31 (C) 39 (D) 41

2. 196 : 256 : : 324 : _____
(A) 361 (B) 400 (C) 411 (D) 484

3. 121 : 169 : : 361 : _____
(A) 529 (B) 400 (C) 484 (D) 576

4. 125 : 343 : : 343 : _____
(A) 512 (B) 1331 (C) 1728 (D) 81

5. 4 : 256 : : 5 : _____
(A) 625 (B) 1025 (C) 525 (D) 875

6. 12 : 144 : : 18 : _____
(A) 160 (B) 180 (C) 190 (D) 150

7. 25 : 21 : : 59 : _____
(A) 42 (B) 46 (C) 76 (D) 56

8. 8 : 72 : : 10 : _____
(A) 95 (B) 106 (C) 99 (D) 90

9. 8 : 0.125 : : 4 : _____
(A) 0.5 (B) 0.4 (C) 0.35 (D) 0.25

10. 11 : 143 : : 19 : _____
(A) 443 (B) 450 (C) 420 (D) 437

11. 568 : 352 : : 732 : _____
(A) 516 (B) 496 (C) 526 (D) 536

12. 6 : 222 : : 9 : _____
(A) 738 (B) 720 (C) 729 (D) 744

13. 5 : 120 : : 8 : _____
(A) 520 (B) 504 (C) 448 (D) 512

14. 16 : 68 : : 36 : _____
(A) 216 (B) 210 (C) 222 (D) 226

15. 10 : 95 : : 16 : _____
(A) 218 (B) 318 (C) 248 (D) 102

16. 3829 : 3851 : : 2987 : _____
(A) 301 (B) 3007
(C) 3017 (D) 3023

17. 47 : 121 : : 89 : _____
(A) 183 (B) 187 (C) 193 (D) 195

18. NATURE : PEVASI : : ISOMERS : _____
(A) OTUNJTV (B) OTUNIST
(C) PUVNJST (D) OVTNJST

19. BAD : BBL : : JDFE : _____
(A) JHRI (B) JHPX
(C) JFTV (D) JHRT

20. FIELD : LRJXH : : CRICKET : _____
(A) FHRDXLJ (B) FJPDTLN
(C) FJRDXAL (D) FJRFVJN

21. TAP : SUZBOQ : : RED : _____
(A) QTDGDE (B) PSDEDF
(C) QSDFCE (D) QRDGBE

22. Train : Track : : Bus : _____
(A) Driver (B) Road
(C) Petrol (D) Passengers

23. Earth : Planet : : Carrot : _____
(A) Vegetable (B) Plant
(C) Cooking (D) Nut

24. Wood : Carpenter : : Iron : _____
(A) Goldsmith (B) Instrument
(C) Melting (D) Blacksmith

25. Pen : Write : : Knife : _____
(A) Vegetable (B) Cut
(C) Sharp (D) Shoot

Practice Problems 2

Directions for questions 1 to 25: Find the missing term.

1. 435 : 534 : : 678 : _____
(A) 876 (B) 875 (C) 676 (D) 856

2. 18 : 964 : : 25216 : _____
(A) 49512 (B) 64729
(C) 1001728 (D) 16125

3. 60 : 95 : : 138 : : _____
(A) 189 (B) 192 (C) 248 (D) 315

4. 12 : 1732 : : 15 : _____
(A) 3080 (B) 3380 (C) 3764 (D) 4550

5. 441 : 8000 : : 225 : _____
(A) 3996 (B) 4194 (C) 3096 (D) 2744

6. 19 : 399 : : 21 : _____
(A) 324 (B) 402 (C) 473 (D) 483

7. 97 : 8 : : 37 : _____
(A) 4 (B) 6 (C) 8 (D) 10

8. 350 : 20 : : _____ : 42
(A) 737 (B) 739
(C) 1342 (D) 1343

9. 2 : 4 : : 5 : _____
(A) 30 (B) 355 (C) 3125 (D) 625

10. 6 : 15 : : 143 : _____
(A) 195 (B) 323 (C) 221 (D) 287

11. 3864 : 5098 : : 4994 : _____
(A) 6228 (B) 6246 (C) 6194 (D) 6286

12. 68 : 82 : : 97 : _____
(A) 130 (B) 146 (C) 113 (D) 156

13. 672 : 687 : : 752 : _____
(A) 832 (B) 766 (C) 822 (D) 850

14. 112 : 448 : : 241 : _____
(A) 1500 (B) 1687 (C) 1568 (D) 1600

15. 49 : 169 : : _____ : 100
(A) 25 (B) 85 (C) 64 (D) 36

16. 758 : 400 : : _____ : 256
(A) 286 (B) 285 (C) 232 (D) 284

17. 248 : 1090 : : _____ : 1029
(A) 366 (B) 377
(C) 562 (D) 287

18. AXDKYO : AZLOUU :: KWHBRZ : _____
(A) KXXHLF (B) XYXHDE
(C) KYXFLF (D) KYXHLE

19. MNATFY : ZIDQLX :: JRCDWK : _____
(A) HLMATJ (B) HMLBTJ
(C) HMLATJ (D) HMLAUJ

20. JCTRE : OEUUI :: TYSEL : _____
(A) UAUIO (B) UUUIO
(C) UAAIO (D) UAUOO

21. MAP : KOYCNR :: YEN : _____
(A) WACGLP
(B) XACGLP
(C) WADFMO
(D) WACGMO

22. Nut : Shell : : Seed : _____
(A) Plant (B) Tree
(C) Fruit (D) Sapling

23. Day : Night : : Spendthrift : _____
(A) Rich (B) Miser
(C) Poor (D) Pauper

24. Hand : Fingers : : Leg : _____
(A) Knuckles (B) Knee
(C) Toes (D) Heel

25. Kangaroo : Hopping : : Snake : _____
(A) Crawling
(B) Mongoose
(C) Poisonous
(D) Bite

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 25:

1. 97 : 89 : : 43 : _____

Previous prime number to 97 is 89. Similarly for 43 the previous prime is 41.

Hence, the correct option is (D).

2. 196 : 256 : : 324 : _____

$(14)^2 : (16)^2 : : (18)^2 : \underline{(20)2}$

+2 +2

$(20)^2 = 400$ is the next number.

Hence, the correct option is (B).

3. 121 : 169 : : 361 : _____

$(11)^2 : (13)^2 : : (19)^2 :$ _____

The given numbers are squares of consecutive prime numbers. Hence, the prime number next to 19 is 23 and $(23)^2 = 529$.

Hence, the correct option is (A).

4. 125 : 343 : : 343 : _____

$(5)^3 : (7)^3 : : (7)^3 :$ _____

The given numbers are the cubes of consecutive prime numbers. Hence, the prime number to next 7 is 11 and $(11)^3 = 1331$ is the next number.

Hence, the correct option is (B).

5. 4 : 256 : : 5 : _____

This is of the form $n : (n)^4$

$(4) : (4)^4 : : (5) : \underline{(5)4}$

$(5)^4 = 625$ is the next number.

Hence, the correct option is (A).

6. 12 : 144 : : 18 : _____

12 +132 = 144.

Similarly, 18 + 132 = 150.

Hence, the correct option is (D).

7. 25 : 21 : : 59 : _____

$5^2 - 2^2 = 4$

Similarly, $9^2 - 5^2 = 56$.

Hence, the correct option is (D).

8. 8 : 72 : : 10 : _____

$8 \times 9 = 72$.

Similarly, $10 \times 9 = 90$.

Hence, the correct option is (D).

9. 8 : 0.125 : : 4 :

$\frac{1}{8} = 0.125$.

Similarly, $\frac{1}{4} = 0.25$.

Hence, the correct option is (D).

10. 11 : 143 : : 19 : _____

$11 \times 13 = 143$ (multiple of its next prime number).

Similarly, $19 \times 23 = 437$.

Hence, the correct option is (D).

11. 598 : 352 : : 732: _____

568 – 216 = 352

Similarly, 732 – 216 = 516.

Hence, the correct option is (A).

12. 6 : 222 : 9 : _____

$6 : (6)^3 + 6 : : 9 : \underline{(9)3 + 9}$

$(9)^3 + 9 = 738$ is the next number.

Hence, the correct option is (A).

13. 5 : 120: : 8 : _____

$5 : (5)^3 - 5 : : 8 : \underline{(8)3 - 8}$

$(8)^3 - 8 = 504$ is the next number.

Hence, the correct option is (B).

14. 16 : 68 : : 36 : _____

$(4)^2 : (4)^3 + 4 : : (6)^2 : \underline{(6)3 + 6}$

This is of the form $n^2 : n^3 + n$.

$\therefore (6)^3 + 6 = 222$ is the next number.

Hence, the correct option is (C).

15. 10 : 95 : : 16 : _____

$10^2 - \frac{10}{2} = 95$.

Similarly, $16^2 - \frac{16}{2} = 248$.

Hence, the correct option is (C).

16. 3829 : 3851 : : 2987 : _____

3829 + (3 + 8 + 2 + 9) = 3851

Similarly 2987 + (2 + 9 + 8 + 7) = 3013.

Hence, the correct option is (A).

17. $47^{+74} : 121 : : 89^{+98} :$ _____

The number is reversed and is added to the number.

$\therefore$ 89 + 98 = 187 is the next number.

Hence, the correct option is (B).

18. NATURE : PEVASI : : ISOMERS : _____

In this, for vowels their next vowels and for consonants their next consonants are given.

Hence, OTUNIST are the required letters.

Hence, the correct option is (B).

19. BAD : BBL : : IDFE : _____

Similarly,

B	A	D		J	D	F	E
×1	×2	×3		×1	×2	×3	×4
B	B	L		J	H	R	T

Hence, the correct option is (D).

20. FIELD : LRJXH : : CRICKET : _____

F	I	E	L	D							
×2	×2	×2	×2	×2							
L	R	J	X	H							

Similarly,

C	R	I	C	K	E	T
×2	×2	×2	×2	×2	×2	×2
F	J	R	F	V	J	N

Hence, the correct option is (D).

21. TAP : SUZBOQ : : RED : _____

The letters on either side of each letter were given.

T		A		P	
–1	+1	–1	+1	–1	+1
S	U	Z	B	O	Q

Similarly

R		E		D	
–1	+1	–1	+1	–1	+1
Q	S	D	F	C	E

Hence, the correct option is (C).

22. Train runs on tracks, similarly bus runs on road.

Hence, the correct option is (B).

23. Earth is a planet and carrot is a vegetable.

Hence, the correct option is (A).

24. Wood is raw material for carpenter and Iron is raw material for blacksmith.

Hence, the correct option is (D).

25. Pen is used to write and knife is used to cut.

Hence, the correct option is (B).

Practice Problems 2

Solutions for questions 1 to 25:

1. 435 : 534 : : 678 : _____

534 is the reverse of 435.Similarly,

876 is the reverse of 678.

Hence, the correct option is (A).

2. 18 : 964 : : 25216 : _____

$1^2\ 2^3 : 3^2\ 4^3 : : 5^2\ 6^3 :$ 72 83

∴ The missing number is 49512.

Hence, the correct option is (A).

3. 60 : 95 : : 138 : _____

$60 = 8^2 - \frac{8}{2}$

$95 = 10^2 - \frac{10}{2}$.

Similarly, $138 = 12^2 - \frac{12}{2}$

∴ The missing number is $14^2 - \frac{14}{2} = 196 - 7 = 189$

Hence, the correct option is (A).

4. 12 : 1732 : : 15 : _____

$12 : 12^3 + \frac{12}{3} : : 15 : 15^3 + \frac{15}{3}$

$\therefore 15^3 + \frac{15}{3} = 3380.$

Hence, the correct option is (B).

5. 441 : 8000 : : 225 : _____

$21^2 : 20^3 : : 15^2 :$ 143

$14^3 = 2744.$

Hence, the correct option is (D).

6. 19 : 399 : : 21 : _____

$19 : 20^2 - 1 : : 21 : 22^2 - 1$

$\therefore 22^2 = 483.$

Hence, the correct option is (D).

7. 97 : 8 : : 37 : _____

89 is immediately preceding prime number of 97.

$\therefore 97 - 89 = 8$

Similarly, the prime numbers before 37 is 31 and hence,

$37 - 31 = 6.$

Hence, the correct option is (B).

8. 350 : 20 : : _____ : 42

$7^3 + 7 : 5^2 - 5 ::$ 113 + 11 $: 7^2 - 7$

$\therefore 11^3 + 11 = 1342.$

Hence, the correct option is (C).

9. 2 : 4 : : 5 : _____

$2 : 2^2 : : 5 : 5^5$

$\therefore 5^5 = 3125.$

Hence, the correct option is (C).

10. 6 : 15 : : 143 : _____

$2 \times 3 : 3 \times 5 : : 11 \times 13 :$ 13 × 17

The given numbers can be written as the product of two consecutive primes.

Hence, the correct option is (C).

11. $3864^{+1234} : 5068 : : 4994^{+1234} :$ _____

$4994 + 1234 = 6228.$

Hence, the correct option is (A).

12. 68 : 82 : : 97 : _____

$(6 + 8) = 14$ and $68 + 14 = 82$

Similarly, $9 + 7 = 16$ and $97 + 16 = 113$.

Hence, the correct option is (C).

13. 672 : 687 : : 752 : _____

$672 + (6 + 7 + 2) = 687$.

Similarly, $752 + (7 + 5 + 2) = 766$.

Hence, the correct option is (B).

14. 112 : 448 : : 241 : _____

$112 \times (1 + 1 + 2) = 448$.

Similarly, $241 \times (2 + 4 + 1) = 1687$.

Hence, the correct option is (B).

15. 49 : 169 : : _____ : 100

$(4 + 9)^2 = 169$.

Similarly, $(6 + 4)^2 = 100$.

Hence, the correct option is (C).

16. 758 : 400 : : _____ : 256

$7 + 5 + 8 = 20$ and $20^2 = 400$

Similarly, $2 + 8 + 6 = 16$ and $16^2 = 256$.

$\therefore$ 286 is the required number.

Hence, the correct option is (A).

17. 248 : 1090 : : _____ : 1029

$248 + 842 = 1090$. (reverse and added)

Similarly,

$366 + 663 = 1029$.

Hence, the correct option is (A).

18.

A	X	D	K	Y	O
×1	+2	×3	+4	×5	+6
A	Z	L	O	U	U

Similarly,

K	W	H	B	R	Z
×1	+2	×3	+4	×5	+6
K	Y	X	F	L	F

Hence, the correct option is (C).

19.

M	N	A	T	F	Y
×6	–5	×4	–3	×2	–1
Z	I	D	Q	L	X

Similarly,

J	R	C	D	W	K
×6	–5	×4	–3	×2	–1
H	M	L	A	T	J

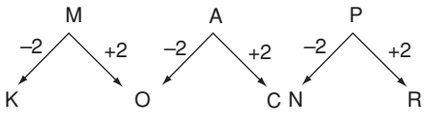
Hence, the correct option is (C).

20. For each letter, the next vowel in English alphabet is taken. The next vowels for J, C, T, R, and E are O, E, U, U, I respectively. Similarly, the next vowels for T, Y, S, E and L are U, A, U, I and O respectively.

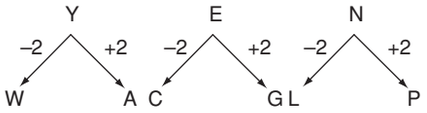
$\therefore$ U A U I O is the required term.

Hence, the correct option is (A).

21.



Similarly



Hence, the correct option is (A).

22. Nut is found inside a shell and seed is found inside a fruit.

Hence, the correct option is (C).

23. Day is opposite of night and miser is opposite of spend thrift.

Hence, the correct option is (B).

24. Hand has fingers and leg has toes.

Hence, the correct option is (C).

25. Kangaroo moves by hopping and snake moves by crawling.

Hence, the correct option is (A).

Chapter 3 Odd Man Out (Classification)

Exercises

Practice Problems 1

Directions for questions 1 to 25: Find the odd man out.

1. (A) 16 (B) 28 (C) 36 (D) 64

2. (A) 27 (B) 37 (C) 47 (D) 67

3. (A) 8 (B) 27 (C) 64 (D) 125

4. (A) 42624 (B) 37573 (C) 84284 (D) 93339

5. (A) 30 (B) 630 (C) 10 (D) 520

6. (A) 8 : 9 (B) 25 : 25 (C) 64 : 81 (D) 16 : 16

7. (A) $\frac{3}{\sqrt{4+25}}$ (B) $\frac{7}{\sqrt{36+64}}$ (C) $\frac{11}{\sqrt{49+169}}$ (D) $\frac{5}{\sqrt{9+49}}$

8. (A) $13\frac{17}{23}$ (B) $41\frac{45}{49}$ (C) $71\frac{73}{79}$ (D) $83\frac{89}{97}$

9. (A) 4422 (B) 2442 (C) 4242 (D) 2244

10. (A) 350 (B) 70 (C) 30 (D) 520

11. (A) N (B) O (C) B (D) K

12. (A) $E\frac{V}{R}$ (B) $O\frac{L}{B}$ (C) $I\frac{R}{V}$ (D) $U\frac{B}{L}$

13. (A) ABD (B) BDH (C) CEJ (D) DFL

14. (A) BCDE (B) FGHI (C) RSTU (D) WXYZ

15. (A) DFRTH (B) ABEJM (C) NBEJM (D) DHKVY

16. (A) Cat (B) Dog (C) Tiger (D) Elephant

17. (A) Chameleon (B) Crocodile (C) Turtle (D) Allegator

18. (A) Trivandrum (B) Hyderabad (C) Calicut (D) Bangalore

19. (A) Part (B) Trap (C) Cart (D) Dart

20. (A) Rocket (B) Star (C) Planet (D) Comet

21. (A) Skin (B) Tongue (C) Leg (D) Nose

22. (A) Baseball (B) Boxing (C) Chess (D) Wrestling

23. (A) Walk (B) Talk (C) Drink (D) Plank

24. (A) Ganga (B) Nagarjuna sagar (C) Yamuna (D) Sutlez

25. (A) HEWAT (B) CERI (C) ROWAJ (D) EECRALS

Practice Problems 2

Directions for questions 1 to 25: Find the odd man out.

1. (A) 3 (B) 4 (C) 5 (D) 9

2. (A) 36 (B) 49 (C) 64 (D) 81

3. (A) $\frac{2}{22}$ (B) $\frac{4}{44}$ (C) $\frac{1}{1}$ (D) $\frac{3}{333}$

4. (A) 41 (B) 43 (C) 45 (D) 47

5. (A) 30 (B) 27 (C) 36 (D) 45

6. (A) 248 (B) 303 (C) 390 (D) 473

7. (A) 125 : 117 (B) 216 : 206 (C) 343 : 333 (D) 512 : 504

8. (A) $\frac{13}{4}$ (B) $\frac{37}{10}$ (C) $\frac{23}{6}$ (D) $\frac{19}{10}$

9. (A) 525 (B) 39 (C) 24 (D) 426

10. (A) 1320 (B) 2190 (C) 2730 (D) 3360

11. (A) HUSF (B) GTTG (C) LOYB (D) PCKX

12. (A) OQMS (B) UAWY (C) NPLR (D) BDZF

13. (A) B^d (B) c^f (C) P^f (D) T^m

14. (A) (ABC, ZOX) (B) (NOP, MLK) (C) (GHI, TUR) (D) (TUV, GHE)

15. (A) HRJ (B) LXL (C) FPH (D) FRL

16. (A) Carrot (B) Potato (C) Beetroot (D) Cabbage

17. (A) Cow (B) Horse
(C) Goat (D) Dog

18. (A) Baseball (B) Boxing
(C) Chess (D) Wrestling

19. (A) Enclose (B) Cover
(C) Close (D) Envelope

20. (A) Success – Failure (B) Win – Lose
(C) Gain – Profit (D) Spend – Earn

21. (A) Pray (B) Plead
(C) Beg (D) Order

22. (A) Sculptor (B) Blacksmith
(C) Carpenter (D) Profession

23. (A) Trapezium (B) Square
(C) Triangle (D) Cube

24. (A) Daughter-in-law (B) Mother
(C) Sister (D) Daughter

25. (A) Lungs (B) Eyes
(C) Fingers (D) Ears

Hints/Solutions

Practice Problems I

Solutions for questions 1 to 25:

1. 16, 36 and 64 are perfect squares but not 28.

Hence, the correct option is (B).

2. 37, 47 and 67 are prime numbers but not 27.

Hence, the correct option is (A).

3. $8 = 2^3$, $27 = 3^3$, $64 = 4^3$, $125 = 5^3$. 8, 27 and 125 are cubes of prime numbers but not 64.

Hence, the correct option is (C).

4. 42624, 37573 and 93339 are palindromes but not 84284.

Hence, the correct option is (C).

5. $30 = 3^3 + 3$, $630 = 5^4 + 5$,

$10 = 2^3 + 2$, $520 = 8^3 + 8$.

30, 10 and 520 can be expressed as $n^3 + n$ but not 630.

Hence, the correct option is (B).

6. $8 : 9 \Rightarrow 2^3 : 3^2$

$64 : 81 \Rightarrow 4^3 : 3^4$

$16 : 16 \Rightarrow 2^4 : 4^2$

Except 25 : 25, all other pairs are in $x^y : yx$ pattern.

Hence, the correct option is (B).

7. $\frac{3}{\sqrt{4+25}} = \frac{3}{\sqrt{2^2+5^2}}$

$\frac{7}{\sqrt{36+64}} = \frac{7}{\sqrt{6^2+8^2}}$

$\frac{11}{\sqrt{49+169}} = \frac{11}{\sqrt{7^2+13^2}}$

$\frac{5}{\sqrt{9+49}} = \frac{5}{\sqrt{3^2+7^2}}$

Except in $\frac{7}{\sqrt{6^2+8^2}}$, in all other fractions all the numbers are prime numbers.

Hence, the correct option is (B).

8. Except in $41\frac{45}{49}$, in all other mixed numerals, all the numbers are prime numbers.

Hence, the correct option is (B).

9. Except 4242, all other numbers are divisible by 11.

Hence, the correct option is (C).

10. $350 = 7^3 + 7$, $30 = 3^3 + 3$, $520 = 8^3 + 8$

Except 70, all other numbers can be expressed in $n^3 + n$ form.

Hence, the correct option is (B).

11. N, B and K are consonants, while O is a vowel.

Hence, the correct option is (B).

12. In the groups the numerator is the opposite letter and the denominator is the corresponding letter. This pattern is not followed in the group $O\frac{B}{L}$.

Hence, the correct option is (D).

13. $A^{\times 2}B^{+2}D$, $B^{+2}D^{\times 2}H$, $C^{+2}E^{\times 2}J$, $D^{+2}F^{\times 2}L$. Except ABD, all other groups form similar pattern.

Hence, the correct option is (A).

14. Each of the groups BCDE, FGHI and RSTU ends with a vowel, but not WXYZ.

Hence, the correct option is (D).

15. $D^{+2}F^{\times 3}R^{+2}T^{\times 3}H$, $A^{\times 2}B^{+3}E^{\times 2}J^{+3}M$, $N^{\times 2}B^{+3}E^{\times 2}J^{+3}M$, $D^{\times 2}H^{+3}K^{\times 2}V^{+3}Y$. Except DFRTH, all other groups follow similar pattern.

Hence, the correct option is (A).

16. Cat, Dog and Tiger are carnivores while elephant is a herbivore.

Hence, the correct option is (D).

17. Crocodile, Turtle and Allegator are amphibians, while Chemeleon is a terristrial animal.

Hence, the correct option is (A).

18. Trivandrum, Hyderabad and Bangalore are state capitals while calicut is not a state capital.

Hence, the correct option is (C).

19. Part, Cart and Dart are rhyming words, but Trap does not sound similarly.

Hence, the correct option is (B).

20. Star, Moon and Comet are natural celestial bodies, while rocket is man made.

Hence, the correct option is (A).

21. Skin, Tongue and Nose are sensory organs while leg is a limb.

Hence, the correct option is (C).

22. In Boxing, Chess and Wrestling only two people compete at a time, while Baseball is played by more than two people.

Hence, the correct option is (A).

23. Walk, Talk and Drink are verbs, but not plank.

Hence, the correct option is (D).

24. Ganga, Yamuna and Sutlez are rivers, while Nagarjun*a* sagar is a dam.

Hence, the correct option is (B).

25. The letters in the word are jumbled. The words are WHEAT, RICE, JOWAR AND CEREALS. WHEAT, RICE and JOWAR are different entities of the class CEREALS.

Hence, the correct option is (D).

Practice Problems 2

Solutions for questions 1 to 25:

1. 3, 5 and 9 are odd numbers, but not 4.

Hence, the correct option is (B).

2. $36 = 6^2$, $49 = 7^2$, $64 = 8^2$, $81 = 9^2$. 36, 64 and 81 are squares of composite numbers, but not 49.

Hence, the correct option is (B).

3. In each of the fractions, $\frac{2}{22}$, $\frac{1}{1}$ and $\frac{3}{333}$, the numerator is written in the denominator as many times as its value. This pattern is not followed in $\frac{4}{44}$.

Hence, the correct option is (B).

4. 41, 43 and 47 are prime numbers, but not 45.

Hence, the correct option is (C).

5. 27, 36 and 45 are divisible by 9, but not 30.

Hence, the correct option is (A).

6. $248 = 16^2 - \frac{16}{2}$, $303 = 18^2 - 21$

$390 = 20^2 - \frac{20}{2}$, $473 = 22^2 - \frac{22}{11}$

Except 303, all other numbers follow similar pattern.

Hence, the correct option is (B).

7. $125 : 117 \Rightarrow 125 - (1 + 2 + 5) = 117$

$343 : 333 \Rightarrow 343 - (3 + 4 + 3) = 333$

$512 : 504 \Rightarrow 512 - (5 + 1 + 2) = 504$

The above pattern is not followed in 216 : 206.

Hence, the correct option is (B).

8. $\frac{13}{4} = \frac{13}{1+3}$, $\frac{37}{10} = \frac{37}{3+7}$

$\frac{19}{10} = \frac{19}{1+9}$

The above pattern is not followed in $\frac{23}{6}$.

Hence, the correct option is (C).

9. $5\ \underline{25} \Rightarrow 5\ \underline{52}$, $3\ \underline{9} \Rightarrow 3\ \underline{32}$, $2\ \underline{4} \Rightarrow 2\ \underline{22}$

The above pattern is not followed in 426.

Hence, the correct option is (D).

10. $1320 = 11^3 - 11$; $2190 = 13^3 - 7$

$2730 = 14^3 - 14$; $3360 = 15^3 - 15$

Except 2190, all other numbers can be expressed in $n^3 - n$ form.

Hence, the correct option is (B).

11. In each of the groups HUSF, GTTG and PCKX, the first and the second letters form a corresponding pair of letters. Similarly, the third and the fourth letters form a pair of corresponding letters. This pattern is not followed in LOYB.

Hence, the correct option is (C).

12. $O^{+2}Q^{-4}M^{+6}S$, $U^{+6}A^{-4}W^{+2}Y$, $N^{+2}P^{-4}L^{+6}R$, $B^{+2}D^{-4}Z^{+6}F$. Except UAWY, all other groups follow similar pattern.

Hence, the correct option is (B).

13. In B^d, C^f and P^f, the place value of the exponent is twice the place value of the base. This pattern is not followed in T^m.

Hence, the correct option is (D).

14. Each answer choice consists of two groups of letters. The first letter of the two groups form an opposite pair, similarly the third letter of the two groups form an opposite pair. While the second letter of both the groups form a corresponding pair of letters. This pattern is followed in all the pairs of groups, except (NOP, MLK).

Hence, the correct option is (B).

15. In each group, the difference between place values of first two letters is equal to the place value of the third letter i.e.,

8 ~ 18 = 10			12 ~ 24 = 12			6 ~ 18 = 12		
H	R	J	L	X	L	F	R	L

The pattern followed by the above three groups is not followed by FPH.

Hence, the correct option is (C).

16. All except Cabbage grows under soil.

Hence, the correct option is (D).

17. Except dog, all the others are herbivorous animals.

Hence, the correct option is (D).

18. Boxing, Chess and Wrestling are individual events, while Baseball is a team event.

Hence, the correct option is (A).

19. Cover, Close and Enclose are verbs, white Envelope is a noun.

Hence, the correct option is (D).

20. Success – Failure, Win – Lose and Spend – Earn are pairs of antonyms, while Gain – Profit is a pair of Synonyms.

Hence, the correct option is (C).

21. Pray, Plead and Beg are requests, but Order is not *a* request.

Hence, the correct option is (D).

22. All except Architect are manufacturers.

Hence, the correct option is (D).

23. All are two dimensional objects except cube.

Hence, the correct option is (D).

24. All are blood relation except Daughter in-law

Hence, the correct option is (A).

25. All are organs of our body which are in pairs except fingers.

Hence, the correct option is (C).

Chapter 4 Coding and Decoding

Exercises

Practice Problems I

Directions for questions 1 to 12: Select the correct alternative from the given choices.

1. In a certain code language, if the word CIRCUMSTANCE is coded as CRUSACICMTNE, then how is the word HAPPINESS coded in that language?
(A) HPEISAPNS (B) HPISEAPNS
(C) HPIESPANS (D) HPIESAPNS

2. In a certain code language, if the word REGISTRATION is coded as TSIGERNOITAR, then how is the word ACCURATE coded in that language?
(A) UCCAETAR (B) UACCETAR
(C) UCACETAR (D) UCCATEAR

3. In a certain code language, if the word LIBERAL is coded as MJCFSBM, then how is the word REDUCTION coded in that language?
(A) EDCTBSHNM (B) SFEVDUJPO
(C) SFEVCTJPO (D) SFDUCTJPO

4. In a certain code language, if the word STRUCTURE is coded as TVUYHZBZN, then how is the word REMEDY coded in that language?
(A) SGPIJE (B) SGPEJD
(C) SGPIHE (D) SGPIIE

5. In a certain code language, if the word SEARCH is coded as IDSBFT, then how is the word FURNISH coded in that language?
(A) ITKNSVG (B) ITJORWG
(C) ITJOSVG (D) ITHNRVG

6. In a certain code language 'two' is called 'three', 'three' is called 'four', 'four' is called 'one', 'one' is called 'five', 'five', is called 'six', and 'six' is called 'nine', then what in the code language is the sum of one and three?
(A) six (B) two (C) nine (D) one

7. In a certain code language if 'pink' means 'black', 'black' means 'white', 'white' means 'yellow', 'yellow' means 'orange', 'orange' means 'red', and 'red' means 'green', then which colour stands for peace in that code?
(A) Red (B) Black
(C) Orange (D) Green

8. In a certain code language, if MENTION = 49 and NEUROTIC = 64, then MARVELLOUS = ?
(A) 81 (B) 88 (C) 64 (D) 100

9. In a certain code language, if CABINET = 70 and BEAUTY = 60, then PRODUCTION = ?
(A) 90 (B) 100 (C) 110 (D) 120

10. In a certain code language, if IMPEND = 61 and DISH = 40, then FRUIT = ?
(A) 86 (B) 68 (C) 74 (D) 76

11. In a certain code language, if BUG = 90 and ALMS = 180, then CADET = ?
(A) 153 (B) 165 (C) 175 (D) 148

12. In a certain code language, if INFER = 25 and JERSEY = 28, then CHOICE =?
(A) 34 (B) 39 (C) 41 (D) 47

Directions for questions 13 to 15: These questions are based on the following data.

In a certain code language, if the word ROUTINE is coded as JMPRRLJ and the word FIDELITY is coded as LGHCXGNW, then how will you code the following words in that language?

13. PREVAIL
(A) FPLRDGX (B) FPJTBGX
(C) FTJBNKX (D) FPJVBIX

14. LANGUAGE
(A) XYBDPXNC (B) XYBDPXMC
(C) XYCEPXNC (D) XYBEPYNC

15. TOBACCO
(A) NMDXEAF (B) NMDYEBF
(C) NMCYFBD (D) NMDYFAD

Directions for questions 16 to 20: For the following groups of letters given in column I, the codes are given in column II. Answer the following questions by finding the codes for the groups from the given columns.

	Column I	Column II
(A)	lit kit bit dit	b r p d
(B)	fit git mit kit	t d s v
(C)	rit bit git tit	x p v w
(D)	nit dit fit rit	r s x j

16. What is the code for lit?
(A) v (B) r (C) p (D) b

17. What is the code for tit?
(A) w (B) x (C) p (D) v

18. What is the code for rit?
(A) j (B) s (C) r (D) x

19. What is the code for nit?
(A) x (B) s (C) j (D) r

20. What is the code for kit?
(A) r (B) p (C) x (D) d

Directions for questions 21 to 25: For the words given in column I, the codes are given in column II. Answer the following questions by finding the codes for the letters from the words and their codes given in the columns.

	Column I	Column II
(A)	PRETEND	4396408
(B)	COMMON	615715
(C)	HOUSE	4*2&1
(D)	SUPPORT	3*21839
(E)	DRUM	5*08

21. What is the code for the word PROTECT?
(A) 3895479 (B) 3846978
(C) 3819479 (D) 3814978

22. What is the code for the word HORMONE?
(A) &385364 (B) &176561
(C) &175184 (D) &185164

23. What is the code for the word EMPEROR?
(A) 5495717 (B) 4534818
(C) 3453919 (D) 4537178

24. What is the code for the word DETHRONE?
(A) 049&7264
(B) 049&8164
(C) 059&7164
(D) 059&8164

25. What is the code for the word COMPOUND?
(A) 71531*60 (B) 72532*80
(C) 91531*70 (D) 72542*60

Practice Problems 2

Directions for questions 1 to 10: Select the correct alternative from the given choices.

1. In a certain code language, if the word HYPERBOLA is coded as YPROHEBLA, then how is the word SENTIMENT coded in that language?
(A) ENEISTMNT (B) ENIESMTNT
(C) ENIESTMNT (D) ENIESTNTM

2. In a certain code language, if the word DECORATE is coded as EDOCARET, then how is the word HYGROMETER coded in that language?
(A) YHRMGOTERE (B) YHRGMTOERE
(C) YHRGMOTERE (D) YHRGMOTREE

3. In a certain code language, if the word CUSTOMER is coded as RCEUMSOT, then how is the word IMMACULATE coded in that language?
(A) EITMMALAUC
(B) EITMAMLAUC
(C) ETEMAMALUC
(D) EITMMALUAC

4. In a certain code language, if the word MAJESTY is coded as NZKDTSZ, then which word is coded as HKJLQRF in that language?
(A) GLORIFY (B) GLISTEN
(C) GLOWING (D) GLIMPSE

5. In a certain code language if the word IMPORT is coded as KPUVCG, then what is coded as MISCHIEF?
(A) KFNVWVNM (B) OLXYJSVVY
(C) OLXIRVWY (D) KFNWVWNM

6. In a certain code language if the word MIRAGE is coded as ZRJBNJ, then how is the word INTRUDE coded in that language?
(A) RBPHNJL (B) RDPIPAJ
(C) RBNJPHJ (D) RBJLPHJ

7. In a certain code language, if the word GROUND is coded as HPRQSX, then what is coded as NOURISH?
(A) OMXNNMO (B) MQRVDYA
(C) MQRTFXA (D) OMVNMNO

8. In a certain code language if the word SPLENDOR is coded as UFNJPHQJ, then how is the word DISASTER coded in that language?
(A) FRUBUNGJ (B) HRUDNPJL
(C) FRUBNPLH (D) HRDLJNLJ

9. In a certain code language, if the word CERTIFY is coded as BURGIVX, then how is the word ADJACENT coded in that language?
(A) ZWQZXVMG (B) GMVXZQWZ
(C) RMVWYJWH (D) GMXVWRVZ

10. In a certain code language, if the word PLATINUM is coded as AIUPLTNM, then how is the word ADVENTURE coded in that language?
(A) AEEUDNRTV (B) ADEENRTUV
(C) AEUEDNTVR (D) AEUEDVNTR

Directions for questions 11 to 15: These questions are based on a certain code language. Understand the logic in the coding given below and answer the following questions.

The word INDUSTRY is coded as $C_3\ G_2\ B_2\ C_7\ S_1\ D_5\ F_3\ E_5$ and the word CREDIT is coded as $C_1\ F_3\ E_1\ B_2\ C_3\ D_5$.

11. SANSKRIT
(A) $S_1A_1D_3S_1K_1F_3D_3E_5$ (B) $S_1A_1D_3S_1K_1F_2C_3D_5$
(C) $S_1A_2G_2S_1I_2C_6H_1D_5$ (D) $S_1A_1G_2S_1K_1C_6C_3E_4$

12. BRIGHT
(A) $B_2C_6C_3E_2B_4D_4$ (B) $A_2F_3C_3G_1H_2D_5$
(C) $A_2F_3C_3G_1D_2J_2$ (D) $A_2F_3C_3E_2H_1E_4$

13. INVENTOR
(A) $C_3G_2T_2E_1L_2D_5C_5F_E$ (B) $C_3G_2K_2E_1L_2D_5E_5C_5$
(C) $C_3G_2K_2E_1G_2J_2C_5I_2$ (D) $C_3G_2T_2E_1G_2D_5C_5I_3$

14. MOTIVE
(A) $M_1C_5D_4C_3K_2E_1$ (B) $M_1E_3J_2C_3K_2E_1$
(C) $M_1E_4D_5C_3T_2E_1$ (D) $M_1E_4J_2C_4K_2E_2$

15. MINUTE
(A) $M_1H_1N_1S_2J_2E_1$ (B) $M_1C_3G_2G_3E_4E_1$
(C) $M_1C_3G_2K_2D_5E_1$ (D) $M_1H_1G_2S_2D_5E_2$

Directions for questions 16 to 20: For the following sentences given in column I, the codes are given in column II. Answer the following questions by finding the codes for the words form the given columns.

Column I	Column II
All people are not poet	kak cac hah faf zaz
Great people are happy	tat dad faf zaz
Krishna is a god	nan gag rar mam
Tagore is a great poet	mam kak dad nan lal
God make people happy	tat gag faf sas
No person is happy	xax pap faf mam

16. What is the code for the word 'Tagore' in that language?
(A) kak (B) dad
(C) lal (D) nan

17. What is the code for the word 'not' in that language?
(A) cac
(B) hah
(C) tat
(D) Cannot be determined

18. What is the code for 'No god is a person' in that language?
(A) mam gag nan cac
(B) pap gag nan mam tat
(C) lal mam gag cac tat
(D) xax mam gag nan pap

19. Which of the following can be the code for 'Tagore make great paintings' in that language?
(A) dad sas lal cac (B) lal kak zaz waw
(C) qaq lal gag sas (D) lal dad sas vav

20. If the code for 'Mahima is not a person' is 'nan xax mam yay cac', then what is the code for 'Mahima make all people happy'?
(A) xax yah cac tat sas (B) faf yay sas cac tat
(C) hah yay faf tat sas (D) tat xax yay tat sas

Directions for questions 21 to 25: For the following sentences given in column I, the codes re given in column II. Answer the following questions by finding the codes for the words form the given columns.

Column I	Column II
I do not cheat.	1 # 2 7
I win the gold medal	9 @ 7 6 Ψ
I am not the last	3 7 6 π #
Manav do not loose	1 8 # %
Last person win the silver medal	4 π 6 θ @ Ψ
Manav is a person	4 5 8 *

21. What is the code for 'cheat'?
(A) 7 (B) 1 (C) # (D) 2

22. What is the code for 'gold'?
(A) 9 (B) @ (C) 7 (D) Ψ

23. Which word is coded as θ?
(A) person (B) win (C) silver (D) medal

24. What is the code for 'Manav is a cheat'?
(A) * 8 # 5 (B) 4 8 5 2 (C) 5 * 8 2 (D) 5 9 4 2

25. What can be the code for 'I loose the gold medal'?
(A) 7 9 @ % 6 (B) 6 8 9 ψ %
(C) 7 9 5 % 6 (D) ψ 6 9 7 @

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 12:

1. Word : CIRCUMSTANCE

Pattern : Alternate letters are written as group.

Code : CRUSACICMTNE

Similarly, the code for HAPPINES is HPIESAPNS.

Hence, the correct option is (D).

2. Word : REGISTRATION

Pattern : The word is divided into two equal halves and the letters in each half are reversed.

Code : T S I G E R N O I T A R

Similarly, the code for ACCURATE is UCCAETAR.

Hence, the correct option is (A).

3. Word : L I B E R A L

Pattern : +1 +1 +1 +1 +1 +1 +1

Code : M J C F S B M

Similarly, the code for REDUCTION is SFEVDUJPO.

Hence, the correct option is (B).

4.

Word :	S	T	R	U	C	T	U	R	E
Pattern :	+1	+2	+3	+4	+5	+6	+7	+8	+9
Code :	T	V	U	Y	H	Z	B	Z	N

Similarly, the code for REMEDY is SGPIIE.

Hence, the correct option is (D).

5. Word : S E A R C H

Pattern : The letters is the word are reversed and for these letters their next letters are given as their codes.

H	C	R	A	E	S
+1	+1	+1	+1	+1	+1
I	D	S	B	F	T

Similarly, the code for FURNISH is ITJOSVG.

Hence, the correct option is (C).

6. It is given that in the given code 'two' is called 'three' i.e., code for two is three. Similarly code for three is four and so on.

Now, one + Three is Four and as per given codes for four is 'one'.

Hence the value is one.

Hence, the correct option is (D).

7. It is given that in the given code 'pink' means 'black' i.e. the code for 'black' is 'pink', similarly the code for 'white' is black and so on.

The colour that stands for peace is 'white' which is coded as 'black'.

Hence, the correct option is (B).

8. For each word, the square the number of letters in it is given as its value.

The word MENTION has seven letters in it and 7^2 (= 49) is its code.

NEUROTIC has eight letters in it and 8^2 (= 84) is its code.

Similarly, MARVELLOUS has ten letters in it and 10^2 = (100) is its code.

Hence, the correct option is (D).

9. The number of letters in the given word is multiplied with a constant number 10 to get its value.

C A B I N E T has 7 letters and $7 \times 10 = 70$

B E A U T *Y* has 7 letters and $6 \times 10 = 60$

Similarly, PRODUCTION has 10 letters and $10 \times 10 = 100$.

Hence, the correct option is (B).

10. I M P E N D $\Rightarrow 9 + 13 + 16 + 5 + 14 + 4 = 61$

The sum of the place values of letters in the word is given as its value.

D I S H $\Rightarrow 4 + 9 + 19 + 8 = 40$

Similarly, FRUIT $\Rightarrow 6 + 18 + 21 + 9 + 20 = 74$

Hence, the correct option is (C).

11. B U G $\Rightarrow 2 + 21 + 7 = 30$ and $30 \times 3 = 90$

In this the sum of the place values is multiplied with the number of letters in the word.

A L M S $\Rightarrow 1 + 12 + 13 + 19 = 45$ and $45 \times 4 = 180$

Similarly, C A D E T $\Rightarrow 3 + 1 + 4 + 5 + 20 = 33$ and $33 \times 5 = 165$.

Hence, the correct option is (B).

12. I N F E R $\Rightarrow 9 + 14 + 6 + 5 + 18 = 52$

In this the reverse of the sum of the place values of the letters in the word is given as its code.

J E R S E *Y* $\Rightarrow 10 + 5 + 18 + 19 + 5 + 25 = 82$ and the code is 28

Similarly, C H O I C E $\Rightarrow 3 + 8 + 15 + 9 + 3 + 5 = 43$

$\therefore$ The code is 34.

Hence, the correct option is (A).

Solutions for questions 13 to 15:

The coding is done as follows.

Word :	R	O	U	T	I	N	E	
Pattern :	×2	–2	×2	–2	×2	–2	×2	
Code :	J	M	P	R	R	L	J	
Word :	F	I	D	E	L	I	T	Y
Pattern :	×2	–2	×2	–2	×2	–2	×2	–2
Code :	L	G	H	C	X	G	N	W

13. The code for PREVAIL is FPJTBGX.

Hence, the correct option is (B).

14. The code of LANGUAGE is XYBEPYNC.

Hence, the correct option is (D).

15. The code for TOBACCO is NMDYFAD.

Hence, the correct option is (D).

Solutions for questions 16 to 20:

	Column I	Column II
(1)	lit kit bit dit	b r p d
(2)	fit git mit kit	t d s v
(3)	rit bit git tit	x p v w
(4)	nit dit fit rit	r s x j

For the 1st and the 2nd statements, kit and the code *d* is common. Hence, the code for kit is *d*.

For the 2nd and the 3rd statements, git and the code *v* are common. Hence, the code for git is *v*.

For the 3rd and the 4th statements, rit and the code *x* are common. Hence, the code for rit is *x*.

Similarly, the letters and their corresponding codes can be determined.

Word	kit	git	rit	bit	tit	fit	mit	Dit	lit	Nit
Code	d	v	x	p	w	s	t	r	b	J

16. The code for lit is *b*.

Hence, the correct option is (D).

17. *w* is the code for tit.

Hence, the correct option is (A).

18. The code for rit is *x*.

Hence, the correct option is (D).

19. *j* is code for nit.

Hence, the correct option is (C).

20. The code for kit is *d*.

Hence, the correct option is (D).

Solutions for questions 21 to 25:

	Column I	Column II
(1)	PRETEND	4396408
(2)	COMMON	615715
(3)	HOUSE	4*2&1
(4)	SUPPORT	3*21839
(5)	DRUM	5*08

In the 1st word, the letter E is repeated and the code 4 is repeated. Hence, the code for E is 4.

In the 4th word, the letter P is repeated and the code 3 repeated. Hence, the code for P is 3.

For the 2nd and the 3rd words the letter O and the code 1 are common. Hence the code for O is 1. From the 2nd word, now it can be concluded that the code for M is 5.

For the 1st and the 2nd words, the letter N and the code 6 are common. Hence, the code for N is 6.

In the 2nd word, the letter C and the code 7 are left. Hence, the code for C is 7.

Similarly, the letters and their corresponding codes can be determined.

Letter	E	P	O	M	N	C	U	S	R	H	T	D
Code	4	3	1	5	6	7	*	2	8	&	9	0

21. The code for PROTECT is 3819479.

Hence, the correct option is (C).

22. The code for HORMONE is &185164.

Hence, the correct option is (D).

23. The code for EMPEROR is 4534818.

Hence, the correct option is (B).

24. The code for DETHRONE is 049&8164.

Hence, the correct option is (B).

25. The code for COMPOUND IS 71531*60.

Hence, the correct option is (A).

Practice Problems 2

Solutions for questions 1 to 25:

1. 1 2 3 4 5 6 7 8 9

Word : H Y P E R B O L A

Code : Y P R O H E B L A

2 3 5 7 1 4 6 8 9

The letters in the prime numbered positions are arranged first followed by the remaining letters.

Similarly, the code for SENTIMENT is ENIESTMNT.

Hence, the correct option is (C).

2. Word : D E C O R A T E

Pattern : Pair of letters reversed.

Code : E D O C A R E T

Similarly, the code for HYGROMETER is YHRGMOTERE.

Hence, the correct option is (C).

3.

	1	2	3	4	5	6	7	8
Word :	C	U	S	T	O	M	E	R
Code :	R	C	E	U	M	S	O	T
	8	1	7	2	6	3	5	4

The letters in the word are rearranged as indicated above.

Similarly, the code for IMMACULATE is EITMAMLAUC.

Hence, the correct option is (B).

4. Word : M A J E S T Y

Pattern : +1 –1 +1 –1 +1 –1 +1

Code : N Z K D T S Z

The word which is coded as

H K J L Q R F is

–1 +1 –1 +1 –1 +1 –1

G L I M P S E

Hence, the correct option is (D).

5. Word : I M P O R T

Pattern : +2 +3 +5 +7 +11 +13

Code : K P U V C G,

similarly

M I S C H I E F

–2 –3 –5 –7 –11 –13 –17 –19

K F N V W V N M

Hence, the correct option is (A).

6. Word : M I R A G E

Pattern : ×2 ×2 ×2 ×2 ×2 ×2

Code : Z R J B N J

Similarly, the code for INTRUDE is RBNJPHJ.

Hence, the correct option is (C).

7. Word : G R O U N D

Pattern : +1 –2 +3 –4 +5 –6

Code : H P R Q S X,

similarly

N O U R I S H

–1 +2 –3 +4 –5 +6 –7

M Q R V D Y A

Hence, the correct option is (B).

8. Word : S P L E N D O R

Pattern : +2 ×2 +2 ×2 +2 ×2 +2 ×2

Code : U F N J P H Q J

Similarly, the code for DISASTER is FRUBUNGJ.

Hence, the correct option is (A).

9. Word : C E R T I F Y

Pattern : The letters in the word are reversed and then their opposite pairs are given as their codes.

Code : B U R G I V X

Similarly, the code for ADJACENT is GMVXZQWZ.

Hence, the correct option is (B).

10. Word : P L A T I N U M

Pattern : In the word the vowels are taken first in the same order as they are in the word followed by consonants.

Code : A I U P L T N M

Similarly, the code for ADVENTURE is AEUEDVNTR.

Hence, the correct option is (D).

Solutions for questions 11 to 15:

The coding is alone as follows.

I N D U S T R Y

C_3 G_2 B_2 C_7 S_1 D_5 F_3 E_5

Here I = 9 and $C_3 \Rightarrow C = 3$ and $3 \times 3 = 9 = I$.

$N = 14$ and $G_2 \Rightarrow G = 7$ and $7 \times 2 = 14 = N$.

$D = 4$ and $B_2 \Rightarrow B = 2$ and $2 \times 2 = 4 = D$ and so on.

11. The code for S A N S K R I T is S_1 A_1 G_2 S_1 K_1 C_6 C_3 E_4.

Hence, the correct option is (D).

12. The code for B R I G H T is A_2 F_3 C_3 G_1 D_2 J_2.

Hence, the correct option is (C).

13. The code for I N V E N T O R is C_3 G_2 K_2 E_1 G_2 J_2 C_5 I_2

Hence, the correct option is (C).

14. The code for M O T I V E is M_1 E_3 J_2 C_3 K_2 E_1.

Hence, the correct option is (B).

15. The code for M I N U T E is M_1 C_3 G_2 G_3 E_4 E_1.

Hence, the correct option is (B).

Solutions for questions 16 to 20:

	Column I	Column II
1.	All people are not poet	kak cac hah tat zaz
2.	Great people are happy	tat dad faf zaz
3.	Krishna is a god	nan gag rar mam
4.	Tagore is a great poet	mam kak dad nan lal
5.	God make people happy	tat gag faf sas
6.	No person is happy	xax pap faf mam

Comparing (4) and (6) 'is' is common in both and the code 'mam' is common, so, 'mam' is the code for 'is'.

Now, comparing (5) and (6) in the same way we get the code for 'happy', i.e., 'faf'.

Comparing (2) and (5) we get the code for 'people', i.e., 'tat'.

From (2) and (4) we get the code for 'great', i.e., 'dad'.

Now in (2) only one word is there, for which the code is unknown, so the remaining code, 'zaz' must be the code for 'are'.

In the same way we will get the codes for the other words also. The codes and the words are written in the following table.

word	great	poet	happy	is	people	are	A	Tagore	God	Krishna	make	No, person	all, not
code	dad	kak	faf	mam	tat	zaz	Nan	Lal	Gag	rar	sas	pap, xax	cac, hah

16. 'lal' is the code for the word 'Tagore'.

Hence, the correct option is (C).

17. 'cac' or 'hah' is the code for the word 'not'.

Hence, the correct option is (D).

18. Code for "No god is *a* person" is 'xax mam gag nan pap'.

Hence, the correct option is (D).

19. 'lal dad sas' is the code for "Tagore make great". Hence, from the given options Choice (D) can be the code for "Tagore make great paintings".

Hence, the correct option is (D).

20. Now by comparing the given word and the code with the known codes,

Mahima – yay

not – cac

person – xax

all – hah

no – pap

∴ The code for "Mahima make all people happy" is 'hah yay faf tat sas'.

Hence, the correct option is (C).

Solutions for questions 21 to 25:

	Column I	Column II
(1)	I do not cheat	1 # 2 7
(2)	I win the gold medal	9 @ 7 6 Ψ
(3)	I am not the last	3 7 6 π #
(4)	Manav do not loose	1 8 # %
(5)	Last person win the silver medal	4 π 6 θ @ Ψ
(6)	Manane is a person	4 5 8 *

Comparing (1) and (2), we found that there is only one common word 'I' and in the code '7'.

∴ '7' is the code for 'I'.

In the same way

From (1) and (3) we get the code for 'not', i.e., #.

Now from (1) and (4), we get 'do' and 'not' common in both the sentences, but as we know the code for 'not', we can find out the code for 'do', i.e., '1'.

Now in (1) for the remaining word 'cheat' the code must be '2'.

In the similar way, we can find out the codes for the other words also.

The codes for the respective words are given in the following table.

Word	I	do	not	cheat	the	gold	am	last	Manav
Code	7	1	#	2	6	9	3	π	8

loose	person	silver	is, a	win, medal
%	4	θ	5, *	@, Ψ

21. '2' is the code for 'cheat'.

Hence, the correct option is (D).

22. Code for 'gold' is '9'.

Hence, the correct option is (A).

23. θ is the code for 'silver'.

Hence, the correct option is (C).

24. Code for 'Manav is a cheat' is '5 * 8 2'.

Hence, the correct option is (C).

25. Code for "I loose the gold medal" can be 7 9 @ % 6.

Hence, the correct option is (A).

Chapter 5 Blood Relations

Exercises

Practice Problems I

***Directions for questions 1 to 15*:** Select the correct alternative from the given choices.

1. A person who is the husband of my son's sister is my
(A) Nephew (B) Son-in-law
(C) Son (D) Brother

2. Y is the daughter of X's brother's wife's father-in-law. Y is X's _____.
(A) Niece (B) Daughter
(C) Sister (D) Sister-in-law

3. Showing a photograph P said,' She is my mother's mother's son's daughter'. How is the person in the photograph related to P?
(A) Sister (B) Cousin
(C) Niece (D) Mother

4. How is my father's mother's only daughter-in-law's sister related to me?
(A) Aunt (B) Sister
(C) Cousin (D) Niece

5. How is my grandmother's only child's husband's mother related to me?
(A) Mother (B) Grandmother
(C) Aunt (D) Sister

6. How is Ramu's mother-in-law's only daughter's son related to Ramu?
(A) Nephew (B) Brother
(C) Son (D) Uncle

7. How is my son's mother's daughter related to me?
(A) Niece (B) Granddaughter
(C) Daughter (D) Aunt

8. How is my father's brother's only sibling's mother related to me?
(A) Mother (B) Cousin
(C) Daughter (D) Grandmother

9. A is the father of B. C is the son of D. E is the brother of C while D is the sister of B. How is B related to E?
(A) Uncle (B) Aunt
(C) Mother (D) Either (A) or (B)

10. My mother's sister's son's father's mother-in-law is related to me as
(A) Mother (B) Grandmother
(C) Mother-in-law (D) Aunt

11. How is David's father's only daughter-in-law's son's wife related to David?
(A) Daughter (B) Daughter-in-law
(C) Niece (D) Granddaughter

12. How is Ravi's mother's father's son related to Ravi's father?
(A) Cousin (B) Uncle
(C) Brother-in-law (D) Son-in-law

13. Divya's father, pointing towards a person, said, 'He is the brother of my father's only sibling'. How is the person related to Divya?
(A) Father (B) Uncle
(C) Brother (D) Grandfather

14. Tinku, introducing a person to Rinku, said 'He is the father of your sister's son and he is also my mother's husband'. How is Tinku's father related to Rinku's mother?
(A) Nephew (B) Uncle
(C) Son-in-law (D) Father

15. A is B's father, B is C's daughter, E is D's only sibling. C is D's only daughter. How is B related to E's niece?
(A) Niece
(B) Granddaughter
(C) Daughter
(D) Mother

Directions for questions 16 to 20: Use the relations defined below and answer the following questions.
A + B means A is the mother of B.
A – B means A is the sister of B.
A × B means A is the father of B.
A ÷ B means A is the son of B.
A = B means A is the brother of B.
A ≠ B means A is the daughter of B.

16. Which of the following means P is the aunt of Q?
(A) P – R ÷ Q (B) P + R × Q
(C) P ≠ R × Q (D) P – R + Q

17. Which of the following means, S is the son of T's daughter?
(A) T × M + S + N (B) T × M + S = N
(C) T + M × S – N (D) S ÷ M ÷ T – N

18. Which of the following means W is the uncle of Z?
(A) W × A – B + Z (B) W = A + B – Z
(C) W = A + B + Z (D) W × A × B = Z

19. Which of the following means C is the grandfather of both D and E?
(A) C × A ÷ D – E (B) C + A + D ≠ E
(C) C ÷ A ≠ D = E (D) C × A × D – E

20. Which of the following means I is the mother of L?
(A) I + B – C ≠ D × L (B) I ≠ B + C × L
(C) I + B × C ≠ D – L (D) I + B – C × L

Directions for questions 21 to 25: These questions are based on the information given below.

A, B, C, D, E, and F are six members of a family. A is the mother of B, who is the husband of D. F is the brother of one of the parents of C. D is the daughter-in-law of E and has no siblings. C is the son of D.

21. How is C related to A?
(A) Nephew (B) Son-in-law
(C) Grandson (D) Father

22. How is F related to D?
(A) Cousin (B) Brother-in-law
(C) Brother (D) Father

23. How is E related to F?
(A) Mother
(B) Son
(C) Father
(D) Father-in-law

24. If F is married to G, then how is G related to B?
(A) Sister (B) Sister-in-law
(C) Cousin (D) Mother

25. How many male members are there in the family?
(A) Two
(B) Three
(C) Four
(D) Cannot be determined

Practice Problems 2

Directions for questions 1 to 10: Select the correct alternative from the given choices.

1. My father's brother's only sibling's father-in-law is my mother's
(A) Uncle (B) Father
(C) Cousin (D) Father-in-law

2. My sister's daughter's grand mother's only child's only son is my
(A) Son
(B) Nephew
(C) Brother
(D) Cannot be determined

3. Madhuri's daughter is playing caroms with the son of daughter-in-law of Krishna's father. How Madhuri related to Krishna?
(A) Sister
(B) Cousin
(C) Wife
(D) Cannot be determined

4. How is my mother's father's father-in-law's son's daughter related to my mother?
(A) Sister
(B) Sister-in-law
(C) Cousin
(D) Cannot be determined

5. My father is the brother-in-law of Usha's husband, who is the only child of Kousalya. How is Kousalya's grand daughter related to my sister?
(A) Sister (B) Aunt
(C) Cousin (D) Grand mother

6. How is my mother's brother's wife's son related to my brother's father's father-in-law?
(A) Grandson (B) Nephew
(C) Granddaughter (D) Son

7. How is Ravi's mother's brother's father's only daughter's daughter related to Ravi?
(A) Cousin (B) Sister
(C) Aunt (D) Mother

8. Pointing at a photograph Shyam told Ram, 'She is the mother-in-law of your father's wife and is my maternal grandmother'. How is Ram related to Shyam?
(A) Brother (B) Uncle
(C) Cousin (D) Father

9. My father's only sibling's mother's son-in-law's son's mother is my
(A) Sister (B) Sister-in-law
(C) Cousin (D) Aunt

10. Charan's father's father-in-law's son's only sister's son is Bhavan. How is Bhavan related to Charan?
(A) Son (B) Brother
(C) Uncle (D) Father

Directions for questions 11 to 15: Use the relationships given below and answer the questions followed.
P $\rightarrow$ Q means P is the husband of Q
P \$ Q means P is the father of Q.
P £ Q means P is the mother of Q.
P @ Q means P is the brother of Q.
P $\odot$ Q means P is the sister of Q.
P Δ Q means P is the son of Q.
P $\Rightarrow$ Q means P is the daughter of Q.
P $\downarrow$ Q means P is the wife of Q.

11. If A Δ B £ C \$ D, then A is the _____ of D.
(A) father (B) uncle
(C) brother (D) son

12. E @ F $\downarrow$ G \$ H means
(A) H is the niece of E.
(B) H is the nephew of E.
(C) E is the paternal uncle of H.
(D) Either (A) or (B)

13. I \$ J $\Rightarrow$ K $\Rightarrow$ L $\downarrow$ M means
(A) I is the son of M.
(B) I is the nephew of M.
(C) M is the father-in-law of I.
(D) I is the son-in-law of M.

14. If P $\odot$ Q Δ R @ S and T $\downarrow$ S, then which among the following is a true statement?
(A) S is the aunt of P.
(B) Q is the niece of S.
(C) S is the father of P and Q.
(D) P is the niece of S.

15. If W $\Rightarrow$ X Δ Y £ Z, then which among the following is definitely true?

(A) Z is the uncle of W.
(B) W is the niece of Z.
(C) W is the daughter of Z.
(D) W is the son of Z.

Directions for questions 16 to 20: These questions are based on the information given below.

A family of eight persons has three married couples. Amelie is the grandmother of Charles and is the mother-in-law of Floyd. Helen is the daughter of Bob, who is the brother of George. Diana is the only child of George and is the mother of Charles. Emma is the wife of Bob.

16. How is George related to Helen?
(A) Uncle (B) Father
(C) Brother (D) Cousin

17. How is Helen related to Diana?
(A) Sister (B) Daughter
(C) Cousin (D) Mother

18. Diana's mother is
(A) Emma (B) Amelie
(C) Helen (D) Floyd

19. Who is the father of Floyd?
(A) George (B) Bob
(C) None of these (D) Data insufficient

20. How is Charles father related to George's daughter?
(A) Son (B) Uncle
(C) Husband (D) Father-in-law

Directions for questions 21 to 25: These questions are based on the information given below.

In a family of three generations, there are eight members, M and N are brothers. R is the grandson of Q. T is the only niece of M, P is the sister-in-law of N. O is the mother-in-law of S. There are three married couples in the family. T is the daughter of S.

21. How is R related to T?
(A) Cousin (B) Uncle
(C) Brother (D) Cannot be determined

22. How is Q related to S?
(A) Grandfather (B) Uncle
(C) Father-in-law (D) Father

23. How is P related to O?
(A) Aunt (B) Mother
(C) Daughter-in-law (D) Mother-in-law

24. How is O related to R?
(A) Uncle
(B) Grandmother
(C) Aunt
(D) Grandfather

25. In the family the ratio of number of male members to that of female members
(A) 3 : 5 (B) 5 : 3
(C) 1 : 1 (D) 3 : 1

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 15:

Note: For all the diagram □ represent males and ○ represent females

1. My son's sister is my daughter. My daughter's husband is my son-in-law.

Hence, the correct option is (B).

2. X's brother's wife's father-in-law is X's brother's father i.e. X's father. X's father's daughter is X's sister.

Hence, the correct option is (C).

3. P's mother's mother's son is P's uncle. P's uncle's daughter is P's cousin.

Hence, the correct option is (B).

4. My father's mother's only daughter-in-law is my father's wife i.e., my mother. My mother's sister is my aunt.

Hence, the correct option is (A).

5. My grandmother's only child is my mother. My Mother's husband is my father. My father's mother is my grandmother.

Hence, the correct option is (B).

6. Ramu's mother-in-law's only daughter is Ramu's wife. Ramu's wife son is Ramu's son.

Hence, the correct option is (C).

7. My son's son's mother is my son's wife. My son's wife's daughter is my granddaughter.

Hence, the correct option is (B).

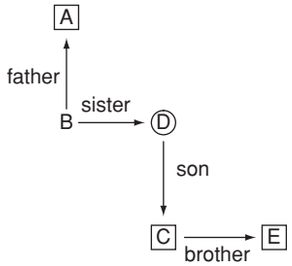
8. My father's brother's only sibling is my father. My father's mother is my grand mother.

Hence, the correct option is (D).

9. C is the son of D and E is the brother of C means C and E are both son's of D. It is also given that D is the sister of B means E is the nephew of B.

But it is not given that B is either male or female.

Therefore, B can be either aunt or uncle of E.



Hence, the correct option is (D).

10. My mother's sister's son's father is my mother's sister's husband i.e., my mother's brother-in-law. My mother's brother-in-law's mother-in-law is my mother's mother i.e., my grandmother.

Hence, the correct option is (B).

11. David's father's only daughter-in-law is David's wife. David's wife's son is David's son. David's son's wife is David's daughter-in-law.

Hence, the correct option is (B).

12. Ravi's mother's father's son is Ravi's mother's brother i.e. Ravi's uncle. Ravi's uncle is Ravi's father's brother-in-law.

Hence, the correct option is (C).

13. Divya's father's father's only sibling is Divya's father's uncle/aunt. The brother of Divya's father's uncle/aunt is Divya's father's father i.e., Divya's grandfather.

Hence, the correct option is (D).

14. He is the father of Rinku's Sister's son means he is Rinku's Sister's husband.

He is also Tinku's mother's husband means Tinku's mother is Rinku's sister.

Now, Tinku's father is Rinku's brother-in-law.

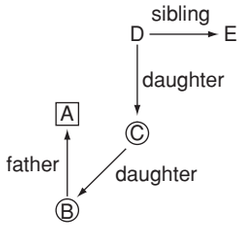
That is Tinku's father is Rinku's mother's son-in-law.

Hence, the correct option is (C).

15. A is B's father and B is C's daughter means A is C's husband and B is their daughter.

C is D's only daughter and E is D's only sibling means C is E's only niece.

B is the daughter of C (E's niece).



Hence, the correct option is (C).

Solutions for questions 16 to 20:

16. (1) P − R + Q means P is the sister of R, R is the mother of Q. P is the aunt of Q.

Hence, the correct option is (D).

17. (1) T × M + S means T is the father of M and M is the mother of S. That is T's daughter is S's mother but S can be male or female.

(2) T × M + S = N means T is the father of M, M is the mother of S and S is the brother of N.

Therefore S is the son of T's daughter.

Hence, the correct option is (B).

18. (1) W × A – B + Z means W is the father of A, A is the sister of B and B is the mother of Z. Therefore W is the grandfather of Z.

(2) W = A + B – Z means W is the brother of A, A is the mother of B and B is the sister of Z. Therefore, W is the uncle of Z.

Hence, the correct option is (B).

19. (1) C × A ÷ D – E means C is the father of A, A is the son of D and D is the sister of E.

(2) C + A + D ≠ E means C is the mother of A. A is the mother of D and D is the daughter of E. Therefore, C is the grand father for D but not E.

(3) C ÷ A ≠ D = E means C is the son of A, A is the daughter of D and D is the brother of E. Here D is the grand father of C.

(4) C × A × D – E means C is the father of A, A is the father of D and D is the sister of E. Therefore, C is the grand father of both D and E.

Hence, the correct option is (D).

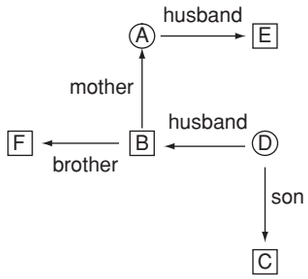
20. (1) I + B – C ≠ D × L means I is the mother of B, B is the sister of C, C is the daughter of D and D is the father of L. Therefore, B, C and L are children of I and D, where I is the mother.

Hence, the correct option is (A).

Solutions for questions 21 to 25:

Given that A is the mother of B and B is the husband of D. Therefore, D is the daughter-in-law of A. Also given that C is the son of D and F is the brother of one of the parents of C. Hence F is the brother of either B or D. But given that D has no siblings, F is the brother of B.

And D is the daughter-in-law of E means E is the husband of A. The given data is represented as follows.



21. C is the grandson of A.

Hence, the correct option is (C).

22. F is the brother-in-law of D.

Hence, the correct option is (B).

23. E is the father of F.

Hence, the correct option is (C).

24. G will be the sister-in-law of B.

Hence, the correct option is (B).

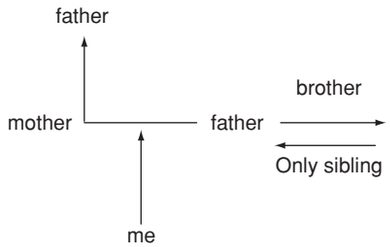
25. E, F, B and C are males.

Hence, the correct option is (C).

Practice Problems 2

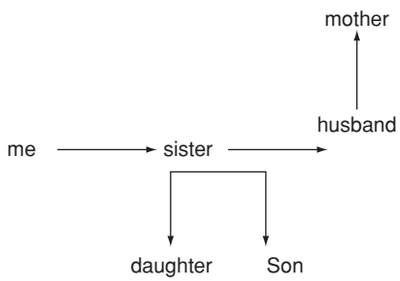
Solutions for questions 1 to 10:

1. My father's brother's only sibling is my father, whose father-in-law is the father of my mother.



Hence, the correct option is (B).

2. My sister's daughter's grand mother may be my mother or my sister's mother-in-law. But she has only child. Thus she cannot be our mother. She is my sister's mother-in-law whose only child is my sister's husband and his only son is my nephew.



Hence, the correct option is (B).

3. The relation between Maduri and Krishna, is not mentioned. Hence, the relation cannot be determined.

Hence, the correct option is (D).

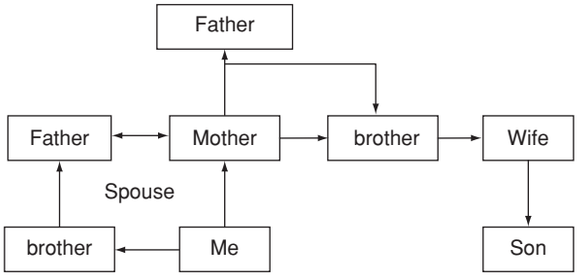
4. My mother's father's father-in-law is the maternal grand father of my mother whose son is my mother's maternal uncle and his daughter is my mother's cousin.

Hence, the correct option is (C).

5. Usha's husband is the only child of Kousalya. Hence, his brother-in-law will be Usha's brother who is my father. Thus Usha is my aunt. Kausalya's grand daughter is Usha's daughter. Hence, she is the cousin of my sister.

Hence, the correct option is (C).

6. My mother's brother's wife's son is my maternal uncle's son. My father's father-in-law is father of my maternal uncle, whose son is grandson of my father's father-in-law.



Hence, the correct option is (A).

7. Ravi's mother's brother's father is Ravi's mother's father i.e. Ravi's maternal grand-father. His only daughter is Ravi's mother, whose daughter is Ravi's sister.

Hence, the correct option is (B).

8. Ravi's father's wife is Ravi's mother. Her mother-in-law is Ravi's father's mother i.e. Ravi's Paternal grand mother. Ravi's paternal grand mother is also Shyam's maternal grand mother i.e., Ravi's father and Shyam's mother are siblings. Hence, Ram is Shyam's cousin.

Hence, the correct option is (C).

9. My father's only sibling is my aunt/uncle, whose mother's son-in-law is my father's mother's sister's husband. Hence, my father's only sibling is his sister. Her husbands son's mother is my father's sister only, who is my aunt.

Hence, the correct option is (D).

10. Charan's father's father-in-law is Charan's maternal grandfather, whose son's only sister is Charan's mother. Her son Bhavan is Charan's brother.

Hence, the correct option is (B).

Solutions for questions 11 to 15:

11. A Δ B £ C $ D means A is the son of B, B is the mother of C and C is the father of D.

Here A and C are brothers, where C is the father of D.

∴ A is the uncle of D.

Hence, the correct option is (B).

12. E @ F ↓ G $ H means E is the brother of F, F is the wife of G and G is the father of H.

Here, H is the child of F and G and E is the brother of F. Therefore, E is the maternal uncle of H.

But, H can be either niece or nephew of E.

Hence, the correct option is (D).

13. I $ J ⇒ K ⇒ L M means I is the father of J, J is the daughter of K, K is the daughter of L and L is the husband of M.

J is the daughter of I and K and K is the daughter of L and M. Therefore, I is the son-in-law of M.

Hence, the correct option is (D).

14. P || Q Δ R @ S means P is the sister of Q, Q is the son of R, R is the brother of S.

Here S is either aunt/uncle of both P and Q.

T↓ S means T is the wife of S i.e. S is the uncle of both P and Q.

P is the niece of S and Q is the nephew of S.

Hence, the correct option is (D).

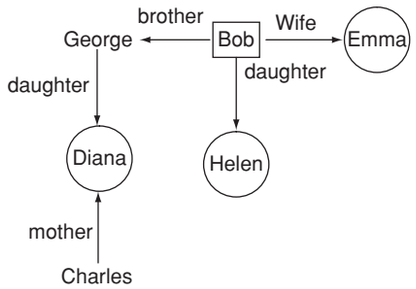
15. W ⇒ × Δ Y £ Z means W is the daughter of X, X is the son of Y and Y is the mother of Z.

Here, W is the niece of Z but Z can be either aunt or uncle of W.

Hence, the correct option is (B).

Solutions for questions 16 to 20:

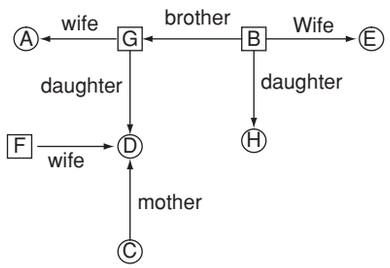
Given that Helen is the daughter of Bob and Bob is the brother of George. Also Diana is the only child of George and is the mother of Charles. Emma is the wife of Bob.



Also given that Amelie is the grandmother of Charles and is the mother-in-law of Floyd.

∴ Floyd should be the husband of Diana and Amelie should be the wife of George.

(Names are represented by their corresponding first letters)



16. George is the uncle of Helen.

Hence, the correct option is (A).

17. Helen is the cousin of Diana.

Hence, the correct option is (C).

18. Amelie is Diana;s mother.

Hence, the correct option is (B).

19. Nothing can be said about Floyd's father.

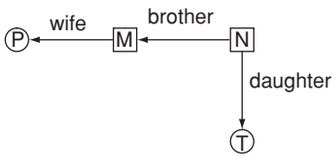
Hence, the correct option is (D).

20. Charle's father is Floyd and George's daughter is Diana. Flyod is the husband of Diana.

Hence, the correct option is (C).

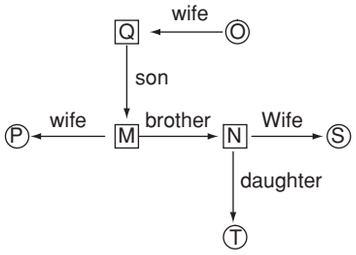
Solutions for questions 21 to 25:

Given M and N are brothers, T is the only niece of M and P is the sister-in-law of N.



(As there are three married couples, it is the only relation possible).

21. Also given T is the daughter of S, O is the mother-in-law of S and R is the grandson of Q. The relation is given below.



But R can be the son of either M or N.

R can be either brother or cousin of T.

Hence, the correct option is (D).

22. Q is the father-in-law of S.

Hence, the correct option is (C).

23. P is the daughter-in-law of O.

Hence, the correct option is (C).

24. O is the grandmother of R.

Hence, the correct option is (B).

25. O, P, S and T are females and M, N, Q and R are males.

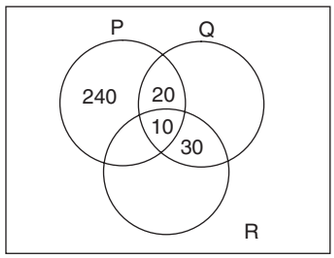
Hence, the correct option is (C).

Chapter 6 Venn Diagrams

Exercises

Practice Problems 1

Directions for questions 1 to 5: There are 1500 students in a college. Each student can be a member of three student communities namely P, Q, and R. Now, using the data mentioned and the diagram given, answer the questions that follow.



- Total members in community P is 300.
- Total members in community Q is 420.
- Total members in community R is 490.

1. How many students are part of only community R?
(A) 360 (B) 420 (C) 210 (D) 350

2. How many students is not part of any community?
(A) 390 (B) 420 (C) 410 (D) 490

3. How many students are part of at least two communities?
(A) 10 (B) 30
(C) 80 (D) 90

4. How many students are part of at least one community?
(A) 1000 (B) 1090
(C) 1110 (D) 1100

5. How many students are part of exactly two communities?
(A) 90 (B) 80
(C) 100 (D) 120

Directions for questions 6 to 10: These questions are based on the data given.

In a class of 95 students, 40 play cricket, 50 play football, and 10 play both cricket and football.

6. How many students play only football?
(A) 45 (B) 30 (C) 40 (D) 28

7. How many students play at least one game?
(A) 80 (B) 70 (C) 60 (D) 50

8. How many students play only cricket?
(A) 30 (B) 35 (C) 40 (D) 25

9. How many students play exactly one game?
(A) 85 (B) 80 (C) 70 (D) 75

10. How may students play neither cricket nor football?
(A) 12 (B) 15 (C) 18 (D) 20

Directions for questions 11 to 15: Study the following data and answer the questions given.

In a certain college, 37% of the students write EAMCET exam, 47% of the students write IIT-JEE exam, and 50% of the students write AIEEE exam. Also known that, 11% of the students write both EAMCET and IIT-JEE, 11% of the students write both EAMCET and AIEEE, 15% of the students write both IIT-JEE and AIEEE, while 15 students write all the three exams. Each student in the college writes at least one of the three exams.

11. How many students appear for the exams from the college?
(A) 400 (B) 200
(C) 500 (D) 600

12. How many students write exactly two exams?
(A) 120 (B) 110
(C) 140 (D) 150

13. The number of students who write only EAMCET as a percentage of the number of students who write only AIEEE is
(A) $33\frac{1}{3}\%$ (B) $66\frac{2}{3}\%$
(C) $33\frac{2}{3}\%$ (D) $66\frac{1}{3}\%$

14. How many students write exactly one exam?
(A) 345 (B) 395 (C) 198 (D) 398

15. What is the ratio of the number of students who write only AIEEE to that of those who write only IIT JEE?
(A) 3 : 2 (B) 2 : 3 (C) 8 : 9 (D) 9 : 8

Directions for questions 16 to 20: These questions are based on the data given.

In a library maintained by a student, there are books on different subjects. It was found that 35 books are on sports, 45 books are on business, and 15 books are on current affairs;14 books are on at least two subjects among sports, business, and current affairs; 3 books have sports, business as well as current affairs in them. Every book in the library is assumed to contain at least one of sports, business, or current affairs in them.

16. How many books are there, which contain information regarding only one subject?
(A) 58 (B) 64 (C) 60 (D) 62

17. What are the total number of books in his library?
(A) 78 (B) 72 (C) 68 (D) 80

18. How many books contained information regarding exactly two subjects?
(A) 11 (B) 10 (C) 9 (D) 14

19. How many books are there, which contain information regarding at most two subjects?
(A) 11 (B) 64 (C) 72 (D) 75

20. If the number of books on only sports is equal to 26, then how many books are there in the library, which are on both business and current affairs but not sports?

(A) 5 (B) 3 (C) 2 (D) 8

Directions for questions 21 to 25: These questions are based on the data given.

In a colony, it is known that three brands of mobile phones are used, namely Nokia, Sony Ericsson, and Motorola. 70 families use only one brand, 47 families use exactly two brands, and 8 use all the three brands. It is assumed that each family uses at least one of these three brands.

21. How many families are there in the colony?
(A) 75 (B) 100 (C) 105 (D) 125

22. How many families use at least two brands?
(A) 117 (B) 55 (C) 47 (D) 125

23. If 10 families stop using Nokia and start using Motorola, then what is the maximum number of families who use exactly two brands?
(A) 57 (B) 37 (C) 47 (D) 67

24. What is the ratio of the number of families which use exactly one brand to that which use at least one brand?
(A) 14 : 25 (B) 14 : 11
(C) 11 : 25 (D) 11 : 14

25. How many families do not use all the three brands?
(A) 125 (B) 117 (C) 0 (D) 8

Practice Problems 2

Directions for questions 1 to 5: Study the following data and the table to answer the questions given.

The following table gives the statistics of 180 students in a class in which each plays either carroms or chess or both. Due to some problem while entering the data, some vital information is lost. The following table shows the remaining data.

	Carroms	Chess	Both	Total
Boys	70			
Girls				
Total		110		180

The Information available is:

(i) The number of boys in the class is 40 more than the number of girls.
(ii) $22^{2}/_{9}\%$ of the total number of students play both the games.
(iii) None of the girls plays both the games.

1. How many girls play only chess?
(A) 28 (B) 30 (C) 17 (D) 18

2. How many students play both chess and carroms?
(A) 30 (B) 33 (C) 40 (D) 36

3. How many boys play only chess?
(A) 40 (B) 128 (C) 32 (D) 35

4. How many students do not play both the games?
(A) 120 (B) 140 (C) 150 (D) 170

5. How many students play carroms?
(A) 110 (B) 140 (C) 125 (D) 90

Directions for questions 6 to 10: These questions are based on the data given.

According to the data obtained from a club, 100 people come for swimming, 85 come for tennis, and 65 come for aerobics. For every 10 people who come for swimming, there are 3 people who come for aerobics and tennis. For every 17 people who come for tennis, there are 7 people who come for swimming and aerobics. For every 13 people who come for aerobics, there are 9 people who come for tennis and swimming. 20 people come for tennis, swimming, and aerobics, while 15 people come for none of the three.

6. The total number of persons who come to the club is
(A) 150 (B) 175 (C) 155 (D) 180

7. How many members come only for swimming?
(A) 20 (B) 30
(C) 40 (D) 45

8. How many members come for both tennis and aerobics but not swimming?
(A) 8 (B) 7
(C) 9 (D) 10

9. How many members come for neither tennis nor swimming?
(A) 35 (B) 40
(C) 36 (D) 59

10. How many members come for at least one of the three given activities?
(A) 160 (B) 150
(C) 120 (D) 180

Directions for questions 11 to 13: These questions are based on the following data.

In a class of 140 students, the ratio of the number of boys to that of the girls is 4 : 3. The number of boys who play only rugby is same as the number of girls who play only baseball, which is same as the number of students who play none of the games. The number of boys who play baseball and the number of girls who play rugby is in the ratio 3 : 2. The number of boys who play both the games is equal to the number of girls who play both the games, which in turn is twice the number of girls who play none of the games. The number of boys who play only baseball is same as the number of girls who play rugby.

11. How many boys do not play any of the games?
(A) 8 (B) 12
(C) 14 (D) 16

12. How many students play only rugby?
(A) 18 (B) 20 (C) 24 (D) 36

13. How many girls do not play rugby?
(A) 20 (B) 32
(C) 28 (D) 36

Directions for questions 14 to 17: These questions are based on the following data.

In a class of 500 students, 37% of the students drink coffee, 55% of the students drink tea, 53% of the students drink milk, and 12% of the students drink none of the three drinks. The number of students who drink tea and exactly one of the other drinks is 25%. The number of students who drink milk but not tea is 27%. The number of students who drink only tea is twice the number of students who drink all the three drinks.

14. How many of the students drink exactly two drinks?
(A) 235 (B) 140
(C) 185 (D) 125

15. How many students drink only milk?
(A) 75 (B) 265
(C) 60 (D) 80

16. How many students do drink neither milk nor coffee?
(A) 60 (B) 160
(C) 100 (D) 135

17. How many students drink only coffee and tea?
(A) 25 (B) 45
(C) 85 (D) 125

Directions for questions 18 to 20: Read the following information and answer the questions that follow.

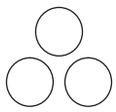
In a survey conducted, it was found that, of the 150 people who were surveyed, 90 read sports magazines, 80 read business magazines, and 70 read political magazines. Each of the surveyed persons reads at least one of these three magazines.

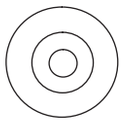
18. What is the maximum possible number of people who read sports magazines only?
(A) 50 (B) 70
(C) 60 (D) 45

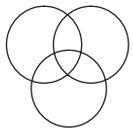
19. What is the minimum possible number of people who read exactly one type of magazine?
(A) 45 (B) 50
(C) 60 (D) 70

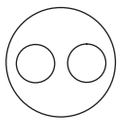
20. If the number of people who read exactly one type of magazine is 80, then the number of people who read exactly two types of magazines is
(A) 50 (B) 70
(C) 60 (D) None of these

Directions for question 21 to 25: Choose the venn diagram which best illustrates the three given classes in each question:

(A) 

(B) 

(C) 

(D) 

21. Biology, Physics, Chemistry

22. Numbers, Whole numbers, Natural numbers

23. India, Hyderabad, Mumbai

24. Social Sciences, History, Geography

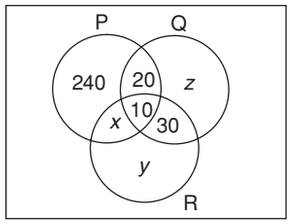
25. Asia, India, Pune

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 5:

Let x, y, z be the unknown quantities in the figure.



Total students in P = 300

$\Rightarrow 240 + 20 + 10 + x = 300. \Rightarrow x = 30$

Total students in Q = 420

$\Rightarrow 20 + 10 + 30 + z = 420 \Rightarrow z = 360$

Total students in R = 490

$\Rightarrow 10 + 30 + x + y = 490$

$\Rightarrow y = 490 - 10 - 30 - 30 = 420$

1. Number of students who are part of only community R gives by the region within R which is not common to Q or R = $y = 420$.

Hence, the correct option is (B).

2. Number of students who are not part of any community

$= \mu - (P \cup Q \cup R)$

$= 1500 - (240 + 360 + 420 + 10 + 20 + 30 + 30)$

$= 1500 - 1110 = 390$

Hence, the correct option is (A).

3. Number of students who are part of at least two communities

= Number of students part of two communities students part of all three communities

$= 20 + 30 + 30 + 10 = 90$

Hence, the correct option is (D).

4. Number of students who are part of at least one community = $P \cup Q \cup R$

$= 240 + 360 + 420 + 10 + 20 + 30 + 30 = 1110.$

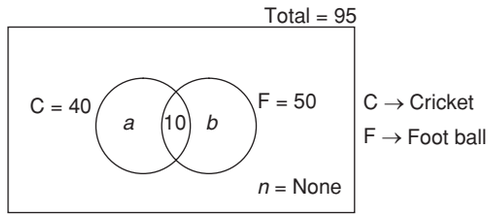
Hence, the correct option is (C).

5. Number of students who are part of exactly two communities = (only $P \cap Q$ + only $Q \cap R$ + only $P \cap R$) = $20 + 30 + 30 = 80$

Hence, the correct option is (B).

Solutions for questions 6 to 10:

As per the given data, we get the following diagram.



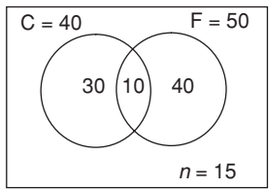
$n \rightarrow$ those who play neither of the games.

$C = a + b = 40 \Rightarrow a = 30$

$F = b + 10 = 50 \Rightarrow b = 40$

$a + b + n + 10 = 95 \Rightarrow n = 15$

The final diagram is as follows.



6. The number of students who play only football = $b = 40$.

Hence, the correct option is (C).

7. The number of students who play at least one game

$= a + b + r = 40 + 30 + 10 = 80$.

Hence, the correct option is (A).

8. The number of students who play only cricket = $a = 30$.

Hence, the correct option is (A).

9. The number of students who play exactly one game

= only cricket (a) + only football (b) = 30 + 40 = 70.

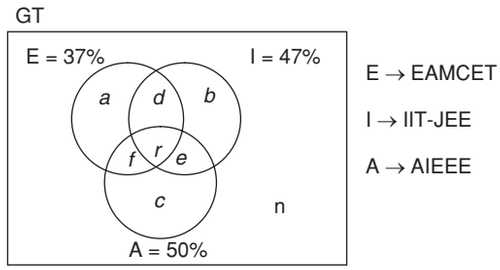
Hence, the correct option is (C).

10. The number of students who play neither football nor cricket = $n = 15$.

Hence, the correct option is (B).

Solutions for questions 11 to 15:

The given data can be represented in the following Venn diagram.



It is given that, 11% of the students write both E and I.

$\Rightarrow \quad d + r = 11\% \quad (1)$

11% of the students write both E and A.

$\Rightarrow \quad f + r = 11\% \quad (2)$

15% of the students write both I and A.

$\Rightarrow \quad e + r = 15\% \quad (3)$

15 student writes all the three exams.

$\Rightarrow \quad r = 15 \quad (4)$

Each student writes at least one of the three exams.

$\Rightarrow \quad n = 0.$

Let us take GT = 100%. = T + n

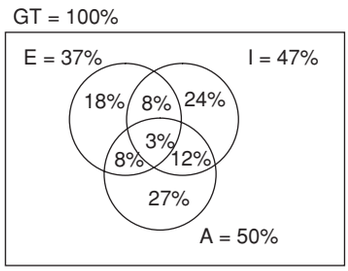
$\therefore \quad$ T = 100%.

$$E + I + A = T + (d + r) + (e + r) + (f + r) - r$$

$$37\% + 47\% + 50\% = 100\% + 11\% + 15\% + 11\% - r$$

$\therefore \quad r = 3\%$ of GT =1 5.

$\therefore$ 3% of GT = 15, we can calculate all other values.
From the above values we get the following diagram.



11. The number of students who write the exams = $\frac{15}{3} \times 100 = 500$.

Hence, the correct option is (C).

12. The number of students who write exactly two exams = $d + e + f$ = (8% + 8% + 12%) of 500

$= \frac{28}{100} \times 500 = 140$

Hence, the correct option is (C).

13. Required percentage is

$= \frac{a}{c} \times 100 = \frac{18}{27} \times 100 = 66\frac{2}{3}\%$

Hence, the correct option is (B).

14. The number of students who write exactly one exam = $a + b + c$ = (18% + 24% + 27%) of 500

$= \frac{69}{100} \times 500 = 345.$

Hence, the correct option is (A).

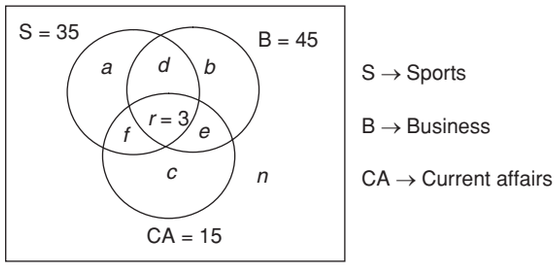
15. The ratio of the number of students who write only AIEEE to that of who wrote only IIT-JEE

$= c : b$

= 27 : 24 = 9 : 8.

Hence, the correct option is (D).

Solutions for questions 16 to 20:



$\Rightarrow$ 14 books are on at least two of the subjects.

$\Rightarrow d + e + f + r = 14$

$\Rightarrow \quad d + e + f = 11$

From the above figure

$35 + 45 + 15 = a + b + c + 2(d + e + f) + 3r$

$\Rightarrow a + b + c = 95 - 22 - 9 = 64.$

16. The number of books on only one subject = $a + b + c = 64$.

Hence, the correct option is (B).

17. The total number of books in the library

$= d + e + f + a + b + c + r$

= 11 + 64 + 3 = 78.

Hence, the correct option is (A).

18. Total number of books on exactly two subjects

$= d + e + f = 11.$

Hence, the correct option is (A).

19. At most two subjects = $(a + b + c) + (d + e + f)$

= 64 + 11 = 75

Hence, the correct option is (D).

20. The number of books on only sports = $a = 26$.

We know that $a + d + r + f = 35$

$\Rightarrow 26 + d + r + f = 35$

$\Rightarrow d + f = 6$

Also, we know that

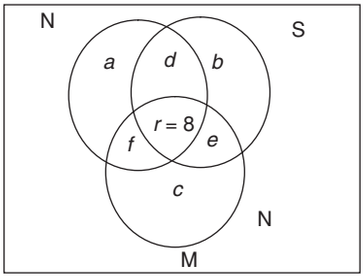
$d + e + f = 11$

$\Rightarrow e = 11 - 6 = 5$

$\therefore$ Number of books on both business and current affairs but not sports = 5.

Hence, the correct option is (A).

Solutions for questions 21 to 25:



N → Nokia

S → Sony Ericsson

M → Motorola

From the given data let us draw the following diagram.

Given that, 70 people use only one brand.

$$\Rightarrow \quad a + b + c = 70 \qquad (5)$$

47 people use exactly two brands.

$$\Rightarrow \quad d + e + f = 47 \qquad (6)$$

Each person uses at least one of the three brands.

$$\Rightarrow \quad n = 0$$

21. The total number of people in the colony

$= a + b + c + d + e + f + r$

$= 70 + 47 + 8 = 125$

Hence, the correct option is (D).

22. The number of people who are using at least two brands.

$= d + e + f + r = 47 + 8 = 55$

Hence, the correct option is (B).

23. The ten people referred to, are initially not using *Motorola. Hence, the ten who stop using Nokia are either from region 'a' in the diagram or from the region 'd'.

If the ten people from 'a' i.e.; only Nokia, stop using Nokia and start using Motorola, they go to region 'c', i.e., only Motorola. Hence, those using exactly two brands, i.e., $(d + e + f)$ remains unchanged.

If the ten people from region 'd', i.e. only Nokia and Sony Ericsson, stop using Nokia and start using Motorola, then the value of 'e', i.e. those using only Motorola and Sony Ericsson increases by ten. Hence, $(d + e + f)$ remains unchanged.

$= d + e + f + 10 = 47 + 10 = 57.$

Hence, the correct option is (A).

24. The ratio of the number of people who use exactly one brand to that of people using at least one brand.

$= (a + b + c) : (a + b + c + d + e + f + r)$

$= 70 : 70 + 47 + 8 = 70 : 125 = 14 : 25$

Hence, the correct option is (A).

25. Number of people who do not use all the three brands = total – people using all the three brands.

$= 125 - 8 = 117.$

Hence, the correct option is (B).

Practice Problems 2

Solutions for questions 1 to 5:

Given that the total number of students = 180

Further,

(i) The number of boys in the class is 40 more than the number of girls.

Let the number of girls be x.

$\Rightarrow x + x + 40 = 180$

$\Rightarrow x = 70$

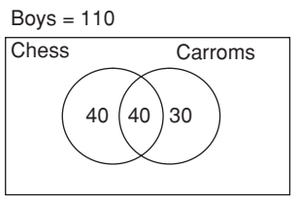
$\Rightarrow$ The number of boys is 110 and the number of girls is 70.

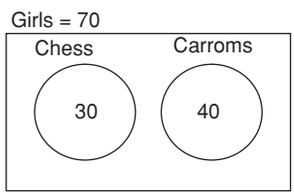
(ii) The number of students playing both the games

$= \frac{200}{9}$ % of $180 = 40$

(iii) None of the girls play both the games.

As per the available data, we get the following Venn diagrams.





Now we can complete the table as shown below.

	Carroms	Chess	Both	Total
Boys	70	80	40	110
Girls	40	30	0	70
Total	110	110	40	180

1. The number of girls who play only chess = 30.

Hence, the correct option is (B).

2. The number of students who play both chess and carroms = 40 + 0 = 40.

Hence, the correct option is (C).

3. The number of boys who play only chess = 40.

Hence, the correct option is (A).

4. The number of students who do not play both the games = Total – The number of students who play both the games

= 180 – 40 = 140

Hence, the correct option is (B).

5. The number of students who play carroms = 70 + 40 = 110.

Hence, the correct option is (A).

Solutions for questions 6 to 10:

The number of people who come for swimming, tennis and aerobics are 100, 85 and 65 respectively.

For every 10 people who came for swimming, there are 3 who come for aerobics and tennis.

⇒ The number of people who come for aerobics and tennis = $\frac{100}{10} \times 3 = 30$

For every 17 people who come for tennis, there are 7 who come for swimming and aerobics.

⇒ The number of people who come for swimming and aerobics = $\frac{85}{17} \times 7 = 35$

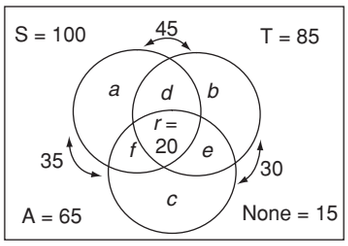
For every 13 people who come for aerobics, there are 9 who come for tennis and swimming.

The number of people who come for tennis and swimming = $\frac{65}{13} \times 9 = 45$

The number of people who come for tennis, swimming and aerobics = 20

The number of people who do not come for any of these activities = 15

From this we get the diagram shown below.



S → Swimming

T → Tennis

A → Aerobics

Now,

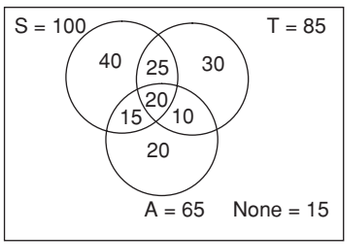
$d = 45 - 20 = 25; f = 35 - 20 = 15; e = 30 - 20 = 10$

Also,

$a = 100 - (d + f + r) = 40; b = 85 - (d + r + e) = 30;$

$c = 65 - (f + r + e) = 20$

Now from the above, we can draw the following diagram.



6 The total number of members in the club

= $a + b + c + d + e + f + r$ + none

= 40 + 30 + 20 + 25 + 15 + 10 + 20 + 15

= 175

Hence, the correct option is (B).

7. The number of people who come only for swimming.

= a = 40.

Hence, the correct option is (C).

8. The number of people who come for both tennis and aerobics but not swimming = e = 10.

Hence, the correct option is (D).

9. The number of people who come for neither tennis nor swimming = c + 15 = 20 + 15 = 35.

Hence, the correct option is (A).

10. The number of people who come for at least one activity

= $a + b + c + d + e + f + r$

= 40 + 20 + 30 + 15 + 25 + 10 + 20 = 160.

Hence, the correct option is (A).

Solutions for questions 11 to 13:

The ratio of boys to girls is 4 : 3.

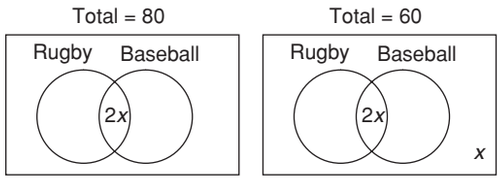
∴ Number of boys = 80

Number of girls = 60

Given that,

The number of boys who play both the games = The number of girls who play both the games = 2 (The number girls who play none of the games) = $2x$ (say)

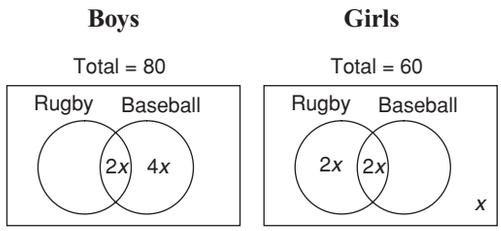
Boys **Girls**



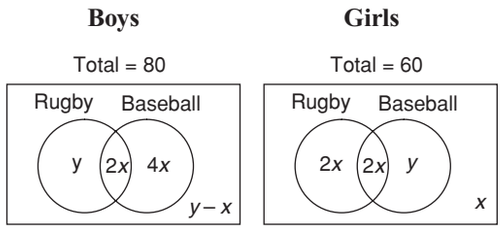
Number of boys who play only Baseball = Number of girls who play Rugby = k (say)

$$\frac{k + 2x}{k} = \frac{3}{2}$$

$$\Rightarrow \quad k = 4x$$



Number of boys who play only Rugby = Number of girls who play only Baseball = Number of students who play none of the games = y (say).

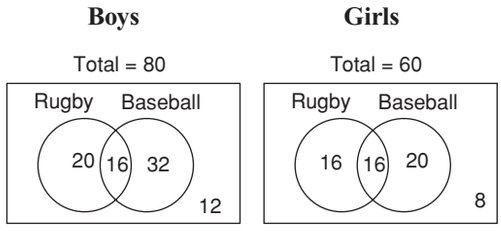


Now,

$$y + 2x + 4x + y - x = 80$$
$$y + 2x + 2x + x = 60$$

$$\Rightarrow 2y + 5x = 80$$
$$y + 5x = 60$$

$$y = 20;\ x = 8$$



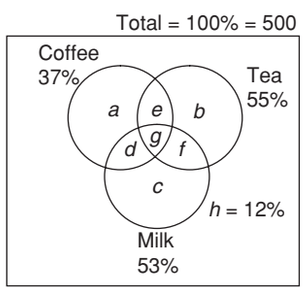
11. 12 boys do not play any of the games.
Hence, the correct option is (B).

12. 36 students play only Rugby.
Hence, the correct option is (D).

13. 28 girls do not play Rugby.
Hence, the correct option is (C).

Solutions for questions 14 to 17:

Let us write all the values in percentage terms.



Given,

$$h = 12\%$$
$$e + f = 25\%$$
$$c + d = 27\%$$
$$b = 2g$$

As the number of persons who drink Tea is 55%

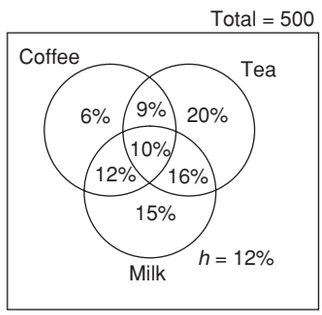
$$a + d + c + h = 100\% - 55\% = 45\%$$
$$a + (27\%) + (12\%) = 45\%$$
$$a = 6\%$$
$$e + f + b + g = 55\%$$
$$(25\%) + 2g + g = 55\%$$
$$g = 10\%;\ b = 20\%$$

Now,

$$c + d + g + f = 53\%$$
$$(27\%) + (10\%) + f = 53\%$$
$$f = 16\%$$
$$e + f = 25\%$$
$$\Rightarrow \quad e = 9\%$$

Now,

$$a + e + g + d = 37\%$$
$$6\% + 9\% + 10\% + d = 37\%$$
$$d = 12\%$$
$$c + d = 27\%;\ c = 15\%$$



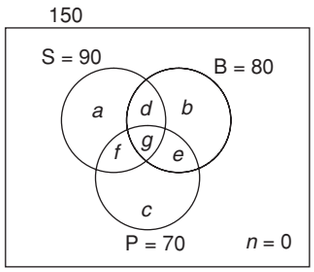
14. Number of persons who drink exactly two drinks
$= 9\% + 12\% + 16\% = 37\% = 185$
Hence, the correct option is (C).

15. Number of students who drink only milk = 15% = 75.
Hence, the correct option is (A).

16. Number of students who do not drink any of milk and coffee = 32% = 160.
Hence, the correct option is (B).

17. The number of students who drink only coffee and tea is 9% = 45.
Hence, the correct option is (B).

Solutions for questions 18 to 20:



$$90 + 80 + 70 - (e + d + f) - 2g = 150$$

$$\Rightarrow \quad e + d + f + 2g = 90$$

And $\quad a + b + c + d + e + f + g = 150$

18. $a + b + c + d + e + f + g = 150$

$\Rightarrow a + (a + b) + (c + e + f + g) = 150$

$\Rightarrow a + (80 - e - g) + 70 = 150$

$\Rightarrow a + 150 - e - g = 150$

$\Rightarrow e + g = a$

The maximum value of $e + g$ can be 70 (when $f + c = 0$)

$\therefore$ The maximum possible value of $a = 70$

Hence, the correct option is (B).

19. $e + d + f + 2g = 90$

$a + c + b$ is the minimum when $g = 0$

$\Rightarrow e + d + f = 90$

Now $a + b + c + d + e + f + g = 150$

$a + c + b + 90 = 150$

$\Rightarrow a + c + b = 60$

Hence, the correct option is (C).

20. given $a + c + b = 80$

$\Rightarrow 80 + g + d + f + e = 150$

$\Rightarrow g + d + f + e = 70$ (1)

But $e + d + f + 2g = 90$ (2)

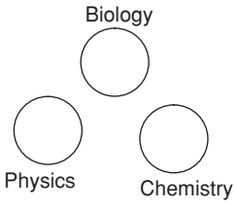
(2) – (1) $\Rightarrow g = 20$

$\Rightarrow e + d + f = 50$

Hence, the correct option is (A).

Solutions for questions 21 to 25:

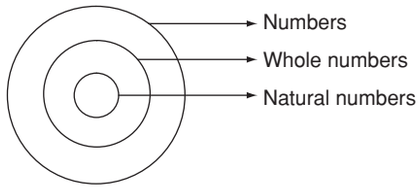
21.



Biology, Physics and Chemistry are three different subjects having nothing in common. So the above diagram is the most appropriate representation of the give groups.

Hence, the correct option is (A).

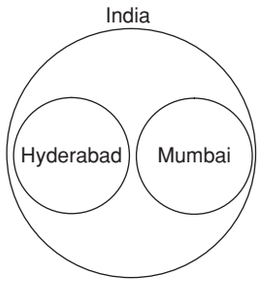
22. Numbers, Whole numbers, Natural numbers



We know that natural numbers is a subset of whole numbers, which inturn is a subset of numbers. So, the above diagram is the most appropriate representation of the given groups.

Hence, the correct option is (B).

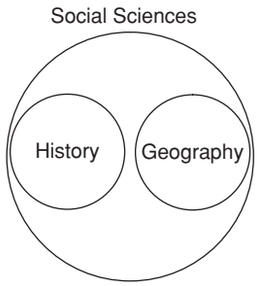
23.



Here, we can say that Hyderabad and Mumbai are two different cities within the state of Andhra Pradesh. So, the above diagram is the most appropriate representation of the given groups.

Hence, the correct option is (D).

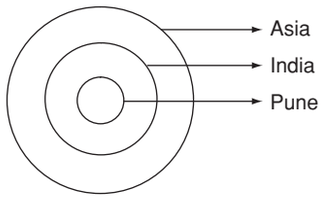
24.



We know that social sciences is a branch of science within which we study two different subjects namely history and geography. So the above diagram is the most appropriate representation of the given groups.

Hence, the correct option is (D).

25. Asia, India, Pune



We know Asia is the continent in which India is one of the countries and in which Pune is one of the cities. So the above diagram is the most appropriate representation of the given groups.

Hence, the correct option is (B).

Chapter 7 Seating Arrangements

Exercises

Practice Problems I

Directions for questions 1 to 3: These questions are based on the following information.

Five boys Anil, Charan, David, John and Kamal sit in a row facing north, not necessarily in the same order.

I. John sits exactly in between Anil and David.
II. John sits exactly in between Charan and Kamal.

1. Who sits exactly at the middle of the row?
(A) John
(B) Kamal
(C) David
(D) Cannot be determined

2. In how many different ways these five boys can sit?
(A) 2 (B) 4 (C) 8 (D) 16

3. If Anil sits to the immediate left of John and if a boy sits to the immediate right of Kamal then who is that boy?
(A) David
(B) Anil
(C) Charan
(D) None of these

Directions for questions 4 to 6: These questions are based on the following information.

Seven girls A, B, C, D, E, F, and G sit in a row facing north, not necessarily in the same order. It is also known that,

I. Two girls sit in between B and F.
II. Three girls sit in between C and G.
III. Four girls sit in between A and D.

4. Who sits exactly at the middle of the row?
(A) B
(B) D
(C) E
(D) Cannot be determined

5. If B sits to the immediate right of D then who sits in between A and E?
(A) F
(B) C
(C) G
(D) Cannot be determined

6. If F and G sit on either sides of E then who sits at the right end of the row?
(A) A
(B) C
(C) D
(D) Cannot be determined

Directions for questions 7 to 9: These questions are based on the following information.

Five persons P, Q, R, S, and T sit in a row facing North not necessarily in the same order. The following information is known about them:

I. Either P or S sits at the one end of the row.
II. Either Q and T or S and T sit on either sides of P.
III. R sits to the left of S and to the immediate left of Q.

7. In how many different ways can these five people sit?
(A) 2 (B) 3
(C) 1 (D) 4

8. If Q sits to the immediate left T then who sits exactly at the middle of the row?
(A) P (B) R
(C) T (D) Cannot be determined

9. If P is not sitting adjacent to S, then who sits to the immediate right of Q?
(A) Q (B) P
(C) R (D) Cannot be determined

Directions for questions 10 to 12: These questions are based on the following information.

Each of six persons Pavan, Raman, Kiran, Charan, Shravan and Rajan stay in a different floor of a six-storied (1^{st}, 2^{nd}, 3^{rd}, 4^{th}, 5^{th}, and 6^{th} from bottom to top, respectively) building.

I. Raman stays above Kiran but below Charan.
II. Pavan stays below Rajan but above Shravan.
III. Kiran stays above Pavan but below Raman who stays above Rajan.

10. Who stays in the 2^{nd} floor?
(A) Pavan
(B) Shravan
(C) Rajan
(D) Cannot be determined

11. Who stays in the 4^{th} floor?
(A) Raman
(B) Rajan
(C) Kiran
(D) Cannot be determined

12. If one person stays in between Pavan and Kiran then who stays in the 3^{rd} floor?
(A) Shravan (B) Pavan
(C) Rajan (D) Charan

Directions for questions 13 to 15: These questions are based on the following information.

There are five buildings of different heights in a row. These houses are painted with a different colour among red, blue, white, green, and yellow such that each house is painted with exactly one colour.

The following information is know about them:

I. Yellow and green buildings are on either sides of the white building.
II. The shortest building is painted in red colour but it is neither at any end of the row nor adjacent to the tallest building.
III. The white building is exactly in between the tallest and the second tallest buildings.

13. Which among the following buildings is definitely at one end of the row?
(A) Yellow building
(B) Green building
(C) The tallest building
(D) The third tallest building

14. Which among the following is definitely false?
(A) The white building is the third tallest
(B) The third tallest and the shortest buildings are together
(C) Blue and yellow buildings are at either ends of the row.
(D) Yellow and green buildings are at either ends of the row.

15. If the yellow building is to the immediate left of the third tallest building, then what could be the order of these buildings in the descending order of their heights?
(A) blue, yellow, red, white, green
(B) blue, green, white, yellow, red
(C) green, white, blue, yellow, red
(D) green, yellow, white, blue, red

Directions for questions 16 to 18: These questions are based on the following information.

Each of the six persons—John, Ted, Humpty, Dumpty, Jack and Jill, is from one different country among India, Japan, China, Australia, America, and England and are sitting around a circular table, may not be in the same order. John, who is from China, is sitting adjacent to American, who is not Humpty. Ted is not an Indian, and Chinese is not sitting adjacent to Indian. The person from England is sitting one place away to the left of the Australian. Humpty is sitting opposite the Indian, who is adjacent to the Japanese. Australian and Dumpty are sitting opposite each other. Jack is not from India and Ted is not from Japan but both are not adjacent to each other.

16. Who among them is from India?
(A) Jill (B) Dumpty
(C) Humpty (D) None of these

17. If Jack is the Japanese, then who is sitting opposite the American?
(A) Jill (B) Ted
(C) Jack (D) Dumpty

18. Which country does Humpty belong to?
(A) Japan (B) Australia
(C) America (D) England

Directions for questions 19 to 22: These questions are based on the following information.

Eight persons—Ram, Ramesh, Mohan, Sohan, Seema, Saroj, Sakshi, and Saloni, are sitting around a circular table. Each of them is one among doctor, engineer, dancer, singer, teacher, lawyer, Accountant, and Pilot, not necessarily in the given order. Further more it is known that

I. Pilot is sitting opposite Ramesh, who is adjacent to the accountant.
II. Dancer is sitting opposite the lawyer and is not adjacent to Sakshi who is not sitting adjacent to the lawyer.
III. Saloni is sitting opposite the engineer, Ramesh is not a lawyer or doctor or engineer.
IV. Sakshi, the singer, is sitting one place away to the right of Saroj.
V. Seema is sitting opposite the lawyer and Ram is sitting opposite the dancer.
VI. Ramesh is sitting three places to the right of singer. Mohan is neither the accountant nor adjacent to the dancer.

19. Who among the following is the doctor?
(A) Ramesh
(B) Saloni
(C) Saroj
(D) Cannot be determined

20. What is the profession of Mohan?
(A) Accountant
(B) Pilot
(C) Engineer
(D) Cannot be determined

21. Who is sitting opposite Ramesh?
(A) Seema
(B) Sakshi
(C) Saroj
(D) None of these

22. Who is sitting opposite the accountant?
(A) Sakshi (B) Mohan
(C) Seema (D) Saroj

Directions for questions 23 to 25: These questions are based on the following information.

Eight persons—Arun, Pankaj, Rohan, Veda, Suman, Shanu, Dimple, and Pinky, are sitting around a circular table for a group discussion. Suman is not sitting opposite Pinky, and Shanu is sitting three places away to the right of Pankaj. Dimple is sitting in between Pankaj and Suman. Rohan is sitting adjacent to Pankaj who is sitting opposite Arun.

23. Who is sitting opposite Dimple?
(A) Piniky
(B) Shanu
(C) Rohan
(D) Cannot be determined

24. Who is sitting opposite Veda?
(A) Suman
(B) Pinky
(C) Shanu
(D) Cannot be determined

25. If Rohan is sitting to the left of Veda, then who is sitting opposite Shanu?
(A) Rohan
(B) Dimple
(C) Suman
(D) Cannot be determined

Practice Problems 2

Directions for questions 1 to 5: Select the correct alternative from the given choices.

1. P, Q, R, S, and T are five speakers who have to speak on a particular day, not necessarily in the same order. R is neither the first nor the last speaker. There are three speakers after S and three speakers ahead of T. If P speaks after Q, then who is the last speaker to speak?
(A) S (B) T (C) P (D) Q

2. 15 people entered a theatre before Sujit. 7 people entered the theatre between Sujit and Suraj and 20 people entered the theatre after Suraj. How many people are there in the theatre?
(A) 28
(B) 36
(C) 44
(D) Cannot be determined

3. In the above previous problem if Suraj entered the theatre before Sujit then how many people are there in the theatre?
(A) 28 (B) 36 (C) 44 (D) 40

4. P through U are six cities which are in a row in the same order. A bus b_1 travels from P to U and another bus b_2 travels from U to P. The bus b_1 reaches S at 10:40 and bus b_2 reaches Q at 10 : 35. If the travel time between any two adjacent cities is 40 minutes and the stoppage time at each city is 15 minutes, then at what time do they start at their respective destinations?
(A) 8:00, 7:00 (B) 8:00, 7:10
(C) 8:10, 7:10 (D) 8:15, 7:25

5. In the previous problem, at which city do the two buses meet?
(A) Q (B) R (C) S (D) T

Directions for questions 6 and 7: These questions are based on the following data.

B – 1, B – 2 and B – 3 are three buses that travel from Mumbai to Delhi. Each bus starts at a different time and arrives at a different time. The digit in the bus number and the order of their departure or arrival is not the same. The first bus to leave Mumbai is the third bus to reach Delhi.

6. Which is the first bus to leave Mumbai?
(A) B–1 (B) B–2
(C) B–3 (D) B–1 or B–2

7. Which is the second bus to reach Delhi?
(A) B–1 (B) B–2
(C) B–3 (D) B–1 or B–3

Directions for questions 8 to 10: These questions are based on the following data.

A train travels from A to E, with intermediary stations being B, C, and D. Ten parcels with code numbers 101 through 110 were transported between these stations. They are transported based on the following conditions.

(i) Only four parcels, 101, 104, 105, and 107, were loaded at A. One among these was unloaded at B, one at C, and two at D.
(ii) 102 and 106 were unloaded at C and 108, which was loaded at B, was unloaded at E.
(iii) Only one parcel was loaded at D, which was 103.
(iv) Only two parcels were unloaded at D and 101 was unloaded at C, the station immediately after the station at which 105 is unloaded.
(v) The number of parcels which were loaded at different stations was different and the number of parcels which were unloaded at different stations was different. No parcel is loaded at E and no parcel is unloaded at A.

8. How many parcels are loaded at C?
(A) 1 (B) 2 (C) 3 (D) 4

9. Which of the following two parcels travel through the maximum number of intermediary stations in the journey?
(A) 101 and 104 (B) 101 and 107
(C) 109 and 110 (D) 104 and 107

10. Which among the following combinations of stations and the parcels which are loaded and unloaded at that station is true?
(A) A – (loading) 101, 104, 105, 107 – (unloading) 105
(B) B – (loading) 102, – (unloading) 108, 106
(C) C – (loading) 109, 110 – (unloading) 101, 102, 106
(D) D – (loading) 103 – (unloading) 109, 110

Directions for questions 11 to 15: These questions are based on the following data.

In a parking area, eight cars of different companies are parked, with four cars adjacent to each other on one side of the walk way and the other four opposite to them. The following information is known about them.

(i) Tata is parked between Mercedes and BMW.
(ii) Maruthi is parked to the immediate right of Fiat, on the same side.
(iii) Toyota is parked opposite to Fiat and both of them are at one of the extreme ends.
(iv) Ford car is parked opposite to Tata.
(v) Hyundai is parked opposite to BMW and both of them are at an extreme end.
(vi) Ford is parked exactly between Hyundai and Maruthi.

11. Which of the following cars are parked diagonally opposite to each other?
(A) Mercedes and Tata (B) Maruti and Hyundai
(C) Fiat and BMW (D) Tata and Maruti

12. Which car is parked opposite to Maruthi?
(A) Mercedes (B) Tata
(C) BMW (D) Hyundai

13. If the positions of Ford and Tata are swaped, then which car is parked to the immediate left of Hyundai?
(A) Fiat (B) Tata
(C) Ford (D) Maruti

14. If the positions of Fiat and BMW are interchanged, then which car is parked opposite to Toyota?
(A) Maruthi (B) Fiat
(C) BMW (D) Ford

15. Which car is parked opposite to Mercedes?
(A) Maruthi (B) Ford
(C) Tata (D) Toyota

Directions for questions 16 to 25: These questions are based on the following data.

Four couples sit around a circular table in a party. Every husband sits to the right of his wife. P, Q, R, and S are husbands and T, U, V, and W are wives. Q–U and R–V are two married couples. S does not sit next to V. T sits to the left of P, who sits opposite S.

16. Q sits between _____.
(A) U and V (B) T and U
(C) U and S (D) W and T

17. Who sits to the right of W?
(A) S (B) Q (C) R (D) P

18. If P interchanges his place with the person who sits opposite to R disregarding the condition that husband and wife sit together, then who sits to the right of U?
(A) T (B) Q (C) P (D) R

19. If every husband interchange his position with the person sitting opposite to him, then who sits between S and R?
(A) T (B) U (C) V (D) W

20. Who sits between P and Q?
(A) T (B) U (C) V (D) W

Directions for questions 21 to 25: These questions are based on the following data.

A–W, B–X, C–Y, and D–Z are four married couples. In a restaurant, they are sitting around a rectangular table, with three persons along each of the longer sides of the table and one person along each of the shorter sides. All the male persons (A, B, C, and D) are sitting along the longer sides and no male persons are sitting together. *X* is sitting to the right of C. W and Z are sitting at the longer sides and neither of them is sitting adjacent to their respective husbands. Y is sitting to the right of A.

21. Which pair of people are sitting at the shorter sides of table?
(A) Z and X (B) B and Y
(C) X and C (D) X and Y

22. Who is sitting to the immediate right of Y?
(A) A (B) B (C) C (D) D

23. Who is sitting two places to the right of A?
(A) B (B) X (C) D (D) W

24. If A and D interchange their places and C and W interchange their places, then who sits to the left of C?
(A) A (B) Z (C) W (D) O

25. Which among the following is a pair of persons sitting diagonally opposite to each other?
(A) A and C (B) B and D
(C) C and D (D) Both (A) and (B)

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 3:

It is given John sits exactly in between Anil and David, John sits exactly in between Charan and Kamal.

As John sits exactly between the two pairs of boys, he has to sit exactly in the middle of the row. The possible arrangements are

Kamal/Charan Anil/David John Anil/David Kamal/Charan

Anil/David Kamal/Charan John Kamal/Charan Anil/David

1. John sits exactly in the middle of the row.

Hence, the correct option is (A).

2. If Kamal and Charan occupy the ends then in four different ways the boys can be seated and if Anil and David occupy the extremes then they can be seated four more ways, thus totally the five boys can be seated in eight different ways.

Hence, the correct option is (C).

3. If Anil sits to the immediate left of John and there is *a* boy who sits to the immediate right of Kamal then their seating order is as follows

Kamal Anil John David Charan

Anil is to the immediate right of Kamal.

Hence, the correct option is (B).

Solutions for questions 4 to 6:

It is given that seven girls – A, B, C, D, E, F and G sit in a row. From (III) we have 4 people sit in between A and D.

∴ There are two possibilities as follow

A/D ___ ___ ___ ___ A/D ___

Case (i):

___ A/D ___ ___ ___ ___ A/D

Case (ii):

From (II) we have 3 people sit in between C and G.

From (I), we have 2 people sit in between B and F.

Combining (I), (II) and (III), we have two possibilities as follow.

A/D B/F C/G E F/B D/A G/C (1)

(or)

C/G A/D B/F E G/C F/B D/A (2)

4. In both ways E sits exactly in the middle of the row.

Hence, the correct option is (C).

5. It is given that, B sits to the immediate right of D then the possible arrangements are as follow.

D B C/G E F A G/C (1)

(or)

C/G D B E G/C F A (2)

In (1), F sits in between A and E

In (2), F, C or G sits in between A and E.

Hence, the correct option is (D).

6. If F and G sit on either side of E then the possible arrangements are as follow.

A/D B G E F D/A C

(or)

C A/D F E G B D/A

Either C, A or D sits at the right end of the row.

Hence, the correct option is (D).

Solutions for questions 7 to 9:

It is given that five persons P, Q, R, S and T sit in a row facing towards North.

From (I), we have either P or S sits at the end of the row

P/S ___ ___ ___ ___

(or)

___ ___ ___ ___ P/S

From (II) we have Q/T P Q/T (or) S/T P S/T

As P has to be in between two persons he cannot be at any end of the row.

From (I), we have only S is at one of the ends of the row.

From (II) P is not at any end thus from (I) S is at one end of the row but from (III) S can be at extreme right end. From (II) If S and T are on sides of P and R is on immediate left of Q then the arrangement is as follows

R Q T P S (3)

From (II) If Q and T are on either sides P and R is on immediate let T of Q the arrangement will be as follows:

R Q P T S (4)

7. These five people can be seated in the two ways, as said above.

Hence, the correct option is (A).

8. If Q sits to the immediate left of T i.e., case (1) then T sits exactly in the middle of the row.

Hence, the correct option is (C).

9. If P is not sitting adjacent to S i.e., case (2) then P sits to the immediate right of Q.

Hence, the correct option is (B).

Solutions for questions 10 to 12:

It is given that six persons A, B, C, D, E and F stay in a six floors building where each one of them stays in a different floor.

From (I), we have Charan
Raman
Kiran

From (II), we have Rajan
Pavan
Shravan

Combining (I) and (II), we got either Kiran or Shravan stays in the 1st floor.

From (III), we have Raman
Kiran
Pavan

And Rajan is below Raman and above Kiran

Combining (I), (II) and (III), we get Shravan stays in the first floor, and four people stay above Pavan. Kiran and Rajan are below Raman who is below Charan.

The order is as follows:

6 - Charan
5 - Raman
4 - Rajan / Kiran
3 - Rajan / Kiran
2 - Pavan
1 - Shravan

10. Pavan stays in the 2nd floor.

Hence, the correct option is (A).

11. Either Rajan or Kiran stays in the 4th floor.

Hence, the correct option is (D).

12. If one person stays in between Pawan and Kiran, then the order is as follows.

6 - Charan
5 - Raman
4 - Kiran
3 - Rajan
2 - Pavan
1 - Shravan

Rajan stays in the 3rd floor.

Hence, the correct option is (C).

Solutions for questions 13 to 15:

It is given that there are five buildings in a row. Each of these are painted with *a* different colour and they are of different heights.

From (I), We have

Yellow/Green White Yellow/Green

From (II), we have the shortest building is Red in colour

Combining (I) and (II), we have

Blue Red Yellow/Green White Yellow/Green or in reverse order which is not different from this and Red is the shortest:

From (III) either yellow or green is the tallest. But from (II) it should at extreme right thus Blue and white are 3rd and fourth tallest buildings in any order.

Combining (I), (II) and (III), we have

Blue	Red	Yellow / Green	White	Yellow / Green
3rd / 4th tallest	Shortest	2nd tallest	3rd / 4th tallest	Tallest

13. The tallest building is definitely at one of the ends of the row.

Hence, the correct option is (C).

14. (1) may be true
(2) may be true
(3) maybe true
(4) is definitely false

Hence, the correct option is (D).

15. If the Yellow coloured building is to the immediate left of the third tallest building then the order is as follows.

Blue	Red	Yellow	White	Green
4th tallest	Shortest	2nd tallest	3rd tallest	Tallest

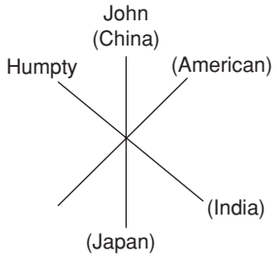
Then the order of the buildings in the descending order of their heights is as follows:

Green, Yellow, White, Blue, Red.

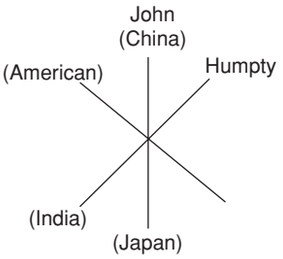
Hence, the correct option is (D).

Solutions for questions 16 to 18:

From the given information John is from chin*a* and is adjacent to American who is not Humpty. But Humpty is opposite the Indian who is not adjacent to Chinese but adjacent to Japanese, thus the following two arrangements are possible.



Case (i)



Case (ii)

The English man is left to Australian thus in case (i) Humpty can be from England and in case (ii) Humpty can be from England and in case (ii) Humpty can be from Australia. As Australian is opposite the Dumpty

Case (i): Dumpty is the Anercian and

Case (ii): Dumpty is the Indian.

Thus the arrangements are as follows.

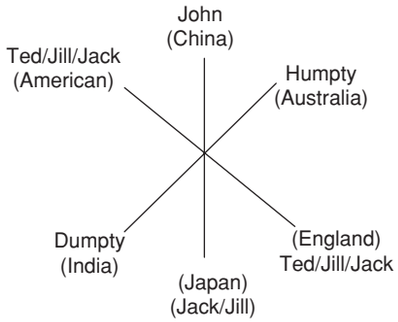
Case (i):

Now among the remaining people i.e., Ted, Jill and Jack, as Ted and Jack are not from India Jill is the Indian. Ted and Jack are Australian and Japanese and are sitting adjacent each other thus case (i) is not possible.

Case (ii):

Either Jack or Jill is from the Japan. If Jack is from Japan Ted is the American and Jill is the English.

If Jill is the Japanese then Ted is either from England or American and jack is either from England or America.



16. Dumpty is from India.

Hence, the correct option is (B).

17. Jill is sitting opposite the American.

Hence, the correct option is (A).

18. Humpty belongs to Australia.

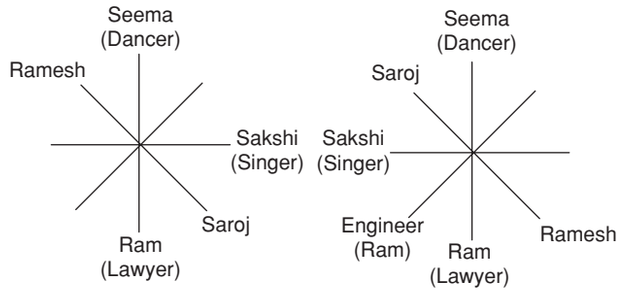
Hence, the correct option is (B).

Solutions for questions 19 to 22:

From (II) and (V)

Seema, the Dancer is opposite Ram, who is the Lawyer and Sakshi is not adjacent to anyone of these two.

From (IV) Sakshi, who is the Singer is at one place to the right of Saroj. And from (VI) Ramesh is sitting three places to the right of Singer.



From (I), pilot is sitting opposite Ramesh, thus Saroj is the Pilot and from (III) Saloni is opposite the Engineer.

From (III) and above arrangement Ramesh cannot be any one except Teacher Saloni is the Doctor, Mohan is the Engineer and Sohan is the Accountant.

19. Saloni is the Doctor.

Hence, the correct option is (B).

20. Mohan is the Engineer.

Hence, the correct option is (C).

21. Saroj is sitting opposite Ramesh.

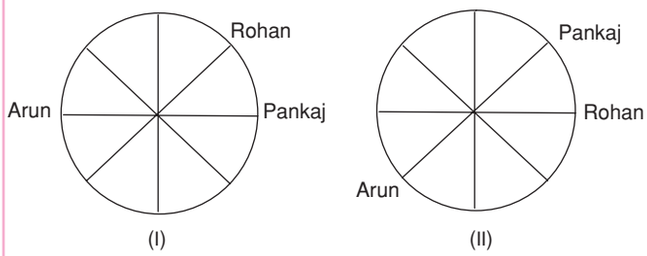
Hence, the correct option is (C).

22. Sakshi is opposite to Accountant.

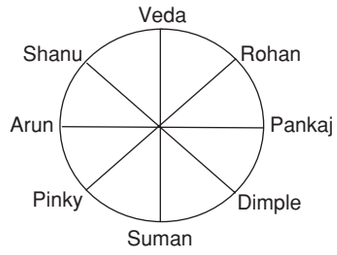
Hence, the correct option is (A).

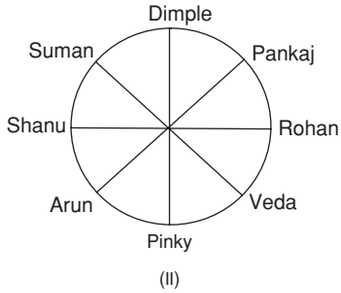
Solutions for questions 23 to 25:

It is given that Rohan is sitting adjacent to Pankaj who is sitting opposite Arun.



Now, from the above arrangements and the remaining information, we get the following two arrangements.





23. Either Pinky or Shanu sits opposite Dimple.

Hence, the correct option is (D).

24. Suman is sitting opposite Veda.

Hence, the correct option is (A).

25. In case (i) Dimple is sitting opposite Shanu.

Hence, the correct option is (B).

Practice Problems 2

Solutions for questions 1 to 5:

1. There are three speakers after S. So, S is the 2nd speaker. There are three speakers before T. So, T is the 4th speaker. R is neither the 1st nor the 5th. So, R is the 3rd speaker. P speaks after Q, So P is the 5th and Q is the 1st speaker. So, P is the last speaker.

Hence, the correct option is (C).

2. If Sujit entered before Suraj then the number of people will be 15 + 1(Sujit) + 7 + 1(Suraj) + 20 = 44.

If Suraj entered before Sujit then number of people will be 7 + 1 (Suraj) + 7 + 1(Sujit) + 12 = 28.

So, the number of people in the theater cannot be determined.

Hence, the correct option is (D).

3. If Suraj entered before Sujit, then the number of people in the theater will be 28.

Hence, the correct option is (A).

4. The bus b_1, which started at P, reached S at 10:40, passing through the intermediary cities Q and R. The time taken to travel from P to S

$= 3 \times 40 + 2 \times 15 = 150$ minutes

(journey (stoppage) time)

= 2 hrs 30 minutes.

Hence, b_1 started at 10:40 – 2:30 = 8:10 at P.

b_2 reached Q, starting at U, through the city T, S and R.

The time taken by it to reach S $= 4 \times 40 + 3 \times 15$

= 205 minutes = 3 hr 25 minutes.

Hence, b_2 started at, 10:35 – 3:25 = 7:10, at U.

Hence, the correct option is (C).

5. b_1 reached S at 10:40, passing through Q and R.

b_4 reached Q at 10:35, passing through T, S and R.

Hence, there is possibility of meeting at R.

b_1 reaches R at, $(2 \times 40 + 15) + 8:10 = 9:45$

b_2 reaches R at, $(3 \times 40 + 2 \times 15) + 7:10 = 9:40$

As they stop for 15 minutes at R, they meet at 9:45 at R.

Hence, the correct option is (B).

Solutions for questions 6 and 7:

As Bus number and the order of arrival or departure is not the same. B – 1 has to depart and arrive at 2nd or 3rd positions. Similarly, B – 2 at 1st or 3rd positions and B – 3 at 1st or 2nd positions.

The first bus to leave Mumbai is the third to reach Delhi. So it has to be B – 2. The order of departure and arrival will be as follow.

	Mumbai (departure)	Delhi (arrival)
1.	B2	B3
2.	B3	B1
3.	B1	B2

6. B– 2 is first to leave Mumbai.

Hence, the correct option is (B).

7. B – 1 is the second to reach Delhi.

Hence, the correct option is (A).

Solutions for questions 8 to 10:

As number of parcels which are loaded and unloaded at different stations are different. The number of parcels loaded or unloaded at a station should be 1 or 2 or 3 or 4.

According to the given conditions the loading and unloading at different station is as follows.

Stations	Loaded parcels	Unloaded parcels
A	101, 104, 105, 107	
B	108	105
C		102, 106, 101
D	103	
E		108

Two of 101, 104, 105, 107 are unloaded at D. They are 104 and 107. As 102 and 106 are unloaded at C. They must have been loaded at B.

So, 109 and 110 should have been loaded at C.

As one parcel is unloaded at B, three are unloaded at C, two at D, four must have been unloaded at E.

So, they are 108, 103, 109 and 110.

The final order of loading and unloading is as follows.

Stations	Loaded parcels	Unloaded parcels
A	101, 104, 105, 107	_____
B	108, 102, 106	105
C	109, 110	102, 106, 101
D	103	104, 107
E	_____	103, 108, 109, 110

8. 2 parcels are loaded at C.

Hence, the correct option is (B).

9. 104 and 107 travel through the maximum number of intermediary stations.

Hence, the correct option is (D).

10. C – (loading) 109, 110 – (unloading) 101, 102, 106 is true.

Hence, the correct option is (C).

Solutions for questions 11 to 15:

In the following explanation, Fi → Fiat, Ma → Maruti, Ta → Tata, To → Toyota, Me → Mercedez, Fo → Ford and Hy → Hyundai.

From conditions (ii) and (iii), we get the following arrangement.

To	—	—	—
Fi	Ma	—	—

As BMW and Hyundai are parked opposite to each other and at one end (from condition *r*) and Tata is between BMW and Mercedez (from conditions *i*) and, we get the following final arrangement.

Fi	Me	Ta	BMW
To	Ma	Fo	Hy

11. BMW and Fiat are parked diagonally opposite to each other.

Hence, the correct option is (C).

12. Mercedes is parked opposite to Maruthi.

Hence, the correct option is (A).

13. When the positions of Tata and Ford swaped, then Tata is to the immediate left of Hyundai.

Hence, the correct option is (B).

14. If the positions of BMW and Fiat are interchanged, then BMW is parked opposite to Toyota.

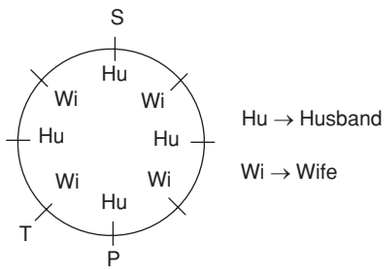
Hence, the correct option is (C).

15. Maruthi is parked opposite to Mercedes.

Hence, the correct option is (A).

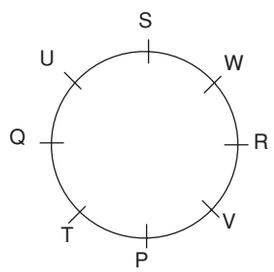
Solutions for questions 16 to 25:

As T sits to the left of P who is sitting opposite S, we get the following arrangement



From the above it is clear that P is T's husband.

⇒ S is W's husband.



V does not sit next to S. So V has to sit to the right of P. So Q and U will be sitting between S and T. Therefore, the final arrangement is as follows.

16. Q sits between U and T.

Hence, the correct option is (B).

17. S is sitting to the right of W.

Hence, the correct option is (A).

18. If P interchanges his place with the person who is sitting opposite to R, then P sits to the right of U.

Hence, the correct option is (C).

19. After effecting the changes, T sits between S and R.

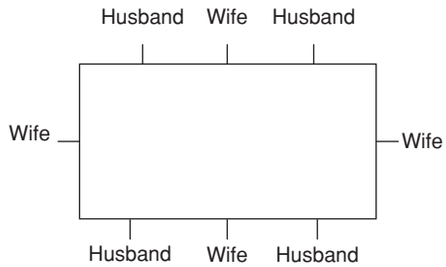
Hence, the correct option is (A).

20. T sits between P and Q.

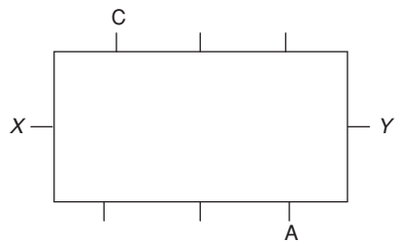
Hence, the correct option is (A).

Solutions for questions 21 to 25:

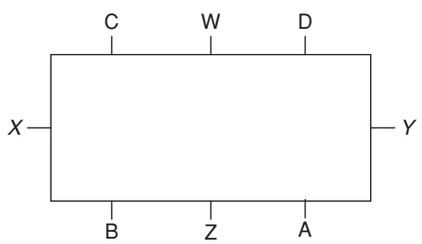
As no two husbands sit adjacent to each other and they sit at the longer side, we get the following arrangement.



X is sitting to the right of C and Y is sitting to the right of A. X and *Y* are not sitting at the longer sides as W and Z are sitting at the longer side of the table. The arrangement will be,



W and Z are sitting at the longer sides but not adjacent to their husbands. i.e. Z is adjacent to A and W is adjacent to C. Since, neither of Z and W is adjacent to her husband. Hence, D is adjacent to W and B is adjacent to Z. Thus we get the following arrangement.



21. *X* and *Y* are sitting at the shorter sides of table.

Hence, the correct option is (D).

22. D is sitting to the immediate right of Y.

Hence, the correct option is (D).

23. D is sitting two places to the right of A.

Hence, the correct option is (C).

24. When the places are interchanged as given, A will be sitting to the left of C.

Hence, the correct option is (A).

25. A is sitting diagonally opposite to C and B is sitting diagonally opposite to D.

Hence, the correct option is (D).

Chapter 8 Puzzles

Exercises

Practice Problems 1

Directions for questions 1 to 3: These questions are based on the following information.

Each of the seven delegates A through G came to India to attend a conference from seven different countries—China, Japan, Malaysia, England, Australia, Germany, and Poland.

(i) China, Japan, and Malaysia are the only Asian countries.
(ii) A and B are from Asian countries, whereas D is neither from England nor from Australia.
(iii) E and F are from non Asian countries but neither of them came from either Australia or England.
(iv) C is not from England and the person from Poland is not F.
(v) A is from China.

1. Who is from Germany?
(A) E (B) C (C) F (D) G

2. Who is from Malaysia?
(A) B (B) D
(C) A (D) Either (A) or (B)

3. Which country did G come?
(A) England
(B) Australia
(C) Poland
(D) Cannot be determined

Directions for questions 4 to 6: These questions are based on the following information.

Bingo, Pingo, Tingo, Hingo, and Mingo are five friends, each of whom is working in a different company among C_1, C_2, C_3, C_4 and C_5 and they belongs to the same city but a different locality—l_1, l_2, l_3, l_4, and l_5.

(i) The persons who are working with C_1 and C_2 are from l_3 and l_4
(ii) Bingo is from l_5 but does not work for C_5.
(iii) Tingo is not from l_4 but works for C_2.
(iv) Pingo works neither for C_5 nor in C_3 and is not form l_2.
(v) The person working for C_3 is from l_1.
(vi) Mingo does not work for C_3.

4. For which company does Hingo work?
(A) C_3 (B) C_4 (C) C_5 (D) C_2

5. Who is from l_4?
(A) Mingo (B) Hingo
(C) Tingo (D) Pingo

6. Who works for C_4?
(A) Bingo (B) Mingo
(C) Pingo (D) Hingo

Directions for questions 7 to 9: These questions are based on the following information.

A team of three is to be selected from six persons Amar, Bhavan, Chetan, Dawan, Ekta, and Farheen under the following constraints:

(i) If Amar or Bhavan is selected, then Chetan must not be selected.
(ii) If Chetan or Dawan is selected, then at least one of Ekta and Farheen must be selected.

7. If Dawan is selected, then who must not be selected?
(A) Amar
(B) Bhavan
(C) Chetan
(D) None of these

8. If Amar is selected, then in how many ways the team can be selected?
(A) 5 (B) 6 (C) 4 (D) 7

9. If Bhavan is selected, then who must be selected?
(A) Dawan
(B) Ekta
(C) Farheen
(D) Either (B) or (C)

Directions for questions 10 to 12: These questions are based on the following information.

Three girls Anjali, Bharathi, and Chandrika and four boys Kiran, Lala, Manoj, and Naveen are to be divided into two teams under the following constraints.

(i) Each team must have at least one girl and at least one boy and at least three persons in total.
(ii) If Anjali and Bharathi are selected in a team, then the team must have only one boy.
(iii) Kiran and Lala cannot be in the same team.
(iv) Chandrika and Naveen can be in the same team, only if Bharathi is selected in that team.

10. If Kiran and Chandrika are in the same team, then in how many ways can the other team be selected?
(A) 6 (B) 3 (C) 4 (D) 5

11. If Manoj is not in the same team as Bharathi, then in how many ways can the teams be selected?
(A) 3 (B) 4 (C) 5 (D) 6

12. If three boys are selected into one team, then in how many ways can the teams be selected?
(A) 4 (B) 5 (C) 3 (D) 6

Directions for questions 13 to 15: These questions are based on the following information.

Seven persons—P, Q, R, S, T, U and V, who are of different ages, are comparing their ages. We know the following information.

(i) P is younger than R, who is not older than S.
(ii) S is younger than only two persons.

(iii) Q is not the oldest but older than fourth youngest person.
(iv) T is older than only U.

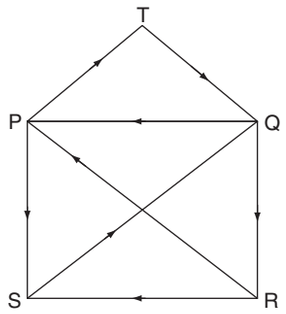
13. Who is oldest?
(A) S (B) T (C) U (D) V

14. Who is the third youngest?
(A) V (B) P (C) R (D) S

15. Who is the fourth eldest?
(A) R (B) P (C) S (D) V

Directions for questions 16 to 19: These questions are based on the diagram given.

Five cities P, Q, R, S, and T are connected by one-way rail routes as shown. One takes one hour duration to travel between any two directly connected cities.



At station S, for every 2 hours, one train departs and the departure time of the first train is 6:00 a.m. Similarly, at station R, for every 3 hours, one train departs in each route and the departure time of the first train is 4 a.m.

At station Q, one train departs for every 2 hour in each route and the departure time of the first train is 7 a.m.

At station P, train departs for every 1 hour in each route and the departure time of the first train is 8 a.m.

At station T, for every 3 hours, one train departs and the departure time of the first train is 5:30 a.m.

16. What is the least time will it take to reach P from R, if one takes the longest route without visiting any station more than once?
(A) 6 hours (B) 3 hours
(C) 5 hours (D) 4 hours

17. If a person reaches Q at 1:00 p.m. from R, which of the following can be the time at what time he must have started from R if that person takes the shortest route?
(A) 10:00 a.m. (B) 9:00 a.m.
(C) 11:00 a.m. (D) None of these

18. A person wants to travel from R to T and he takes the longest route without visiting any station more than once. If he starts at 4:00 a.m., then for how much time he has to wait for the trains altogether in all stations before reaching T.
(A) 2 hours (B) 3 hours
(C) 2 hours (D) 1 hour

19. If a person starts from P at 10:00 a.m. to reach S and he takes the longest route without visiting any station more than once then at what time will he be reachings?
(A) 1:00 p.m. (B) 4:00 p.m.
(C) 5:00 p.m. (D) 2:00 p.m.

Directions for question 20: This question is based on the information given.

Five cities Ahmedabad, Bangalore, Calicut, Delhi, and Indore are connected by one-way routes from Ahmedabad to Bangalore, Delhi to Ahmedabad, Indore to Delhi, Delhi to Calicut, Ahmedabad to Calicut, Bangalore to Calicut, Calicut to Indore, Indore to Bangalore, and Ahmedabad to Indore.

20. In how many ways a person can travel from Delhi to Indore without visiting any city more than once?
(A) 5 (B) 3 (C) 6 (D) 4

Directions for questions 21 and 22: Select the correct alternative from the given choices.

21. There are 15 identical coins out of which fourteen are of equal weights and one coin lighter than each of the other coins. What is the minimum number of weighings required using a common balance to definitely identify the counterfeit coin?
(A) 3 (B) 4
(C) 5 (D) None of these

22. Beside a lake, there are three temples and a flower garden. Whenever some flowers are dipped into the lake, the flowers gets triplet. A person brought some flowers from the garden and dipped then into the lake. He placed x flowers in front of the first temple and dipped the remaining flowers into the lake. He placed x flowers in front of the second temple and dipped the remaining flowers into the lake. Now, he placed x flowers in front of the third temple and has no flowers. Which of the following numbers can be the value of x?
(A) 9 (B) 18 (C) 27 (D) 36

Directions for questions 23: These questions are based on the following letter – multiplication in which each letter is represents a unique non-zero digit.

A	B	C		
×	C	B	A	
C	D	E	F	C

Also, it is known that D = 3C and F = 4B

23. What is the value of D?
(A) 3
(B) 6
(C) 9
(D) Cannot be determined

Directions for questions 24 and 25: These questions are based on the following data.

Each individual of a city called 'Josh' belongs exactly to one of the two types, viz., Yes-type or No-type. Yes-type people always give the true reply, while the No-type always lies. Answer the following questions based on the information.

24. You met three residents A, B, and C, of the city and asked them, 'who among you are married?' and got the following replies.
A: I am married to B.
B: I am married to C.
C: I am not married to A.
If it is further known that A is married to one of B and C and there is exactly one married couple among the three, then which of the following is definitely true?
(A) C is married to A.
(B) B is married to A.
(C) A is of Yes-type.
(D) B is of No-type.
(E) A is of No-type.

25. You approached three inhabitants A, B, and C of the city and asked them, 'Who is of No-type among you?', and got the following replies.
A: B is of No-type.
B: C is of No-type.
C: A is of No-type.
It can be concluded that:
(A) A is a No-type.
(B) B is a No-type.
(C) C is a No-type.
(D) Either A or B is of No-type.
(E) Data inconsistent.

Practice Problems 2

Directions for questions 1 to 3: These questions are based on the following information.

Each of the five couples are wearing a dress of different colour among violet, blue, green, red, and orange and each couple is dressed in the same colour. Among the couples males are A, B, C, D, and E and females are P, Q, R, S, and T.

(i) A is wearing red dress and T is wearing orange dress.
(ii) Neither of P and Q is wearing violet or blue dress.
(iii) B is the husband of Q and D is wearing orange dress.
(iv) C is not the husband of R but is wearing violate dress.

1. Which of the following couple is dressed in green?
(A) E, S (B) D, T (C) B, Q (D) C, T

2. Who is P's husband?
(A) D (B) E (C) A (D) C

3. Who is the wife of C?
(A) R (B) T (C) S (D) Q

Directions for questions 4 to 6: These questions are based on the following information.

Each of the six friends A, B, C, D, E and F is of six different profession—engineer, doctor, professor, architect, lawyer and painter, and they belong to six different cities—Kolkata, Bangalore, Hyderabad, Mumbai, Chennai, and Delhi, may not be in the same order.

(i) The person from Bangalore is a doctor who is not B.
(ii) A is an architect and C who is from Chennai, is an engineer.
(iii) The person from Delhi is a professor.
(iv) D is neither a professor nor the person from Bangalore
(v) E is from Mumbai and the person from Kolkata is neither an architect nor a lawyer.

4. What is the profession of F?
(A) painter (B) lawyer
(C) professor (D) doctor

5. What is the profession of the person from Kolkata?
(A) Architect (B) Doctor
(C) Painter (D) Lawyer

6. What is the profession of E?
(A) Professor (B) Lawyer
(C) Doctor (D) Painter

Directions for questions 7 to 9: These questions are based on the following information.

A team of four persons is to be selected from seven persons Anuj, Bindu, Chanti, Dheeraj, Eswar, Farhaan, and Ganesh under the following constraints.

(i) At most two of Chanti, Eswar, and Ganesh can be selected.
(ii) Atleast one of Anuj and Bindu must be selected.
(iii) If Farhaan is selected, then neither Anuj nor Chanti can be selected.

7. If Dheeraj is selected, then in how many ways can the team be selected?
(A) 8 (B) 10 (C) 9 (D) 11

8. If atmost one of Farhaan and Ganesh can be selected, then in how many ways can the team be selected?
(A) 11 (B) 12 (C) 13 (D) 14

9. If Eswar is not selected, then in how many ways can the team be selected?
(A) 6 (B) 7 (C) 8 (D) 9

Directions for questions 10 to 12: These questions are based on the following information.

A team is to be selected from eight persons P, Q, R, S, T, U, V, and W under the following constraints.

(i) Atleast one of P, Q, and R must be selected.
(ii) At most two of S, T, and U can be selected.
(iii) V and W cannot be selected together.
(iv) If one of Q, S, and V is selected, then the other two must not be selected.
(v) If one of R, U, and W is selected, then the other two must be selected.

10. What can be the maximum size of the team?
(A) 6 (B) 5 (C) 4 (D) 3

11. If W is selected, then at most how many more persons can be selected along with him?
(A) 6 (B) 5 (C) 4 (D) 3

12. If S is not selected, then what can be the minimum size of the team?
(A) 3 (B) 2
(C) 1 (D) None of these

Directions for questions 13 to 15: These questions are based on the following information.

Each of the six children Amit, Sumit, Kamat, Namit, Ranjit, and Charit has a different number of chocolates among 3, 4, 5, 6, 7, and 8, not necessarily in the same order. We know the following information.

I. The difference between the number of chocolates with Charit and Ranjit is the same as that between the number of chocolates with Kamat and Ranjit.
II. The number of chocolates with Charit is less than that with Sumit, which in turn, is less than that with Ranjit.
III. The number of chocolates with Sumit is more than that with Namit.

13. Who has 6 chocolates?
(A) Sumit (B) Ranjit
(C) Amit (D) Charit

14. What is the number of chocolates with Sumit?
(A) 5 (B) 6 (C) 7 (D) 4

15. What is the difference between the number of chocolates with Namit and Kamat?
(A) 2 (B) 3 (C) 4 (D) 5

Directions for questions 16 to 18: These questions based on the following information.

Six students Anand, Brijesh, Charan, Deepti, Gopal, and Hriday are the top six rankers of a class. No two persons got the same rank. We know the following information regarding their ranks.

(i) Deepti got a better rank than atleast two students.
(ii) Gopal got a better rank than Brijesh.
(iii) The number of persons who got better rank than Anand is the same as the number of persons who got worst rank than Charan.
(iv) Anand got a better rank than Deepti.
(v) Only one person got a rank between the ranks of Hriday and Brijesh.

16. If Hriday got the third rank, then the only person whose rank is between the ranks of Deepti and Charan is
(A) Anand
(B) Gopal
(C) Hriday
(D) Brijesh

17. Who got the sixth rank?
(A) Charan (B) Brijesh
(C) Hriday
(D) Cannot be determined

18. If Deepti got the second rank, then who got the fifth rank?
(A) Brijesh
(B) Charan
(C) Hriday
(D) Cannot be determined

Directions for questions 19: These questions are based on the following information.

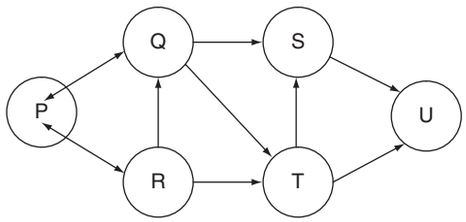
Eight persons—Anurag, Bhadri, Chakri, Dayanand, Eleena, Firoz, Goutam, and Hemant who got different marks are comparing their marks. We know the following information regarding their marks.

(A) Anurag got more marks than Bhadri and the number of persons who got less marks than Anurag is the same as the number of persons who got more marks than Bhadri.
(B) Chakri got more marks than Dayanand but less marks than Eleena.
(C) Firoz got the fifth highest marks.
(D) Goutam got more marks than Hemant, who did not get the lowest marks.
(E) Dayanand got more marks than Goutam.

19. Who got the fourth highest score?
(A) Anurag
(B) Eleena
(C) Chakri
(D) Dayanand

Directions for questions 20 and 21: These questions are based on the following information given below.

In the city XYZ, P is a water source from where water flows into the tanks—Q, R, S, T, and U. The following diagram shows the network of the source, and all the five tanks connected with pipes through which water flows.



For any pipe, *flow* is the number of units of water flowing through it. For any tank, requirement is the number of units of water that the tank holds. The moment the tanks meet the requirement the tank starts overflowing.

The following information is also known.

(i) The requirement (in units) of each of the five tanks given as well as the *flow* (in units) in each of the nine pipelines given is positive integral value less than 10.
(ii) The flow (in units) in of each of the pipelines connected to a particular tank is different and further, none of them is equal to requirement (in units) of that tank.
(iii) The difference in the requirements of R and T is 1 unit.
(iv) The requirement of Q is more than that of exactly two tanks.
(v) The sum of the requirements of all the five tanks is 17 units.
(vi) The flow in the pipeline connecting Q and T is 4 units and the flow in the pipeline connecting T and U is 2 units.
(vii) U has the highest requirement.

20. Find the flow in the pipeline connecting R to Q.
(A) 1 unit
(B) 2 units
(C) 3 units
(D) Cannot be determined

21. Find the flow in the pipeline connecting R to T.
(A) 5 units
(B) 6 units
(C) 7 units
(D) Cannot be determined

Directions for questions 22 and 23: Select the correct alternative from the given choices.

22. Six adults and two children need to cross a river. The river is too big to swim. They found a boat, but the boat can only withstand an adult or two children at a time. How many crossings of the boat are needed to take all the eight persons across?
(A) 23 (B) 24 (C) 25 (D) 26

23. There are two sets of clocks. At any instant, the difference in time between any two clocks, each selected from a different set, is the same. The maximum different timings that the clocks can show is
(A) 1 (B) 2 (C) 3 (D) 4

Directions for questions 24 and 25: Read the following information and answer the following questions.

Satyam, Shivam, and Sundaram are taken into police custody in a theft case. The following are the statements made by each of them during interrogation.

Satyam: (a) I am not the thief.
(b) Shivam is not the thief.
Shivam : (a) I am the thief.
(b) Satyam or Sundaram is the thief.
Sundaram : (a) I am not the thief.
(b) Shivam is the thief.

Answer the following questions if exactly one of them is the thief.

24. If exactly one statement of each is true, then who is the thief?
(A) Satyam
(B) Shivam
(C) Sundaram
(D) Either (A) or (B)

25. If the statements of only one person is a combination of true and false, then who is the thief?
(A) Satyam
(B) Shivam
(C) Sundaram
(D) Either (B) or (C)

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 3:

The given information is as follows.

	Asian Countries						
	Chi	Jap	Mal	Eng	Aus	Ger	Pol
A	✓			×	×	×	×
B				×	×	×	×
C				×			
D				×	×		
E	×	×	×	×	×		
F	×	×	×	×	×		×
G							

From the above table,

F is from Germany and G is from England.

⇒ C is from Australia and E is from Poland.

∴ B and D are from Japan and Malaysia in any order.

Hence, the final arrangement is as follows.

	Chi	Jap	Mal	Eng	Aus	Ger	Pol
A	✓	×	×	×	×	×	×
B	×			×	×	×	×
C	×	×	×	×	✓	×	×
D	×			×	×	×	×
E	×	×	×	×	×	×	✓
F	×	×	×	×	×	✓	×
G	×	×	×	✓	×	×	×

1. F is from Germany.

Hence, the correct option is (C).

2. Either B or D is from Malaysia.

Hence, the correct option is (D).

3. G is from England.

Hence, the correct option is (A).

Solutions for questions 4 to 6:

From (i) the person working in C_1 and C_2 are from l_3 and l_4.

From (ii) Bingo is from l_5 but not in C_5.

From (iii) Tingo is in C_2 and from l_3.

From (iv) and (v) Pingo is in C_1 and from l_4.

From (vi) Mingo is in C_5 and from l_2.

Bingo is in C_4 and Hingo is in C_3 and from l_1.

	Company	Place
Bingo	C_4	l_5
Pingo	C_1	l_4
Tingo	C_2	l_3
Hingo	C_3	l_1
Mingo	C_5	l_2

4. Hingo works for C_3.

Hence, the correct option is (A).

5. Pingo is from l_4.

Hence, the correct option is (D).

6. Bingo works for C_4.

Hence, the correct option is (A).

Solutions for questions 7 to 9:

Let each person be donated by the first letter of his name.

7. If D is selected, then some of the possibilities are:

DEF

CDE

ABD

∴ Any one can be selected.

Hence, the correct option is (D).

8. If A is selected, then C must not be selected. [from (i)]

∴ Now using condition (ii) the possibilities are:

ABE

ABF

ADE

ADF

AEF

∴ There are 5 possibilities.

Hence, the correct option is (A).

9. As B is selected, then C must not be selected.

If D is selected, then E or F must be selected.

∴ If A is selected, then D must not be selected.

∴ To select a team of 3. E or F must be selected.

Hence, the correct option is (D).

Solutions for questions 10 to 12:

Let each person be denoted by the first letter of his/her name.

10. K and C are in the same team.

∴ L must be in the other team. [from (iii)]

If A and B are in the same team as L, then it violates

(iv). [from (ii)]

∴ Only one of A and B is in the same team as L.

∴ Using other conditions the possibilities are :

(a) K, C, A, M and L, B, N

(b) K, C, B, M and L, A, N

(c) K, C, A and L, M, N, B

(d) K, C, B and L, M, N, A

(e) K, C, B, N and L, M, A

Hence, the correct option is (D).

11. M and B are not in the same team.

From (iii), either K or L is with B.

Now, if A is with B, then C and N must be with M, which violates (iv).

∴ A is with M.

Now, atleast one of C and N is with B.

∴ The teams are:

B, K/L, C, N and M, L/K, A

B, K/L, C and M, L/K, A, N

B, K/L, N and M, L/K, A, C

∴ There are six possibilities.

Hence, the correct option is (D).

12. From (iii), M and N are in the same team.

One of K and L is with them.

∴ C cannot be with them as it violates (iv).

∴ From (ii), only one of A and B is with them.

∴ The possibilities are :

M, N, K/L, A/B and L/K, C, B/A.

∴ There are four possibilities.

Hence, the correct option is (A).

Solutions for questions 13 to 15:

From (i), P < R < S.

From (ii), S is the third eldest.

From (iii), Q is elder than fourth youngest [i.e., fourth eldest]

∴ Q is the second eldest.

From (iv), T is the second youngest and U is the youngest.

∴ V must be the eldest.

Also, R is the fourth eldest and P is the fifth eldest.

∴ We have,

$$U < T < P < R < S < Q < V.$$

13. V is the oldest.

Hence, the correct option is (D).

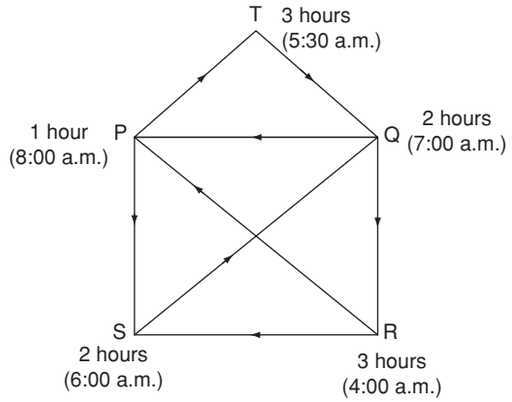
14. P is the third youngest.

Hence, the correct option is (B).

15. R is the fourth oldest.

Hence, the correct option is (A).

Solutions for questions 16 to 19:



The time of departure of the first train and duration between two successive trains are given adjacent to each station.

16. The root one has to follow to reach P from R is as follows.

	1 hr		1 hr		1 hr	
R		S		Q		P
(4:00 a.m.)		(6:00 a.m.)		(7:00 a.m.)		(8:00 a.m.)

1 hr wait

∴ one takes 4 hours to reach P from R if he starts at 4 am.

But if starts at 7 O'clock.

He can reach P as follows

	1 hr		1 hr		1 hr	
R		S		Q		P
(7:00 a.m.)		(8:00 a.m.)		(9:00 a.m.)		(10:00 a.m.)

∴ one takes 3 hours to travel to P from R.

Hence, the correct option is (B).

17. The shortest route that a person can follow from R to Q is R – S – Q

R	S	Q	
(10:00 a.m.)	(11–12 a.m.)	(1:00 p.m.)	

1 hr wait

As he reached Q at 1 pm he should start from S at 12 noon but no train reaches from R at 12 noon thus he must reach S at 11 a.m. only.

∴ He would have started at 10:00 a.m. from R.

Hence, the correct option is (A).

18.

	1 hr		1 hr		1 hr		1hr	
R		S		Q		P		T
(4:00 a.m.)		(5:00–6:00 a.m.)		(7:00 a.m.)		(8:00 a.m.)		(9:00 a.m.)

∴ He has to wait only at station S for 1 hour, because he reaches there at 5:00 a.m. and first train departures at 6 O'clock.

Hence, the correct option is (D).

19. The route is as follows:

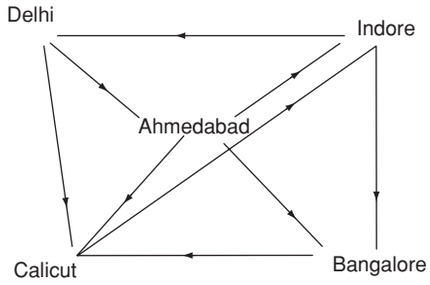
P	T	Q	R	S
(10:00 a.m.)	(11:00 a.m.)	(12:30 p.m.)	(2:00 p.m.)	(5:00 p.m.)
	Next train at 11:30 p.m.	Next train at 11:30 p.m.	Next train at 11:30 p.m.	

∴ He will reach 's' at 5 O'clock.

Hence, the correct option is (C).

Solutions for question 20:

20. Let us represent the given information in the form of a diagram.



The possible routes from Delhi to Indore are as follows:

(i) Delhi – Ahmedabad – Indore

(ii) Delhi – Ahmedabad – Calicut – Indore

(iii) Delhi – Calicut – Indore.

(iv) Delhi – Ahmedabad – Bangalore – Calicut – Indore.

∴ four different routes are possible.

Hence, the correct option is (D).

Solutions for questions 21 and 22:

21. In first weighing if we weigh 5 coins on each pan, we can identify the set of 5 coins in which the counterfeit coin is present.

Now, from that set of 5 coins, weigh two coins on each pan, if they are equal, the fifth coin counterfeit light.

If they are not equal, weigh the two coins which weighs.

∴ We will be able to identify the counterfeit coin in 3 weightings.

Hence, the correct option is (A).

22. Let n be the number of flowers he brought from the garden.

∴ We have

$[[[n \times 3] - x]\ (3) - x]\ (3) - x = 0$

$\Rightarrow (3n - x)\ 3 - x = \frac{x}{3}$

$\Rightarrow (3n - x)3 = \frac{4x}{3}$

$\Rightarrow 3n - x = \frac{4x}{9}$

$\Rightarrow 3n = \frac{13x}{9}$

$\Rightarrow 27n = 13x$

As n and x are natural numbers, x must be a multiple of 27.

Hence, the correct option is (C).

Solutions for question 23:

When a 3 digit number is multiplied by another three digit number. The result obtained is a 5 digit number, Also the first and last digits of the result are same ⇒ A must be equal to 1. As D = 3C, C = 1 or 2 or 3.

But A = 1

∴ C = 2 or 3

If C = 2, then F cannot be equal to 4 times B.

∴C = 3.

As F = 4B, B must be equal to 1 or 2.

But A = 1

∴ B = 2

∴	1	2	3
×	3	2	1
	39483		

∴ D = 9, E = 4 and F = 8.

23. D = 9

Hence, the correct option is (C).

Solutions for questions 24 and 25:

24. From statement A

$2x > 3y + 6$

$x > \frac{3}{2}y + 3$

$\therefore x > \frac{3}{2}y$

$x > y$ (1)

Since we donot know the relation between x and z. A is not sufficient to answer question.

Statement B

$5y > 3z + 1y$

$y > \frac{3}{5}z + \frac{1}{5}$

$y > \frac{3}{5}z$

$\Rightarrow y > z - \frac{2}{5}z$

Since we donot know the relation between x and y

∴ Statement B alone is not sufficient.

By combining both the statements also we cannot answer the question.

Hence, the correct option is (D).

25. Since we donot know the value of x statement A is not sufficient. Using the statement B alone we cannot answer the question. Now combining both the statements we get 15 men and we select atmost one women from 10 women.

Probability of at most one.

women selected = 1 – P (no woman is selected)

$$= 1 - \frac{15\,C_2}{25\,C_2} = 1 - 7/20$$

$$= \frac{13}{20} = 0.65$$

∴ It is greater than 0.4

Combining both the statements we can answer the question.

Hence, the correct option is (C).

Practice Problems 2

Solutions for questions 1 to 3:

From (i) and (ii) A is husband of P or Q

The colour of the dress of R and S are violet and blue

From (iii) A is the husband of P

B and Q are wearing green dress

From (iv) C is the husband of S, who were wearing violet dress

E is husband of F who were wearing blue dress.

The couples and their dresses are as follow

Couples		Place
Male	Female	
A	P	Red
B	Q	Green
C	S	Violet
D	T	Orange
E	R	Blue

1. B and Q wears green dress.

Hence, the correct option is (C).

2. A is the husband of P.

Hence, the correct option is (C).

3. S is the wife of C.

Hence, the correct option is (C).

Solutions for questions 4 to 6:

The given information is as follows.

Name	Profession	Place
A	Architect	
B	Not Doctor	Not Bangalore
C	Engineer	Chennai
D	Not Professorr	Not Bangalore
E		Mumbai
	Not Architect Not Lawyer	Kolkata

The doctor from Bangalore cannot be any one among A, B, C, D and E. Hence, it is F.

Since D is not a professor, he is not from Delhi.

⇒ B is the professor from Delhi.

Since, the person from Kolkata is not an Architect, A is from Hyderabad and D is from Kolkata.

⇒ D is the Painter and E is the Lawyer.

The final distribution is as follows.

Name	Profession	Place
A	Architect	Hyderabad
B	Professor	Delhi
C	Engineer	Chennai
D	Painter	Kolkata
E	Lawyer	Mumbai
F	Doctor	Bangalore

4. F is the doctor.

Hence, the correct option is (D).

5. The painter is from Kolkata.

Hence, the correct option is (C).

6. E is the laywer.

Hence, the correct option is (B).

Solutions for questions 7 to 9:

Let each person be denoted by the first letter of his/her name.

From (iii), if F is selected, then A and C are not selected.

From (ii) One among A and B must be selected.

∴ The possibilities are:

If F is selected then,

(a) F, B, E, G

(b) F, B, E, D

(c) F, B, D, G

If F is not selected, then A or B or A, B must be selected in the team as we have to select 4, we have to reject 3 and among C, E and G atleast one must be rejected.

From (i), at most two of C, E and G can be selected.

∴ The possibilities are as follows.

(d) A, B, C, E

(e) A, B, C, G

(f) A, B, G, E

(g) A, B, D, C

(h) A, B, D, E

(i) A, B, D, G

(j) A, D, C, E

(k) A, D, C, G

(l) A, D, G, E

(m) B, D, C, E

(n) B, D, C, G

(o) B, D, G, E

7. Except possibilities (a), (d), (e) and (f) all other team have D.

Hence, the correct option is (D).

8. Except (a) and (c), all have at most one of F and G.

Hence, the correct option is (C).

9. (c), (e), (g), (i), (k) and (n) are the possibilities.

Hence, the correct option is (A).

Solutions for questions 10 to 12:

From (ii), atleast one of S, T, U must not be selected.

From (iii), atleast one of V and W must not be selected.

From (iv), atleast two of Q, S, V must not be selected.

From (v), either all of R, U and W are selected or none of R, U and W is selected.

10. To maximize, we have to select R, U and W.

∴ V is not selected.

∴ S or T can be selected.

From (iv), we take Q is selected.

∴ T is also selected.

P can also be selected.

∴ Violating none of the conditions, we can select, PQRTUW.

∴ There can be 6 people.

Hence, the correct option is (A).

11. From the above solution, we can say that at most five can be selected with him.

Hence, the correct option is (B).

12. To minimize, we select exactly one of P, Q and R, and none of S, T, U.

∴ Only P or only Q can be in the team.

Hence, the correct option is (C).

Solutions for questions 13 to 15:

Let the number of chocolates with each of them be denoted by the first letter of his name.

From (ii), C < S < R.

From (iii), S > N

From (iv), R – C = K – R

As R – C is atleast two, and no number has a difference of three with more than one of the given numbers,

R – C = 2

∴ K – R = 2

From (ii) and (iii)

N < C < S < R

As K – R = 2,

A must be greater than R.

∴ The final arrangement will be

N	<	C	<	S	<	R	<	A	<	K
3		4		5		6		7		8

13. Ranjit has 6 chocolates.

Hence, the correct option is (B).

14. Sumit has 5 chocolates.

Hence, the correct option is (A).

15. The difference is = 8 – 3 = 5.

Hence, the correct option is (D).

Solutions for questions 16 to 18:

From (i) and (iv), Anand got a better rank than atleast three persons i.e., Anand's rank can be 1 or 2 or 3.

From (iii) Charan's rank can be 6 or 5 or 4.

If Anand's rank is 3 then Charan's rank must be 4, in this case, condition (v) is violated.

∴ Anand's rank is either 1 or 2.

Here we have three possibilities:

(a)

1	2	3	4	5	6
Gopal	Anand	Deepti	Hriday/ Brijesh	Charan	Brihesh/ Harish

(b)

1	2	3	4	5	6
Anand	Gopal	Hriday/	Deepti Brijesh	Brijesh/	Charan Hriday

(c)

1	2	3	4	5	6
Anand	Deepti	Hriday	Gopal	Brijesh	Charan

16. It is possible in case (b) and (c).

But only in case (b), we have one person between Deepti and Charan i.e., Brijesh.

Hence, the correct option is (D).

17. We have more than one possibility.

Hence, the correct option is (D).

18. It is possibility (c), in which Brijesh got the fifth rank.

Hence, the correct option is (A).

Solutions for questions 19:

Let the marks scored by each person be denoted by the first letter of his name.

From (ii), E > C > D.

From (iv), G > H

From (v) D > G

Combining the above, we get.

$\therefore$ E > C > D > G > H

from (iii),

1	2	3	4	5	6	7	8
				F			

As H did not get the lowest score, either A or B got the lowest score.

From (i) and above results, A got the first rank and B got the eight rank.

$\therefore$ The final arrangement will be as follows.

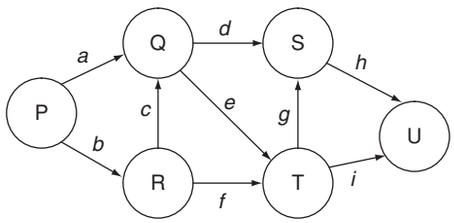
A > E > C > D > F > G > H > B

19. D got the fourth highest score.

Hence, the correct option is (D).

Solutions for questions 20 and 21:

The network can be represented as follows:



Given, the total capacities of all the five tanks is 17 units. This is to be supplied by the source.

$\therefore$ $a + b = 17$ and $a < 10$, $b < 10$

$\Rightarrow a = 9, b = 8$ or $a = 8, b = 9$ and $17 = 1 + 2 + 3 + 4 + 7$

(or) $17 = 1 + 2 + 3 + 5 + 6$

$\therefore$ The capacities of 3 tanks should be 1, 2 and 3 units.

As the capacity of Q is more than that of two tanks

Q = 3 units

And also U = 6 or U = 7

Now, the difference of capacities of R and T is 1 unit, which is possible only for the capacities 1 unit and 2 units.

(as Q = 3 units and U = 6 or 7 units)

But given $i = 2$ units, the capacity of T cannot be 2 units.

$\therefore$ T = 1 unit, R = 2 units

$\therefore$ S = 17 – (1 + 2 + 3 + U)

S = 11 – U

$\therefore$ S = 5 (or) 4

When $b = 9$ units

At tank T,

$e + f = T + g + i$

$4 + f = 1 + 2 + g$

$\Rightarrow g = f + 1$

i and f must be two consecutive numbers.

The possible value of (f, g) cannot be

(1, 2) : As T = 1, $f \neq 1$

(2, 3) : As R = 2, $f \neq 2$

(3, 4) : As $e = 4$, $g \neq 4$

(4, 5) : As $e = 4$, $f \neq 4$

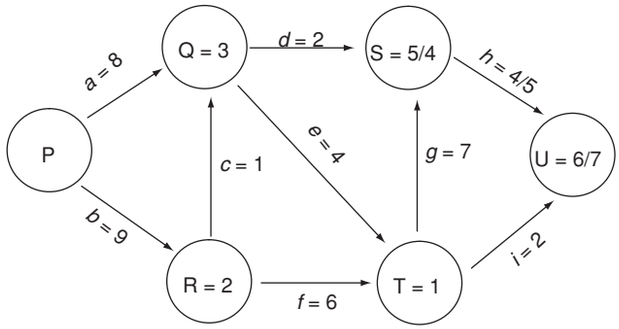
(5, 6) : If $g = 6$, Q = $d = 3$, which is not possible.

(7, 8) : If $f = 7$, then $c = 0$, which is not possible.

$\therefore$ The only possible value for (f, g) is (6, 7).

Now we can obtain the remaining values as follows.

Hence, we get the following values.



20. The flow from R to Q is c and $c = 1$ unit.

Hence, the correct option is (A).

21. The flow from R to T is 6 units.

Hence, the correct option is (B).

Solutions for questions 22 and 23:

22. In the first crossing, two children go to the other side.

In the second crossing, one child returns.

In the third crossing, one adult should go to the other side.

In the fourth crossing the second child should return.

Hence, for one adult to cross, four crossings are required.

$\therefore$ For six adults $6 \times 4 = 24$ crossings are required.

In the twenty fifth crossing, the two children cross the river.

$\therefore$ A total of 25 crossings are required.

Hence, the correct option is (C).

23. Let 'a' be the time of a clock in set A and the difference of time be x.

$\therefore$ The different times possible for set B are $a + x$ and $a - x$.

For $a + x$, the times possible for set A are a and $a + 2x$

But the difference in $a - x$ and $a + 2x$ is $3x$.

$\therefore$ a, $a + x$ and $a - x$ are 3 different times possible.

Hence, the correct option is (C).

Solutions for questions 24 and 25:

24. Exactly one statement of each should be true. If the first statement of Sundaram is false, then his second statement should be true (which is a contradiction as there is only one thief). Therefore his first statement is true and second statement is false. Therefore Satyam is the thief.

Hence, the correct option is (A).

25. The statements of only one person is a combination of true and false. The person has to be Shivam.

Both the statements of Satyam should be either true or false. If the statements are false, then both satyam and Shivam would be thieves (which is a contradiction). Therefore both the statements of Satyam should be true, in which case Sundaram would be the thief.

Hence, the correct option is (C).

Chapter 9 Clocks and Calendars

Exercises

Practice Problems 1

Directions for questions 1 to 25: Select the correct alternative from the given choices.

1. What is the angle covered by the minute hand in 22 minutes?
(A) 66° (B) 110° (C) 132° (D) 220°

2. By how many degrees will the minute hand move, in the same time, in which the hour hand moves 6°?
(A) 54° (B) 84° (C) 72° (D) 60°

3. What is the angle between the hands of the clock, when it shows 40 minutes past 6?
(A) 40° (B) 70° (C) 80° (D) 90°

4. What is the angle between the two hands of a clock when the time is 25 minutes past 7 O'clock?
(A) $62\frac{1}{2}°$ (B) $66\frac{1}{2}°$
(C) $72\frac{1}{2}°$ (D) $69\frac{1}{2}°$

5. At what time between 9 and 10 O'clock, will the two hands of the clock coincide?
(A) $43\frac{3}{11}$ minutes past 9 O'clock
(B) $45\frac{6}{11}$ minutes past 9 O'clock
(C) $49\frac{1}{11}$ minutes past 9 O'clock
(D) $49\frac{6}{11}$ minutes past 9 O'clock

6. At what time between 4 and 5 O'clock are the two hands of a clock in the opposite directions?
(A) $52\frac{3}{11}$ minutes past 4 O'clock
(B) $54\frac{6}{11}$ minutes past 4 O'clock
(C) $51\frac{7}{11}$ minutes past 4 O'clock
(D) $53\frac{9}{11}$ minutes past 4 O'clock

7. The angle between the two hands of a clock is 20° and the hour hand is in between 2 and 3. What is the time shown by the clock?
(A) $7\frac{3}{11}$ minutes past 2
(B) $14\frac{6}{11}$ minutes past 2
(C) $15\frac{5}{11}$ minutes past 2
(D) Both (A) and (B)

8. Which of the following can be the time shown by the clock, when the hour hand is in between 4 and 5 and the angle between the two hands of the clock is 60°?
(A) $16\frac{4}{11}$ min past 4 (B) $18\frac{9}{11}$ min past 4
(C) $32\frac{8}{11}$ min past 4 (D) $36\frac{5}{11}$ min past 4

9. How many times, the two hands of a clock will be at 30° with each other in a day?
(A) 36 (B) 40 (C) 44 (D) 48

10. If the time in a clock is 10 hours 40 minutes, then what time does its mirror image show?
(A) 2 hours 20 minutes (B) 1 hour 15 minutes
(C) 1 hour 10 minutes (D) 1 hour 20 minutes

11. There are two clocks on a wall, both set to show the correct time at 5:00 p.m. The clocks lose 2 minutes and 3 minutes respectively in an hour. When the clock which loses 2 minutes in one hour shows 9:50 p.m. on the same day, then what time does the other clock show?
(A) 9:30 p.m. (B) 9:40 p.m.
(C) 9:45 p.m. (D) 10:15 p.m.

12. A watch that gains uniformly was observed to be 1 minute slow at 8:00 a.m. on a day. At 6:00 p.m. on the same day it was 1 minute fast. At what time did the watch show the correct time?
(A) 12:00 noon (B) 1:00 p.m.
(C) 2:00 p.m. (D) 3:00 p.m.

13. A watch, which gains uniformly, was observed to be 6 minutes slow at 9:00 a.m. on a Tuesday and 3 minutes fast at 12:00 noon on the subsequent Wednesday. When did the watch show the correct time?
(A) 9:00 p.m. on Tuesday
(B) 12:00 a.m. on Wednesday
(C) 3:00 a.m. on Wednesday
(D) 6:00 a.m. on Wednesday

14. The number of odd days in a non-leap year is
(A) 0 (B) 1 (C) 2 (D) 3

15. What will be next leap year after 2096?
(A) 2100 (B) 2101 (C) 2104 (D) 2108

16. If 21st March 2000 was a Monday, what day of the week will 21st March 2003 be?
(A) Tuesday (B) Friday
(C) Thursday (D) Wednesday

17. If 5th January 2001 was a Friday then what day of the weak will 25th December 2001 be?
(A) Monday (B) Tuesday
(C) Wednesday (D) Thursday

18. If 14th February 2001 was a Wednesday, then what day of the week will 14th February 2101 be (i.e. after a century)?

(A) Friday (B) Saturday
(C) Sunday (D) Monday

19. If 8th February 1995 was a Wednesday, then what day of the week will 8th February 1994 be?
(A) Wednesday (B) Thursday
(C) Tuesday (D) Monday

20. If holidays are declared only on Sundays and in a particular year 12th March is a Sunday, is 23rd September in that year a holiday?
(A) Yes
(B) No
(C) Yes, if it is a leap year.
(D) No, if it is a leap year.

21. Which day of the week was 1601, Jan 15?
(A) Monday (B) Tuesday
(C) Wednesday (D) Thursday

22. In a year, if 23rd November is a Friday then what day of the week will 14th March in that year be?
(A) Monday
(B) Wednesday
(C) Sunday
(D) Cannot be determined

23. The calendar of which of the following years is the same as that of the year 2001?
(A) 2005 (B) 2006 (C) 2007 (D) 2008

24. Pankaj met his friend three days ago. He told his friend that he has his last exam five days later. He met his friend again, three days after the last exam. Six days after he met his friend after the last exam, they left for a vacation. The day on which they left for a vacation is a Saturday. What is today?
(A) Saturday
(B) Tuesday
(C) Sunday
(D) Cannot be determined

25. Five days ago Shweta lost her phone. Two days after loosing the phone she lodged a complaint with the police. Six days after lodging the complaint she bought a new phone. Four days after buying a new phone, i.e. on a Thursday she found her old phone. On which day did she loose her phone?
(A) Friday (B) Saturday
(C) Thursday (D) None of these

Practice Problems 2

Directions for questions 1 to 25: Select the correct alternative from the given choices.

1. How many times will the minute hand and the hour hand of a clock point in opposite directions between 4:00 p.m. on Tuesday and 11:00 a.m. on the following Thursday?
(A) 35 (B) 39 (C) 24 (D) 38

2. For how many times the minute hand of a clock coincides with the hour hand between 2:00 p.m. on the 2nd of a month and 1:00 a.m. on the 5th of the same month?
(A) 55 (B) 54 (C) 68 (D) 74

3. What is the angle between the two hands of a clock when the clock shows 5:35 p.m.?
(A) 42.5° (B) 40° (C) 45° (D) 46°

4. What is the angle between the two hands of a clock when the time shown by the clock is 8:40 p.m.?
(A) 5° (B) 20° (C) 10° (D) 15°

5. At what time between 5 and 6 O'clock, will the hands of a clock make an angle of 50° with each other?
(A) $36\frac{4}{11}$ minutes past 5 (B) $18\frac{2}{11}$ minutes past 5
(C) 20 minutes past 5 (D) Both (A) and (B)

6. At what time between 6 and 7 O'clock the angle between the two hands of a clock is 70°?
(A) $45\frac{5}{11}$ minutes past 6 (B) 22 minutes past 6
(C) 20 minutes past 6 (D) Both (A) and (C)

7. At what time between 4 and 5 O'clock, the hour hand and the minute the of a clock coincide?
(A) $21\frac{9}{11}$ minutes past 4 (B) 20 minutes past 4
(C) $23\frac{4}{11}$ minutes past 4 (D) 23 minutes past 4

8. A watch which gains time uniformly was observed to be 7 minutes slow at 4:00 a.m. on a Sunday. On the subsequent Wednesday at 12:00 noon, the watch was 9 minutes fast. When did the watch show the correct time?
(A) 1:00 a.m. on Sunday
(B) 3:00 p.m. on Monday
(C) 4:00 a.m. on Tuesday
(D) 12:00 a.m. on Sunday

9. A clock that loses time uniformly was observed to be 11 minutes fast at 5:00 p.m. on a Tuesday. On the subsequent Sunday at 2:00 a.m., the watch was 4 minutes slow. When did the watch show the correct time?
(A) 10:00 p.m. on Friday (B) 11:00 p.m. on Sunday
(C) 8:00 a.m. on Saturday (D) None of these

10. A watch that gains time uniformly, was observed to be 9 minutes slow at 1:00 p.m. on a Wednesday. It was 8 minutes fast at 9:00 a.m. on the subsequent Saturday. When did the watch show the correct time?
(A) 12 noon on Thursday
(B) 1:00 p.m. on Saturday
(C) 12:00 mid night on Friday
(D) 1:00 a.m. on Friday

11. The number of minutes from 10 O' clock to now, is five times the number of minutes from now to 12 O'clock. Find the present time.
(A) 11 : 40
(B) 10 : 24
(C) 10 : 16
(D) Cannot be determined

12. The number of minutes from this time to 5 O'clock is four times the number of minutes from 2 O'clock to the time fifty minutes ago. Which among the following can be the time shown by the clock?
(A) 3:16 (B) 4:00 (C) 5:16 (D) 4:25

13. At a time between 5 O'clock and 6 O'clock, the number of minutes taken by hour hand to reach 6 O'clock mark is three times that of the number of minutes taken by the minute hand to reach 6 O'clock mark. Which among the following can be the time shown by the clock?
(A) 5:15 (B) 5:20 (C) 5:25 (D) 5:00

14. If a year starts with Monday, then what is the maximum possible number of Mondays in that year?
(A) 52 (B) 54 (C) 53 (D) 51

15. If a year starts with Friday, then what is the maximum possible number of Sundays in that year?
(A) 52 (B) 54 (C) 53 (D) 51

16. How many odd days are there in 100 years?
(A) 6
(B) 5
(C) 4
(D) Cannot be determined

17. If April in a year starts with a particular day then which among the following months in that year will start with the same day?
(A) July (B) August
(C) November (D) December

18. If today is Friday, then what was the day of the week 125 days ago?
(A) Friday (B) Sunday
(C) Saturday (D) Monday

19. If the first day of the years 2012 and 2023 are Mondays, which day of the week will the last days of these years be respectively?
(A) Tuesday, Tuesday (B) Tuesday, Monday
(C) Monday, Tuesday (D) Sunday, Monday

20. In a leap year, which month will have the same calendar as that of January in that year?
(A) April (B) July (C) October (D) March

21. On which dates of October, 1994 did Monday fall?
(A) 4, 11, 18, 25 (B) 2, 9, 16, 23
(C) 1, 8, 15, 22 (D) 3, 10, 17, 24, 31

22. If our Independence day in 2002 happens to be a Thursday, on what day of the week the Independence day in 2006 celebrated?
(A) Monday (B) Tuesday
(C) Wednesday (D) Thursday

23. What is the next leap year after 2396?
(A) 2398 (B) 2408 (C) 2404 (D) 2400

24. I met my friend on 12th April, which was a Saturday and I promised him to meet in October of the same year, but only on a Saturday. What are the possible dates on which I can meet my friend?
(A) 2nd, 9th, 16th, 23rd, 30th (B) 3rd, 10th, 17th, 24th, 31st
(C) 4th, 11th, 18th, 25th (D) 5th, 12th, 19th, 26th

25. Day before yesterday, which was a Monday, was Rajeev's birthday. Vineet's birthday is after three days from today, which is a
(A) Monday (B) Sunday
(C) Saturday (D) Friday

Previous Years' Questions

1. Read the statements:

All women are entrepreneurs.

Some women are doctors.

Which of the following conclusions can be logically inferred from the statements? **[2014]**
(A) All women are doctors
(B) All doctors are entrepreneurs
(C) All entrepreneurs are women
(D) Some entrepreneurs are doctors

2. What is the next number in the series? **[2014]**
12 35 81 173 357 ____

3. Find the odd one from the following group:
W, E, K, O I, Q, W, A F, N, T, X N, V, B, D **[2014]**
(A) W, E, K, O (B) I, Q, W, A
(C) F, N, T, X (D) N, V, B, D

4. For submitting tax returns, all resident males with annual income below ₹10 lakhs should fill up Form P and all resident females with income below ₹8 lakhs should fill up Form Q. All people with incomes above ₹10 lakhs should fill up Form R, except non residents with income above ₹15 lakhs, who should fill up Form S. All others should fill Form T. An example of a person who should fill Form T is **[2014]**
(A) a resident male with annual income ₹9 lakh
(B) a resident female with annual income ₹9 lakhs
(C) a non-resident male with annual income ₹16 lakhs
(D) a non-resident female with annual income ₹16 lakhs

5. Fill in the missing number in the series. **[2014]**

2, 3, 6, 15, ____, 157.5, 630

6. Find the odd one in the following group **[2014]**

Q, W, Z, B B, H, K, M W, C, G, J M, S, V, X

(A) Q, W, Z, B (B) B, H, K, M
(C) W, C, G, J (D) M, S, V, X

7. Lights of four colors (red, blue, green, yellow) are hung on a ladder. On every step of the ladder, there are two lights. If one of the lights is red, the other light on that step will always be blue. If one of the lights on a step is green, the other light on that step will always be yellow. Which of the following statements is not necessarily correct? **[2014]**

(A) The number of red lights is equal to the number of blue lights.
(B) The number of green lights is equal to the number of yellow lights.
(C) The sum of the red and green lights is equal to the sum of the yellow and blue lights.
(D) The sum of the red and blue lights is equal to the sum of the green and yellow lights.

8. The next term in the series 81, 54, 36, 24, … is _____ **[2014]**

9. In which of the following options will the expression P < M be definitely true? **[2014]**

(A) M < R > P > S (B) M > S < P < F
(C) Q < M < F = P (D) P = A < R < M

10. Find the next term in the sequence: 7G, 11K, 13M, _____ **[2014]**

(A) 15Q (B) 17Q
(C) 15P (D) 17P

11. Find the next term in the sequence: 13M, 17Q, 19S, _____ **[2014]**

(A) 21W (B) 21V
(C) 23W (D) 23V

12. If 'KCLFTSB' stands for 'best of luck' and 'SHSWDG' stands for 'good wishes', which of the following indicates 'ace the exam'? **[2014]**

(A) MCHTX (B) MXHTC
(C) XMHCT (D) XMHTC

13. Statement: You can always give me a ring whenever you need.

Which one of the following is the best inference from the statement? **[2013]**

(A) Because I have a nice caller tune
(B) Because I have a better telephone facility
(C) Because a friend in need is a friend indeed
(D) Because you need not pay towards the telephone bills when you give me a ring

14. Statement: There were different steams of freedom movements in colonial India carried out by the moderates, liberals, radicals, socialists, and so on

Which one of the following is the best inference from the statement? **[2013]**

(A) The emergence of nationalism in colonial India led to our independence.
(B) Nationalism in India emerged in the context of colonialism.
(C) Nationalism in India is homogeneous.
(D) Nationalism in India is heterogeneous.

15. There are eight bags of rice looking alike, seven of which have equal weight and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance, the minimum number of weightings required to identify the heavier bag is **[2012]**

(A) 2 (B) 3
(C) 4 (D) 8

16. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair: **[2011]**

(A) dancer : stage (B) commuter : train
(C) teacher : classroom (D) lawyer : courtroom

17. The question below consists of a pair of related of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.

Unemployed: Worker **[2010]**

(A) fallow : land (B) unaware : sleeper
(C) wit : jester (D) renovated : house

18. 25 persons are in a room. 15 of them play hockey, 17 of them play football, and 10 of them play both hockey and football. The number of persons playing neither hockey nor football is _____. **[2010]**

(A) 2 (B) 17
(C) 13 (D) 3

19. Hari (H), Gita (G), Irfan (I), and Saira (S) are siblings (i.e., brothers and sisters). All were born on 1st January, in different years. The age difference between any two successive siblings (that is born one after another) is less than 3 years. Given the following facts:

i. Hari's age + Gita's age > Irfan's age + Saira's age

ii. The age difference between Gita and Saira is 1 year. However, Gita is not the oldest and Saira is not the youngest.

iii. There are no twins.

Which of the following in a possible order in which they were born? **[2010]**

(A) HSIG (B) SGHI
(C) IGSH (D) IHSG

Test
Logical Ability

Time: 25 min.

Directions for questions 1 to 7: Complete the following series.

1. 11, 26, 51, 76, ____
(A) 101 (B) 115
(C) 125 (D) 133

2. 23, 57, 1113, 1719, ____
(A) 2329 (B) 2931
(C) 3137 (D) 3743

3. VIQ, TAC, WJR, VCE, XKS, XEG, _____
(A) YGL (B) ZFH
(C) YLT (D) YNR

4. 25 : 343 : : 49 : _____
(A) 121 (B) 343
(C) 512 (D) 1331

5. BIDM : DLPR : : HSBC : _____
(A) PVEH (B) PXDH
(C) PVHH (D) RVHD

6. 2Y5 : 4W9 : : 3J6 : _____
(A) 4W9 (B) 6L4
(C) 8C1 (D) 6N4

7. Aeroplane : Pilot : : Ship : _____
(A) Driver (B) Chef
(C) Captain (D) Marshal

Directions for questions 8 to 11: Find the odd man out.

8. (A) 38 – 121 (B) 48 – 144
(C) 68 – 196 (D) 98 – 361

9. (A) BDGC (B) DHKR
(C) FLOH (D) EJMZ

10. (A) 6V12 (B) 2H4
(C) 9F18 (D) 3R6

11. (A) Mercury (B) Mars
(C) Moon (D) Venus

Directions for questions 12 to 14: Choose the correct alternative from the given choices.

12. In a certain code language the word PRIVATE is coded as AEIPRTV then how is the word PRESENT coded in that language?
(A) EEPNRST (B) EENPRST
(C) EPSNERT (D) EENRPST

13. In a certain code, if the word CHLORATE is written as DFOKWUAW then how is the word PHOSPHATE written in that code?
(A) QFRUOBHLN (B) QFROBUHLN
(C) QFHROUBLN (D) QFROUBHLN

14. In a certain code, if the word PRESSURE is written as KIVHHFIV then how is the word SOLUTION written in that code?
(A) HLOUTRLM (B) HLPGFRLM
(C) HLOFGRLM (D) HLOGTROM

Directions for questions 15 and 16: These questions are based on the following information.

Six persons—P through U—are standing in a queue in the increasing order of their heights so that the shortest is at the front of the queue and the tallest is at the back. Furthermore,

(i) U is the shortest.
(ii) Exactly two persons are taller than T.
(iii) P is taller than S and exactly two persons stand between P and S.
(iv) Q is taller than P.

15. Who is the second tallest person?
(A) T (B) R
(C) S (D) P

16. Who is/are the persons in between P and R?
(A) Only T (B) Q and S
(C) T and U (D) Only S

Directions for questions 17 to 19: These questions are based on the following data.

Eight persons A, B, C, D, E, F, G, and H attended a conference and are sitting around a circular table. Among them, there are CEOs of 4 companies who came along with one assistant each. Each CEO has his assistant sitting to his right.

(i) Assistants of C and A are sitting opposite each other.
(ii) E, who is the assistant of B, is sitting opposite F.
(iii) E was not sitting adjacent to A.
(iv) G is neither adjacent nor opposite to D.

17. Who is to the left of A?
(A) D (B) G
(C) F (D) H

18. Who is the assistant of C?
(A) D (B) G
(C) E (D) H

19. If H is opposite to G, then D is to the right of ____.
(A) A (B) B
(C) F (D) H

Directions for questions 20 to 24: These questions are based on the following data.

In a class, 50 students failed in Maths.

40 students failed in Physics.

30 students failed in Chemistry.
10 students failed in Physics and Chemistry.
10 students failed in Maths and Physics.
No student failed in both Maths and Chemistry.
None of the students failed in all the three subjects.

20. How many students failed atleast in one subject?
(A) 50 (B) 100
(C) 75 (D) 125

21. What is the ratio of the number of students who failed in Maths and Physics to that who failed in Physics and Chemistry?
(A) 1 : 2 (B) 2 : 1
(C) 1 : 1 (D) 4 : 3

22. How many students failed in exactly two subjects?
(A) 10 (B) 20
(C) 30 (D) 40

23. The number of students who failed in only Maths, in only Physics and in only Chemistry respectively is
(A) 40, 20, 20 (B) 20, 40, 20
(C) 20, 20, 40 (D) 50, 40, 30

24. Which of the following statements is true?
(A) The number of students who failed in only Maths equals to that of the students who failed in only Physics.
(B) The number of students who failed in only Maths equals to that of the students who failed in only Physics or in only Chemistry.
(C) The number of students who failed in all the three subjects is 10.
(D) None of these.

Directions for question 25 to 30: Select the correct alternative from the given choices.

25. In the following addition each latter represents a different digit from of O to 9. which of the following is a possible number represented by FAN ?

```
   H   A   N
F  A   F   N
-------------
5  5   8   8
```

(A) 434 (B) 534
(C) 345 (D) 135

26. At what time between 10 O' clock and 11 O' clock are the hands of the clock together?
(A) $54^{6}/_{11}$ past 10 (B) $27^{8}/_{11}$ past 10
(C) Both A and B (D) None of these

27. How many times the hands of a clock are at right angles in a day?
(A) 24 (B) 22
(C) 44 (D) 48

28. On a particular day if it is found that a clock is showing 10 minutes less at 1:00 pm and 5 minutes more at 6:00 pm on the same day. At what time did the clock show the correct time?
(A) 3 hr 20 min (B) 4 hr 20 min
(C) 5 hr 40 min (D) 6 hr 40 min

29. If 21st March 2000 was a Monday, which day of the week will be 21st March 2003?
(A) Tuesday (B) Friday
(C) Thursday (D) Wednesday

30. The movie of my favorite hero is going to be released on Wednesday. To watch the movie on the first day of release, I booked my ticket the day before yesterday. If I watch the movie on the fourth day from today, on which day of the week did I book my ticket?
(A) Wednesday (B) Thursday
(C) Friday (D) Saturday

HINTS/SOLUTIONS

Practice Problems I

Solutions for questions 1 to 25:

1. The angle covered by the minute hand in 22 minutes is $22 \times 6 = 132°$.

Hence, the correct option is (C).

2. The hour hand will move by 6° in 12 minutes. So, minutes hand will move $12 \times 6° = 72°$ in 12 minutes, as the minute hand moves by 6° in one minute.

Hence, the correct option is (C).

3. Angle will be $\theta = \left(\frac{11}{2}\text{m} - 30h\right)$

$\left(\frac{11}{2} \times 20 - 30 \times 6\right) = 40°$.

Hence, the correct option is (A).

4. Angle between two hands is given by

$\theta = \left|\frac{11}{2}m - 30h\right|$ here, $h = 7$ and $m = 25$

$\therefore \theta = \left|\frac{11}{2} \times 25 - 30 \times 7\right| = \frac{275 - 210}{2} = \frac{145^\circ}{2} = 72\frac{1^\circ}{2}$.

Hence, the correct option is (C).

5. When hands coincide with each other the angle between them is 0. Therefore, angle between two hands is given by

$\theta = 30h - \frac{11}{2}m \quad \left(\because 30h > \frac{11}{2}m\right)$ here, $h = 9$

$0 = 30 \times 9 - \frac{11}{2}m$

$\Rightarrow 270 \times \frac{2}{11} = m$

$\therefore m = 49\frac{1}{11}$ minutes

So, the hands coincide at $49\frac{1}{11}$ minutes past 9 hours.

Hence, the correct option is (C).

6. When hands of a clock are in opposite direction the angle between them is 180°.

Therefore $\theta = \left|\frac{11}{2}\text{m} - 30h\right|$ where $\theta = 180°$ and $h = 4$

$180 = \frac{11}{2}\text{m} - 120$

$\Rightarrow \frac{11}{2}\text{m} = 300$

$m = \frac{600}{11}\text{m} = 54\frac{6}{11}$ minutes

So, at $54\frac{6}{11}$ minutes past 4 the hands are in opposite direction.

Hence, the correct option is (B).

7. Given $\theta = 20°$ and $h = 2$

$\theta = \frac{11}{2}m - 30h$ or $30h - \frac{11}{2}m$

$20 = \frac{11}{2}m - 30 \times 2$; $\frac{11}{2}m = 80$

$m = \frac{160}{11} = 14\frac{6}{11}m$

(or) $20 = 30 \times 2 - \frac{11}{2}m$; $\frac{11}{2}m = 40$

$m = \frac{80}{11} = 7\frac{3}{11}m$

Therefore, the angle between the hands will be 20° at hours $14\frac{6}{11}$ minutes past 2 and $7\frac{3}{11}$ minutes past 2.

Hence, the correct option is (D).

8. Given $\theta = 60°$ and $h = 4$

$\theta = \frac{11}{2}m - 30h$ or $\theta = 30h - \frac{11}{2}\text{m}$

$60 = \frac{11}{2}m - 30 \times 4$ or $60 = 120 - \frac{11}{2}m$

$\frac{11}{2}m = 180$

(or) $\frac{11}{2}\text{m} = 60$

$\therefore m = \frac{2 \times 60}{11} = 10\frac{10}{11}m$

$m = \frac{360}{11} = 32\frac{8}{11}m$.

Hence, the angle between the hands will be 60° at $32\frac{8}{11}$ min past 4.

Hence, the correct option is (C).

9. In 12 hours the clock will be at 30° with each other for 22 times. So, they will be at 30° with each other for 44 times in *a* day.

Hence, the correct option is (C).

10. Mirror time = 12 – Actual time = 12 – 10 hour 40 minutes = 1 hour 20 minutes.

Hence, the correct option is (D).

11. After 5 hours, i.e. at 10:00 p.m. the clock, which loses 2 minutes, will lose 10 minutes and shows 9:50 p.m. So, the other clock will lose $3 \times 5 = 15$ minutes and show 9:45 p.m.

Hence, the correct option is (C).

12. From 8 a.m. to 6 p.m. i.e., in 10 hours the clock gained 2 minutes. So, it gains 1 minute in 5 hours.

So it shows correct time at 1 pm on the same day.

Hence, the correct option is (B).

13. The watch which was 6 minutes slow at 9 a.m. on a Tuesday and 3 minutes fast at 12 noon on Wednesday.

∴ The watch gained 9 minutes in 27 hours.

So, it gains 6 minutes in $\frac{6\times27}{9} = 18$ hours.

∴ It shows correct time after 18 hours i.e. at 3 a.m. on Wednesday.

Hence, the correct option is (C).

14. Total number of days in an ordinary year are 365.

Number of odd days = $\frac{365}{7} = 52$ weeks and 1 odd day.

Hence, the correct option is (B).

15. For a century year to be a leap year, it should be divisible by 400. As 2100 is not divided by 400 it is not a leap year.

The next leap year is 2104

Hence, the correct option is (C).

16. 21st March, 2000 is Monday and the year is *a* leap year.

So, none of the next 3 years is a leap year.

So, the day of the week will be 3 days beyond Monday i.e., Thursday.

Hence, the correct option is (C).

17. Total number of odd days from 5th January, 2001 to 25th January, 2001 are

Months: Jan + Feb + Mar + April + May + June + July + Aug + Sep + Oct + Nov + Dec

Odd days 26 + 0 + 3 + 2 + 3 + 2 + 3 + 3 + 2 + 3 + 2 + 25 = 74

$\frac{74}{7}$ = 10 weeks + 4 odd days

4 days from Friday is Tuesday.

Hence, the correct option is (B).

18. A century has 5 odd days.

∴ 5 days beyond Wednesday.

Thursday

Friday

Saturday

Sunday

Monday

Hence, 14th February, 2101 will be on Monday.

Hence, the correct option is (D).

19. 1994 is not a leap year.

∴ It has only 1 odd day.

∴ 8th Feb 1995 is one day before Wednesday.

Hence, 8th Feb 1994 is a Tuesday.

Hence, the correct option is (C).

20. The total number of odd days from 12th March to 23rd September

Month: M + A + M + J + J + A + S

Odd days: 5 + 2 + 3 + 2 + 3 + 3 + 2 = 20 days.

$\frac{20}{7}$ = 6 odd days.

Hence, 23rd September is 6 days to Sunday i.e., Saturday.

So, 23rd September is not *a* holiday.

Hence, the correct option is (B).

21. The number of odd days upto 15th Jan, 1601:

1600 + (1st Jan to 15th Jan 1601)

1600 years have *z*ero odd days and there is one odd day in 15 days.

Hence, 15th Jan 1601 is a Monday.

Hence, the correct option is (A).

22. The number of odd days from 23rd November to 14th March in that year.

Month : N + O + S + A + J + J + M + A + M

Odd days : 1 + 3 + 2 + 3 + 3 + 2 + 3 + 2 + 4

23 odd days

$\Rightarrow \frac{23}{7}$ = 2 odd days.

Hence, is two days before Friday i.e., Wednesday.

Hence, the correct option is (B).

23. The number of odd days from 2001 are

Year :	2001	2002	2003	2004	2005	2006	2007
Odd days :	1	1	1	2	1	1	=7

$\frac{7}{7}$ = 0 odd day. Calendar for 2001 is same as 2007.

Hence, the correct option is (C).

24. 5 days after the first meet was the last exam.

3 days after the last exam they met.

6 days after meeting they left for vacation.

∴ A total of 14 or 0 odd days.

∴ Pankaj met his friend before the exam on a Saturday. Today is three days after meeting his friend, i.e., a Tuesday.

Hence, the correct option is (B).

25. 2 days after loosing her cell phone she filed a complaint. 6 days after that she bought a new phone, 4 days after that she found her old phone.

Thus a total of 12

⇒ 5 (12 – 7) odd days. i.e., Saturday.

Hence, the correct option is (B).

Practice Problems 2

Solutions for questions 1 to 25:

1. The exception time for the condition $\theta = 180°$ is 6 O'clock. From 4:00 p.m. on Tuesday to 4:00 p.m. on Wednesday, it occurs 22 times.

From 4:00 p.m. Wednesday to 4:00 a.m. on Thursday it occurs 11 times.

From 4:00 a.m. to 11:00 a.m., it occurs 6 times. Hence both the hands will be opposite for (22 + 11 + 6) = 39 times.

Hence, the correct option is (B).

2. From 2:00 p.m. on 2nd of a month to 2:00 p.m. on the 4th of the same month, it occurs 44 times.

From 2:00 p.m. to 1:00 a.m. they coincide each other for 10 times.

$\therefore$ Hence, they coincides for, 44 + 10 = 54 times.

Hence, the correct option is (B).

3. As we know that $\theta = \left|\frac{11}{2}m - 30h\right|$ here, we have $h = 5$ and $m = 35$

$$\left|\frac{11}{2}\times 35 - 5\times 30\right| = 5.5 \times 35 - 150$$

$$= 192.5 - 150 = 42.5°$$

Hence, the correct option is (A).

4. Here, we have $h = 8$ and $m = 40$

As we know that, $\theta = 30h - \frac{11}{2}m$

$$= 30 \times 8 - \frac{11}{2} \times 40 = 240 - 220 = 20°$$

Hence, the correct option is (B).

5. Here, $\theta = 50°$ and $h = 5$

$$\theta = \left|\frac{11}{2}m - 30h\right|$$

$$\theta = \left|\frac{11}{2}m - 30h\right| \text{ and } \theta = \left|30h - \frac{11}{2}m\right|$$

$$50 = \frac{11}{2}m - 30 \times 5$$

$$200 = \frac{11}{2}m \quad \text{or} \quad m = \frac{400}{11} = 36\frac{4}{11} \text{ or } \theta = \left|30h - \frac{11}{2}m\right|$$

$$50 = 30 \times 5 - \frac{11}{2}$$

$$\frac{11}{2}m = 100;\ m = \frac{200}{11};\ 18\frac{2}{11}$$

Hence, the correct option is (D).

6. Here, $h = 6$, $\theta = 70°$

$$\therefore 30h - \frac{11}{2}m = \pm\theta$$

$$30 \times 6 - \frac{11}{2}m = \pm 70$$

$$\Rightarrow \frac{11}{2}\text{m} = 180 \pm 70 = 110 \text{ or } 250$$

$$\therefore m = 20 \text{ or } 45\ \frac{5}{11}$$

Hence, the angle is 70° at 20 minutes past 6 and $45\ \frac{5}{11}$ minutes past 6

Hence, the correct option is (D).

7. Here, we have $h = 4$, $\theta = 0°$

$$0 = \frac{11}{2}m - 4 \times 30$$

$$\Rightarrow m = 21\frac{9}{11}$$

At $4{:}21\frac{9}{11}$, the hand of the clock will coincide.

Hence, the correct option is (A).

8. The duration from 4:00 a.m. on Sunday to 12:00 p.m. on Wednesday = 80 hours.

In 80 hours, the clock gained 7 + 9 = 16 minutes. But to show the correct time, the clock has to gain 7 minutes.

Hence, after

$$\therefore \frac{7}{16} \times 80 = 35 \text{ hours from Sunday 3 p.m. it shows the correct time.}$$

35 hours from 4 am on Sunday is 3:00 p.m. on Monday.

Hence, the correct option is (B).

9. The duration from 5:00 p.m. on Tuesday to 2:00 a.m. on Sunday is 105 hours.

In 105 hours, the clock loses 11 + 4 = 15 minutes.

But to show the correct time, the clock has to lose 11 minutes.

$$\therefore \frac{11}{15} \times 105 = 77 \text{ hours.}$$

77 hours from 5:00 p.m. on Tuesday is 10:00 p.m. on Friday.

Hence, the correct option is (A).

10. The number of hours from 1:00 p.m. on Wednesday to 9:00 a.m. on Saturday = 68 hours.

In 68 hours, the clock gained 9 + 8 = 17 minutes.

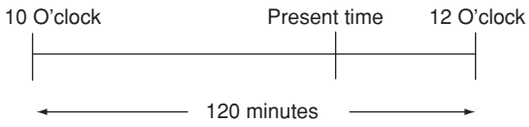
But to show the correct time, the clock has to gain 9 minutes.

$$\therefore \frac{9}{17} \times 60 = 36 \text{ hours.}$$

36 hours from 1:00 p.m. on Wednesday is 1:00 a.m. on Friday.

Hence, the correct option is (D).

11. Let the given information be represented as follows:



Let the number of minutes from present time to 12 O'clock be x.

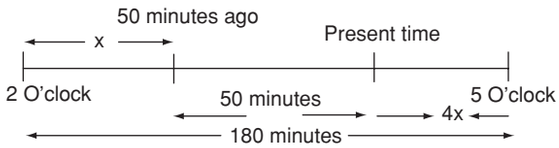
$\therefore$ The number of minutes from 10 O'clock to now $= 5x$.

$\therefore x + 5x = 120$ or $x = 20$

$\therefore$ The present time is 11 : 40.

Hence, the correct option is (A).

12. Let the given information be represented as follows:



Let the number of minutes from 2 O'clock to fifty minutes ago be x.

$\therefore$ The number of minutes from present time to 5 O'clock is $4x$.

$\therefore x + 4x + 50 = 180$

Let the number of minutes from 2 O'clock to fifty minutes ago be x.

$\therefore$ The number of minutes from the present time to 5 O'clock is $4x$.

$\therefore x + 4x + 50 = 180$

$\Rightarrow x = 26$

$\therefore$ The present time is 3:16.

Hence, the correct option is (A).

13. Let the time be 5 hours x minutes.

Minute hand reaches 6 at 5 hours 30 minutes and hour hand 6 O'clock.

$\therefore$ From the answer choices the present time which satisfied the given condition is 5 hours 15 minutes.

Hence, the correct option is (A).

14. Irrespective of the year whether it is a leap year or a non leap year, if the year starts with Monday then at the maximum there can be 53 Mondays in that year.

Hence, the correct option is (C).

15. If a year starts with Friday, then that year will have 53 Fridays and 53 Saturdays. All the remaining days occur for only 52 times.

Hence, the correct option is (A).

16. The number of odd days in first 100 years i.e., 1 AD to 100 AD, second 100 years i.e. 101 to 200 and 3rd 100 years i.e. 201 to 300 is 5 but in 4th 100 years i.e. 301 to 400 is 6.

Hence, the correct option is (D).

17. The number of odd days from April is as follows.

Month : Apr + May + Jun + Jul + Aug + Sep + Oct + Nov + Dec

Odd days : 2 3 2 3 3 2 3 2 3

The number of Odd days from Apr to Jul is 0. Hence, Apr and Jul will start with the same day of the week.

Hence, the correct option is (A).

18. There are 6 odd days in 125 days.

Hence, the six days to Friday is Saturday.

Hence, the correct option is (C).

19. 2012 is leap year, so it will have two odd days.

Hence 1st Jan 2013 is two days after Monday i.e., Wednesday. So, 31st Dec 2012 is a Tuesday. 2023 is a non leap year and have 1 odd day.

So, 1st Jan 2024 is Tuesday. Hence, 31st Dec 2023 is Monday.

Hence, the correct option is (B).

20. In order to have same calendar between these two months the number of odd days should be zero.

Month: Jan + Feb + Mar + Apr + May + Jun + Jul

Odd days: 3 + 1 + 3 + 2 + 3 + 2

At the completion of June the number of odd days is zero. Hence, January and July will have the same calendar.

Hence, the correct option is (B).

21. 1600 years contain zero odd days.

300 years contain 1 odd day.

93 years = (23 leap + 70 non leap years)

Total number of odd days in 93 years = $(23 \times 2 + 70 \times 1)$

= 116 odd days $\Rightarrow$ 4 odd days.

Number of odd days from 1st January to 1st October in 1994

Month: J + F + M + A + M + J + J + A + S + O

Odd days: 3 + 0 + 3 + 2 + 3 + 2 + 3 + 3 + 2 + 1

= 22 odd days $\Rightarrow$ 1 odd day.

The total number odd days = 1 + 4 + 1 = 6 odd days

$\therefore$ 1st October 1994 is Saturday.

Therefore, first Monday is on 3rd October.

So, 3, 10, 17, 24 and 31 are Mondays in October.

Hence, the correct option is (D).

22. If 15th August, 2002 is Thursday then the same day in 2006 is on

Year	2003	2004	2005	2006
Odddays	1	2	1	1

i.e., 5 days beyond Thursday is Tuesday.

Hence, the correct option is (B).

23. A century year which is divisible by 400 is a leap year and a leap year comes for every 4 years.

Hence, 2396 + 4 = 2400 is a leap year.

Hence, the correct option is (D).

24. The number of odd days between April, 12 and 1st October is $18 + 3 + 2 + 3 + 3 + 2 + 1 \Rightarrow 4$

$\therefore$ October 1st will be Wednesday.

$\therefore$ In October, the Saturdays are on 4, 11, 18, 25.

$\therefore$ The possible dates are 4th, 11th, 18th and 25th of October.

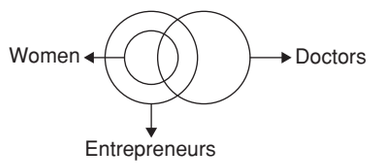
Hence, the correct option is (C).

25. If day before yesterday was Monday, then today will be Wednesday and the day after three days from today will be Saturday.

Hence, the correct option is (C).

Previous Years' Questions

1. The given statements can be represented in the following diagram.



From the above (D) i.e., 'Some entrepreneurs are doctors' can be inferred.

Hence, the correct option is (D).

2. $12 \times 2 + 11 = 35$

$35 \times 2 + 11 = 81$

$81 \times 2 + 11 = 173$

$173 \times 2 + 11 = 357$

$357 \times 2 + 11 = 725$

$\therefore$ 725 is the next number in the series.

3. The pattern followed in the given groups is as follows.

$W^{+8}, E^{+6}, K^{+4}, O$

$I^{+8}, Q^{+6}, W^{+4}, A$

$F^{+8}, N^{+6}, T^{+4}, X$

$N^{+8}, V^{+6}, B^{+2}, D$

Except NVBD, all other groups follow similar pattern.

Hence, the correct option is (D).

4. A resident female whose income lies between 8 Lakhs and 10 Lakhs will come under the 'Others' category.

$\therefore$ She should fill Form T.

Hence, the correct option is (B).

5. The pattern followed in the given series is as follows.

$2^{x1\frac{1}{2}}, 3^{x2}, 6^{x2\frac{1}{2}}, 15^{x3}, 45^{x3\frac{1}{2}}, 157.5^{x4}, 630$

$\therefore$ 45 is the missing number.

6. The pattern followed in the given groups is as follows.

$Q^{+6}, W^{+3}, Z^{+2}, B$

$B^{+6}, H^{+3}, K^{+2}, M$

$W^{+6}, C^{+4}, G^{+3}, J$

$M^{+6}, S^{+3}, V^{+2}, X$

Exept 'W, C, G, J', all other follow similar pattern.

Hence, the correct option is (C).

7. From the given answer choices it is clear that the statement, 'If one of the lights is red, the other light on the step will always be blue' implies that if there is no red light, then there should not be blue' (which does not confirm to the logical connection concept). Going by this assumption, the possible combination of lights on any step is either Red – Blue or Green – Yellow. In that senario A, B and C are necessarily true, but not D.

Hence, the correct option is (D).

8. 81, 54, 36, 24 _____

$81^{x\frac{2}{3}}, 54^{x\frac{2}{3}}, 36^{x\frac{2}{3}}, 24^{x\frac{2}{3}}, \underline{16}$

Hence, the correct answer is16.

9. Choice (A): R > P and R > M

Choice (B): S < M and S < P

From this we cannot find relation between R and M.

Choice (C): $P = F > M \Rightarrow P > M$

Choice (D): $P = A < M \Rightarrow P < M$

In (D), P < M is true.

Hence, the correct option is (D).

10. The numbers are consecutive prime numbers and they represent the place value of the letter in the group.

$\therefore$ 17Q is the next term.

Hence, the correct option is (B).

11. The given number may be considered as consecutive odd numbers or consecutive prime number. These

numbers represent the place value of the letter in the terms. If the numbers are considered as odd numbers, the next term should be 21 U, but this is not given. If we consider them as prime numbers, the next term would be 23 W.

Hence, the correct option is (C).

12. In the coding the consonants in the phrase are written in reverse order.

For example,

'best of luck → KCLFTSB

Thus 'a c e t he exam' is represented by MXHTC.

Hence, the correct option is (B).

13. The statement is a polite way of saying "I am willing to help you anytime".

Hence, the correct option is (C).

14. The Statement tells us that there were different approaches and ideologies in the fight for freedom, which means that there were different contributions made to the idea of nationality and freedom. So, our concept Nationalism is a composite of different ideas, therefore 'heterogeneous'.

Hence, the correct option is (D).

15. Separate the eight bags into three groups of 3, 3 and 2. Compare the weights of the two groups containing 3 bags each, by keeping them on either side of the balance.

(i) If they are different in weight, it indicates that the heavier bag is in the group which is heavier of the two groups. Take two bags from the group containing the heavier bag and compare their weights by placing on either side of the balance. If they are unequal it means the heavier one is the required bag, if they are equal it means that the third one in that group is the required bag.

(ii) If the two groups of 3 bags each are equal in weight, it means that the heavier bag is in the group of 2 bags. By comparing their weights, we can find the required bag.

In any case two weightings are sufficient.

Hence, the correct option is (A).

16. Choice (A) has the same relationship as the given pair since both refer to a performer and a place where the public performance takes place.

Hence, the correct option is (A).

17. Hence, the correct option is (A).

18. Hence, the correct option is (D).

19. Hence, the correct option is (B).

TEST

HINTS/SOLUTIONS

1. The given series is of the form 11×1, 13×2, 17×3, 19×4, 23×5.

Hence, the correct option is (B).

2. It is a series formed by writing two consecutive primes, one next to the other. The next number would be 2329.

Hence, the correct option is (A).

3. VIQ, TAC, WJR, VCE, XKS, XEG, _____

The given series is an alternate series.

V^{+1}, W^{+1}, X^{+1}, $\underline{Y}$

I^{+1}, J^{+1}, K^{+1}, $\underline{L}$ and

Q^{+1}, R^{+1}, S^{+1}, $\underline{T}$

Hence, YLT is the next term.

Hence, the correct option is (C).

4. 25 : 343 : : 49 : _____

The given analogy is of the form

$(5)^2 : (7)^3 : : (7)^2 : (11)^3$

where 5, 7 and 11 are consecutive primes.

Hence the missing term is 11^3 i.e., 1331.

Hence, the correct option is (D).

5. BIDM : DLPR : : HSBC : _____

B	I	D	M
$\times 2$	$+3$	$\times 4$	$+5$
D	L	P	R

Similarly,

H	S	B	C
$\times 2$	$+3$	$\times 4$	$+5$
P	V	H	H

Hence, PVHH is the missing term.

Hence, the correct option is (C).

6. 2Y5 : 4W9 : : 3J6 : _____

$2Y5 \Rightarrow 25 = 5^2$ and 25th letter is Y.

$4W9 \Rightarrow 49 = 7^2$ and 49th letter is W.

Similarly, $6^2 = 36 \Rightarrow 3J6$

$(6 + 2) = 8$ and $8^2 = 64$

64th letter is L.

Hence, the missing term is 6L4.

Hence, the correct option is (B).

7. Pilot drives an Aeroplane, similarly Captain navigates a Ship.

Hence, the correct option is (C).

8. $38 - 121 \Rightarrow 3 + 8 = 11$ and $(11)^2 = 121$

$48 - 144 \Rightarrow (4 + 8) = 12$ and $12^2 = 144$

$68 = 196 \Rightarrow (6 + 8) = 14$ and $14^2 = 196$

But $98 - 361 \Rightarrow 9 + 8 = 17$ and $17^2 = 289$

but not 361

Hence, 98 – 361 is the odd one.

Hence, the correct option is (D).

9. $B^{\times 2}$ D^{+3} $G^{\times 4}$ C; $D^{\times 2}$ H^{+3} $K^{\times 4}$ R; $F^{\times 2}$ L^{+3} $O^{\times 4}$ H; $E^{\times 2}$ J^{+3} $M^{\times 4}$ Z

Hence, all the terms except BDGC follow a specific pattern

Hence, the correct option is (A).

10. 6 V 12 $\Rightarrow 6 \times 12 = 72$ and 72nd letter is T but not V

$2H4 \Rightarrow 2 \times 4 = 8$ and 8th letter is H.

$9F18 \Rightarrow 9 \times 18 = 162 = F$

$3R6 \Rightarrow 3 \times 6 = 18 = R$

Hence, 6V12 is the odd one.

Hence, the correct option is (A).

11. All except moon are planets where as moon is a satellite.

Hence, the correct option is (C).

12. Word : P R I V A T E

Pattern : The letter in the word are arranged in the alphabetical order.

Code : A E I P R T V

Similarly the code for PRESENT is E E N P R S T

Hence, the correct option is (B).

13. Word : C H L O R A T E

Pattern : $+1 - 2 + 3 - 4 + 5 - 6 + 7 - 8$

Code : D F O K W U A W

Similarly QFROUBHLN is the code for the word PHOSPHATE.

Hence, the correct option is (D).

14. Word : P R E S S U R E

Pattern : To the letters in the word their opposite pairs is given as the code.

Code : K I V H H F I V

Similarly HLOFGRLM is the code to the word SOLUTION.

Hence, the correct option is (C).

Solutions for questions 15 and 16:

From the given information, we can clearly say that U is at the front of the queue.

From (iii) and (iv), it is clear that Q is the tallest and P is second tallest, and S is the second shortest.

So the arrangement in the ascending order of heights is.

Shortest --- U
S
R
T
P
Tallest ---- Q

15. P is the second tallest.

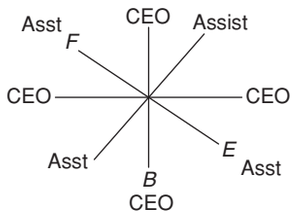
Hence, the correct option is (D).

16. Only T is standing in between P and R.

Hence, the correct option is (A).

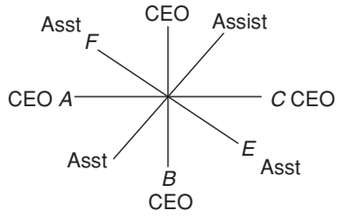
From the statement that each CEO made his assistant to sit to his right we can say that the CEOs and assistants are seated alternately.

From the above and (ii),

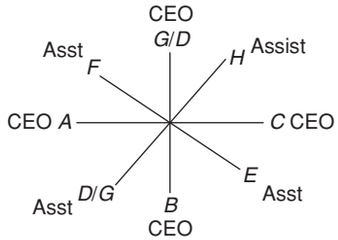


From (i) we can say that C and A are CEOs and also they sat apposite to each other.

From (iii),



From (iv) the arrangement will be



17. F is to the left of A.

Hence, the correct option is (C).

18. H is the assistant of C.

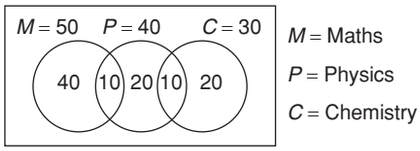
Hence, the correct option is (D).

19. If H is opposite to G, then D is to the right of H.

Hence, the correct option is (D).

Solutions for questions 20 to 24:

Venn diagrams for the failed candidates.



The questions given are solved by using the figure given above.

20. Number of students who failed in atleast one subject

= 40 + 10 + 20 + 10 + 20 = 100.

Hence, the correct option is (B).

21. Number of students who failed in Maths and Physics = 10

Number of students who failed in Physics and Chemistry = 10

Ratio = 10 : 10 = 1 : 1.

Hence, the correct option is (C).

22. Number of students who failed in exactly two subjects = 10 + 10 = 20.

Hence, the correct option is (B).

23. The number of students who failed in only Maths, in only Physics, and in only Chemistry are 40, 20 and 20 respectively .

Hence, the correct option is (A).

24. Number of students who failed in only Maths = 40

Number of students who failed in only Physics and in only Chemistry = 20 + 20 = 40

Hence this is true.

Hence, the correct option is (B).

Solutions for questions 25 to 30:

25. Since N + N = 18, N = 4 or 9 F, which is in thousands place after addition resulted in 5. Hence, F is either 5 or 4 (in case 1 is carried from previous columns).

If F = 4, then N = 9. Then there is carry of 1 to tens position where (A + F + 1) = 8. Since F is taken as 4, A = 3. Hence, there is no carry to hundreds place. Hence, H = 2. In such case there is no carry to thousands place. But F is taken as 4 only.

$\therefore$ Addition will not be satisfied if F is 4.

$\therefore$ F must be 5, Among the given option only (B) satisfied this.

Hence, the correct option is (B).

26. At 10 O' clock, the hour hand is at 10 and the minutes hand is at 12. i.e., they are 50 minute spaces apart. To be together, the minutes hand must gain 50 minutes over the hour hand.

We know that 55 minutes are gained in 60 minutes.

$\therefore$ 50 minutes are gained in $\frac{60}{55} \times 50$

$= 54\frac{6}{11}$ past 10 O' clock.

Hence, the correct option is (A).

27. In 12 hours, they are at right angles 22 times (because two positions of 3 O' clock and 9 O' clock are common). Therefore, in a day they are at right angles for 44 times.

Hence, the correct option is (C).

28. Given that the clock is gaining time uniformly.

At 1:00 pm, it is showing 12:50 pm.

And at 6:00 pm, it is showing 6:05 pm.

So in a span of 5 hrs the clock is gaining 15 minutes.

$\Rightarrow$ The clock is gaining 3 minutes per hour.

So at 4:20 pm, the clock had shown the correct time.

Hence, the correct option is (B).

29. 21st March, 2000 is a Monday and the year is a leap year.

So, none of the next 3 years is a leap year.

So, the day of the week will be 3 days beyond Monday i.e., Thursday.

Hence, the correct option is (C).

30.

Day before yesterday (1) Today (3) Day of watching the movie (Wednesday)

The day on which the ticket was booked was the sixth day prior to Wednesday i.e., Thursday.

Hence, the correct option is (B).