Basic Mechanical Engineering MCQs

Part 3

1) Which of the following is a power transmitting element?

a. Nuts and bolts

b. Sprockets and chains

c. Axles

d. All of the above

ANSWER: Sprockets and chains

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2) Machine elements such as bearings are _____

a. holding type elements

b. supporting type elements

c. power transmitting elements

d. all of the above

ANSWER: supporting type elements

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3) The shaft directly connected to the power source is called as _____

a. line shaft

b. counter shaft

c. both a. and b.

d. none of the above

ANSWER: line shaft

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4) Which of the following is a machine shaft?

a. Line shaft

b. Counter shaft

c. Crankshaft

d. All of the above

ANSWER: Crankshaft

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5) Which of the following statements is/are true?

a. Axles are used to transmit power

b. Shafts and axles are rotating elements

c. Shafts transmit power while axles do not transmit power

d. All of the above

ANSWER: Shafts transmit power while axles do not transmit power

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6) Which flat belt drive system has two pulleys mounted on driven shaft and one pulley on driving shaft?

a. Multiple belt drive

b. Cone pulley drive

c. Fast and loose pulley drive

d. None of the above

ANSWER: Fast and loose pulley drive

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7) Which of the following statements are false for belt drives?
1. Belt drive is used in applications having constant speed drive
2. Belt drives can be used at extremely high speeds
3. Belt drives have low power transmitting capacity
4. Belt drives need continuous lubrication

a. 1 and 2

b. 1, 2 and 3

c. 2, 3 and 4

d. 1, 2 and 4

ANSWER: 1, 2 and 4

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8) Determine power rating of an electric motor if it runs at 1440 r.p.m and line shaft transmits torque of 75 Nm. Assume Reduction ratio = 1.6

a. 10.36 kW

b. 11.3 kW

c. 7.068 kW

d. 9.12 kW

ANSWER: 7.068 kW

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9) In simple gear trains the direction of rotation of driven gear is opposite to the direction of rotation of driving gear only if_____

a. even number of idler gears are present

b. odd number of idler gears are present

ANSWER: even number of idler gears are present

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10) Why is an idler gear used in gear trains?

a. To obtain minimum centre distance between driving and driven shaft

b. To have required direction of rotation

c. Both a. and b.

d. None of the above

ANSWER: To have required direction of rotation

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11) The process of creating mechanisms and shapes of mechanical elements for a machine to get the desired output for a given input is called as ___

a. analysis

b. innovation

c. synthesis

d. designing

ANSWER: synthesis

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12) Which of the following is not a reason to design and redesign a product?

a. Optimum design

b. Innovation

c. Appearance

d. None of the above

ANSWER: None of the above

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13) In design process, which process is followed after selecting the material?

a. Selecting factor of safety

b. Synthesis

c. Analysis of forces

d. Determining mode of failure

ANSWER: Determining mode of failure

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14) Which design consideration deals with appearance of the product?

a. Ergonomics

b. Aesthetics

c. System design

d. Creative design

ANSWER: Aesthetics

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15) The objective of considering ergonomics in machine design is to ____
1. decrease physical stresses

2. make user adapt to the machine
3. make machine fit for the user
4. improve appearance of the product

a. only 2

b. 3 and 4

c. 1 and 3

d. 1, 3 and 4

ANSWER: 1 and 3

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16) Hardness of a material enables it to resist _____

a. abrasion

b. penetration

c. plastic deformation

d. all of the above

ANSWER: all of the above

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17) The component deforming progressively under load at high temperatures is called as

a. Resilience

b. Creep

c. Fatigue

d. All of the above

ANSWER: Creep

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18) Which of the following ferrous alloys can be casted into intricate shapes?

a. Plain carbon steels

b. Alloy steels

c. Cast irons

d. All of the above

ANSWER: Cast irons

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19) Which of the following is not a property of copper alloy?

a. High electrical conductivity

b. High thermal conductivity

c. High strength

d. None of the above

ANSWER: High strength

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20) What is the percentage of carbon in plain carbon steel?

a. 60 to 80%

b. Less than 1.7%

c. Less than 7%

d. None of the above

ANSWER: Less than 1.7%

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21) What are the minimum number of kinematic pairs required in a kinematic chain?

a. 2 kinematic pairs

b. 3 kinematic pairs

c. 4 kinematic pairs

d. None of the above

ANSWER: 4 kinematic pairs

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22) According to Grashof's law in a four bar chain, one link can complete a rotation only

if _____

a. (sum of longest and shortest link length) ≥ (sum of the remaining two link lengths)

b. (sum of longest and shortest link length) ≤ (sum of the remaining two link lengths)

c. (sum of longest and shortest link length) = (sum of the remaining two link lengths)

d. None of the above

ANSWER: (sum of longest and shortest link length) ≤ (sum of the remaining two link lengths)

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23) Beam engine mechanism is an example of

a. double crank mechanism

b. double lever mechanism

c. crank and lever mechanism

d. none of the above

ANSWER: crank and lever mechanism

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24) Which of the following inversions of four bar chain, convert oscillatory motion from one lever to another lever?

a. Ackermann steering gear mechanism

b. Beam engine mechanism

c. Coupled wheels of locomotive

d. All of the above

ANSWER: Ackermann steering gear mechanism

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25) In the slider crank mechanism shown below, link 2 is fixed. This second inversion of slider crank mechanism is observed in _____

a. Reciprocating air compressor

b. I. C. engine

c. Whitworth quick return mechanism

d. Crank and slotted lever quick return mechanism

ANSWER: Whitworth quick return mechanism

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26) Which of the following is a not a surface finishing process?

a. Honing

b. Buffing

c. Lapping

d. Turning

ANSWER: Turning

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27) Match the following Manufacturing processes with their Types and select the correct option.

1. Metal forming ---------- A. Grinding
2. Surface finish ---------- B. Rivetting
3. Sheet metal working ---------- C. Extrusion
4. Metal joining ----------D. Blanking

a. 1 – A, 2 – C, 3 – D, 4 – B

b. 1 – C, 2 – A, 3 – D, 4 – B

c. 1 – B, 2 – A, 3 – D, 4 – C

d. 1 – D, 2 – B, 3 – A, 4 – C

ANSWER: 1 – C, 2 – A, 3 – D, 4 – B

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28) Which of the following factors reduce strength of casted components?

a. Blow holes

b. Gas cavities

c. Non-metallic incursions

d. All of the above

ANSWER: All of the above

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29) In which of the following processes, material is neither added nor removed but is deformed into desired shape?

a. Surface finishing process

b. Metal forming process

c. Casting

d. Machining

ANSWER: Metal forming process

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30) Which of the following component(s) is/are manufactured by powder metallurgy processes?

a. Gears

b. Cutting tools

c. Bearing bushes

d. All of the above

ANSWER: All of the above
