

Mechanical Engineering- I.C. Engines Important MCQs

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1. The working cycle in case of four stroke engine is completed in following number of revolutions of crankshaft

- (a) 1/2
- (b) 1
- (c) 2
- (d) 4
- (e) 8.

Ans: c

2. In a diesel engine, the fuel is ignited by

- (a) spark
- (b) injected fuel
- (c) heat resulting from compressing air that is supplied for combustion
- (d) ignition
- (e) combustion chamber.

Ans: c

3. Scavenging air in diesel engine means

- (a) air used for combustion sent under pres-sure
- (b) forced air for cooling cylinder
- (c) burnt air containing products of combustion
- (d) air used for forcing burnt gases out of engine's cylinder during the exhaust period
- (e) air fuel mixture.

Ans: d

4. Supercharging is the process of

- (a) supplying the intake of an engine with air at a density greater than the density of the surrounding atmosphere
- (b) providing forced cooling air
- (c) injecting excess fuel for raising more load
- (d) supplying compressed air to remove combustion products fully
- (e) raising exhaust pressure.

Ans: a

5. Does the supply of scavenging air at a density greater than that of atmosphere mean engine is supercharged ?

- (a) yes
- (b) no
- (c) to some extent
- (d) unpredictable
- (e) depends on other factors.

Ans: b

6. The ratio of indicated thermal efficiency to the corresponding air standard cycle efficiency is called

- (a) net efficiency
- (b) efficiency ratio
- (c) relative efficiency
- (d) overall efficiency
- (e) cycle efficiency.

Ans: c

7. Compression ratio of LC. engines is

- (a) the ratio of volumes of air in cylinder before compression stroke and after compression stroke
- (b) volume displaced by piston per stroke and clearance volume in cylinder
- (c) ratio of pressure after compression and before compression
- (d) swept volume/cylinder volume
- (e) cylinder volume/swept volume.

Ans: a

8. The air standard efficiency of an Otto cycle compared to diesel cycle for the given compression ratio is

- (a) same
- (b) less
- (c) more
- (d) more or less depending on power rating
- (e) unpredictable.

Ans: c

9. The calorific value of gaseous fuels is expressed in terms of

- (a) kcal
- (b) kcal/kg
- (c) kcal/m²
- (d) kcal/n?
- (e) all of the above.

Ans: d

11. If the intake air temperature of I.C. engine increases, its efficiency will

- (a) increase
- (b) decrease
- (c) remain same
- (d) unpredictable
- (e) depend on other factors.

Ans: b

12. All heat engines utilize

- (a) low heat value of oil
- (b) high heat value of oil
- (c) net calorific value of oil
- (d) calorific value of fuel
- (e) all of the above.

Ans: a

13. An engine indicator is used to determine the following

- (a) speed
- (b) temperature
- (c) volume of cylinder
- (d) m.e.p. and I.H.P.
- (e) BHP.

Ans: d

14. Fuel oil consumption guarantees for I.C. engine are usually based on

- (a) low heat value of oil
- (b) high heat value of oil
- (c) net calorific value of oil
- (d) calorific value of fuel

(e) all of the above.

Ans: b

17. If the compression ratio of an engine working on Otto cycle is increased from 5 to 7, the %age increase in efficiency will be

- (a) 2%
- (b) 4%
- (c) 8%
- (d) 14%
- (e) 27%.

Ans: d

18. In case of gas turbines, the gaseous fuel consumption guarantees are based on

- (a) high heat value
- (b) low heat value
- (c) net calorific value
- (d) middle heat value
- (e) calorific value.

Ans: b

19. In a typical medium speed 4-stroke cycle diesel engine the inlet valve

- (a) opens at 20° before top dead center and closes at 35° after the bottom dead center
- (b) opens at top dead center and closes at bottom dead center
- (c) opens at 10° after top dead center and closes 20° before the bottom dead center
- (d) may open or close anywhere
- (e) remains open for 200° .

Ans: a

20. The pressure and temperature at the end of compression stroke in a petrol engine are of the order of

- (a) 4 - 6 kg/cm² and 200 - 250°C
- (b) 6 - 12 kg/cm² and 250 - 350°C
- (c) 12 - 20 kg/cm² and 350 - 450°C
- (d) 20 - 30 kg/cm² and 450 - 500°C
- (e) 30 - 40 kg/cm² and 500 - 700°C.

Ans: b

21. The pressure at the end of compression in the case of diesel engine is of the order of

- (a) 6 kg/cm
- (b) 12kg/cmz
- (c) 20 kg/cmz
- (d) 27.5 kg/cmz
- (e) 35 kg/cm

Ans: e

22. The maximum temperature in the I.C. engine cylinder is of the order of

- (a) 500- 1000°C
- (b) 1000- 1500°C
- (c) 1500-2000°C
- (d) 2000-2500°C
- (e) 2500-3000°C

Ans: d

23. The thermal efficiencty of a diesel cycle having fixed compression ratio, with increase in cut-off ratio will

- (a) increase
- (b) decrease
- (c) be independent
- (d) may increase or decrease depending on other factors
- (e) none of the above.

Ans: b

24. Pick up the wrong statement

- (a) 2-stroke engine can run in any direction
- (b) In 4-stroke engine, a power stroke is obtained in 4-strokes
- (c) thermal efficiency of 4-stroke engine is more due to positive scavenging
- (d) petrol engines work on otto cycle
- (e) petrol engines occupy more space than diesel engines for same power output.

Ans: e

25. Combustion in compression ignition engines is

- (a) homogeneous
- (b) heterogeneous
- (c) both (a) and (b)
- (d) laminar
- (e) turbulent.

Ans: b

26. The fuel in diesel engine is normally injected at pressure of

- (a) 5-10 kg/cm²
- (b) 20-25 kg/cm²
- (c) 60-80 kg/cm²
- (d) 90-130 kg/cm²
- (e) 150-250 kg/cm²

Ans: d

27. The specific fuel consumption per BHP hour for diesel engine is approximately

- (a) 0.15 kg
- (b) 0.2 kg
- (c) 0.25 kg
- (d) 0.3 kg
- (e) 0.35 kg.

Ans: b

28. The temperature of interior surface of cylinder wall in normal operation is not allowed to exceed

- (a) 80°C
- (b) 120°C
- (c) 180°C
- (d) 240°C
- (e) 320°C.

Ans: c

30. Crankcase explosion in I.C. engines usually occurs as

- (a) first a mild explosion followed by a big explosion
- (b) first a big explosion followed by a mild explosion
- (c) both mild and big explosions occur simultaneously
- (d) never occurs
- (e) unpredictable.

Ans: a

31. Compression loss in I.C engines occurs due to

- (a) leaking piston rings
- (b) use of thick head gasket
- (c) clogged air-inlet slots
- (d) increase in clearance volume caused by bearing-bushing wear
- (e) all of the above.

Ans: e

32. The specific fuel consumption per BHP hour for a petrol engine is approximately

- (a) 0.15 kg
- (b) 0.2 kg
- (c) 0.25 kg
- (d) 0.3kg
- (e) 0.35 kg.

Ans: c

33. The air requirement of a petrol engine during starting compared to theoretical air required for complete combustion is

- (a) more
- (b) less
- (c) same
- (d) may be more or less depending on engine capacity
- (e) unpredictable.

Ans: b

34. The inlet valve of a four stroke cycle I.C engine remains open for nearly

- (a) 180°
- (b) 125°
- (c) 235°
- (d) 200°
- (e) 275°.

Ans: c

35. Which of the following is not an internal combustion engine

- (a) 2-stroke petrol engine
- (b) 4-stroke petrol engine
- (c) diesel engine
- (d) gas turbine
- (e) steam turbine.

Ans: e

36. Pick up the false statement

- (a) Thermal efficiency of diesel engine is about 34%
- (b) Theoretically correct mixture of air and petrol is approximately 15 : 1
- (c) High speed compression engines operate on dual combustion cycle
- (d) Diesel engines are compression ignition engines
- (e) S.I. engines are quantity-governed engines.

Ans: e

37. If one cylinder of a diesel engine receives more fuel than the others, then for that cylinder the

- (a) exhaust will be smoky
- (b) piston rings would stick into piston grooves
- (c) exhaust temperature will be high

- (d) engine starts overheating
- (e) scavenging occurs.

Ans: e

38. The output of a diesel engine can be increased without increasing the engine revolution or size in following way

- (a) feeding more fuel
- (b) increasing flywheel size
- (c) heating incoming air
- (d) scavenging
- (e) supercharging.

Ans: e

39. If the temperature of intake air in IC engines is lowered, then its efficiency will

- (a) increase
- (b) decrease
- (c) remain same
- (d) increase upto certain limit and then decrease
- (e) decrease upto certain limit and then increase.

Ans: a

40. In a typical medium speed 4-stroke cycle diesel engine

- (a) compression starts at 35° after bottom dead center and ends at top dead center
- (b) compression starts at bottom dead center and ends at top dead center
- (c) compression starts at 10° before bottom dead center and, ends just before top dead center
- (d) may start and end anywhere
- (e) none of the above.

Ans: a

41. For the same compression ratio

- (a) Otto cycle is more efficient than the Diesel
- (b) Diesel cycle is more efficient than Otto
- (c) both Otto and Diesel cycles are, equally efficient
- (d) compression ratio has nothing to do with efficiency
- (e) which is more efficient would depend on engine capacity.

Ans: a

42. The process of breaking up of a liquid into fine droplets by spraying is called

- (a) vaporisation
- (b) carburetion
- (c) ionisation
- (d) injection
- (e) atomisation.

Ans: e

43. As a result of detonation in an I.C. engine, following parameter attains very high value

- (a) peak pressure
- (b) rate of rise of pressure
- (c) rate of rise of temperature
- (d) peak temperature
- (e) rate of rise of horse-power.

Ans: b

44. Which of the following statements is correct?

- (a) All the irreversible engines have same efficiency
- (b) All the reversible engines have same efficiency
- (c) Both Rankine and Caront cycles have same efficiency between same temperature limits
- (d) All reversible engines working between same temperature limits have same-efficiency
- (e) Between same temperature limits, both petrol and diesel engines have same efficiency.

Ans: d

45. Most high speed compression engines operate on

- (a) Diesel cycle
- (b) Otto cycle
- (c) Dual combustion cycle
- (d) Special type of air cycle
- (e) Carnot cycle.

Ans: c

48. The accunmulation of carbon in a cylinder results in increase of

- (a) clearance volume
- (b) volumetric efficiency
- (c) ignition time
- (d) effective compression ratio
- (e) valve travel time.

Ans: d

49. Which of the following medium is compressed in a Diesel engine cylinder

- (a) air aione
- (b) air and fuel
- (c) air and lub oil
- (d) fuel alone
- (e) air, fuel and lub oil.

Ans: a

54. The air-fuel ratio of the petrol engine is controlled by

- (a) fuel pump
- (b) governor
- (c) injector
- (d) carburettor
- (e) scavenging.

Ans: d

55. In a typical medium speed, 4-stroke cycle diesel engine

- (a) fuelinjection starts at 10° before to dead center and ends at 20° after tor dead center
- (b) fuel injection starts at top dead center and ends at 20° after top dead center
- (c) fuel injection starts at just before top dead center and ends just after top deac center
- (d) may start and end anywhere
- (e) none of the above.

Ans: a

56. Diesel fuel, compared to petrol is

- (a) less difficult to ignite
- (b) just about the same difficult to ignite
- (c) more difficult to ignite
- (d) highly ignitable
- (e) none of the above.

Ans: c

57. In diesel engine the diesel fuel injected into cylinder would burn instantly at about compressed air temperature of

- (a) 250°C
- (b) 500°C
- (c) 1000°C
- (d) 150°C
- (e) 2000°C.

Ans: c

58. When crude oil is heated, then which of the following hydrocarbon is given off first.

- (a) kerosene
- (b) gasoline
- (c) paraffin
- (d) diesel
- (e) natural gas.

Ans: e

59. The rating of a diesel engine, with increase in air inlet temperature, will

- (a) increase linearly
- (b) decrease linearly
- (c) increase parabolically
- (d) decrease parabolically
- (e) first decrease linearly and then increase parabolically.

Ans: b

60. A 75 cc engine has following parameter as 75 cc

- (a) fuel tank capacity
- (b) lub oil capacity
- (c) swept volume
- (d) cylinder volume
- (e) clearance volume.

Ans: c

61. A heat engine utilises the

- (a) calorific value of oil
- (b) low heat value of
- (c) high heat value of oil
- (d) mean heat value of oil
- (e) all of the above.

Ans: c

62. Gaseous-fuel guarantees are based on

- (a) calorific value of oil
- (b) low heat value of oil
- (c) high heat value of oil
- (d) mean heat value of oil
- (e) all of the above.

Ans: b

63. Fuel consumption of diesel engines is not guaranteed at one quarter load because at such low loads

- (a) the friction is high
- (b) the friction is unpredictable
- (c) the small difference in cooling water temperature or in internal friction has a disproportionate effect

- (d) the engine is rarely operated
- (e) none of the above.

Ans: c

64. Polymerisation is a chemical process in which molecules of a compound become

- (a) larger
- (b) slowed down
- (c) smaller
- (d) liquid
- (e) gaseous.

Ans: a

65. The term scavenging is generally associated with

- (a) 2-stroke cycle engines
- (b) 4-stroke cycle engines
- (c) aeroplane engines
- (d) diesel engines
- (e) high efficiency engines.

Ans: e

66. In diesel engine, the compression ratio in comparison to expansion ratio is

- (a) same
- (b) less
- (c) more
- (d) variable
- (e) more/less depending on engine capacity.

Ans: c

67. The cam shaft of a four stroke I.C. engine running at 1500 rpm will run at

- (a) 1500 rpm
- (b) 750 rpm
- (c) 3000 rpm
- (d) any value independent of engine speed
- (e) none of the above.

Ans: b

68. Engine pistons are usually made of aluminium alloy because it

- (a) is lighter
- (b) wears less
- (c) absorbs shocks
- (d) is stronger
- (e) does not react with fuel and lub oil.

Ans: a

69. Most high speed compression engines operate on

- (a) Otto cycle
- (b) Diesel cycle
- (c) Dual cycle
- (d) Carnot cycle
- (e) Two stroke cycle.

Ans: c

70. The specific fuel consumption of a petrol engine compared to diesel engine of same H.P. is

- (a) same

- (b) more
- (c) less
- (d) less or more depending on operating conditions
- (e) unpredictable.

Ans: b

71. A diesel engine as compared to petrol engine (both running at rated load) is

- (a) more efficient
- (b) less efficient
- (c) equally efficient
- (d) unpredictable
- (e) other factors will decide it.

Ans: a

72. The size of inlet valve of an engine in comparison to exhaust valve is

- (a) more
- (b) less
- (c) same
- (d) more/less depending on capacity of engine
- (e) varies from design to design.

Ans: b

74. In a cycle, the spark lasts roughly for

- (a) 1 sec
- (b) 0.1 sec
- (c) 0.01 sec
- (d) 0.001 sec
- (e) 0.0001 sec.

Ans: d

75. Which of the following is false statement :

Excess quantities of sulphur in diesel fuel are objectionable because it may cause the following

- (a) piston ring and cylinder wear
- (b) formation of hard coating on piston skirts
- (c) oil sludge in the engine crank case
- (d) detonation
- (e) forms corrosive acids.

Ans: d

76. Which of the following is false statement. Some of the methods used to reduce diesel smoke are as follows

- (a) using additives in the fuel
- (b) engine derating i.e. reducing the maximum flow of fuel
- (c) increasing the compression ratio
- (d) adherence to proper fuel specification
- (e) avoidance of overloading.

Ans: c

77. The fuel air ratio in a petrol engine fitted with suction carburettor, operating with dirty air filter as compared to clean filter will be

- (a) higher
- (b) lower
- (c) remain unaffected
- (d) unpredictable

(e) none of the above.

Ans: a

78. Pick up the wrong statement about supercharging

- (a) supercharging reduces knocking in diesel engines
- (b) there can be limited supercharging in petrol engines because of detonation
- (c) supercharging at high altitudes is essential
- (d) supercharging results in fuel economy
- (e) supercharging is essential in aircraft engines.

Ans: d

79. The actual volume of fresh charge admitted in 4-stroke petrol engine is

- (a) equal to stroke volume
- (b) equal to stroke volume and clearance volume
- (c) less than stroke volume
- (d) more than stroke volume
- (e) more than cylinder volume.

Ans: c

80. The magneto in an automobile is basically

- (a) transformer
- (b) d.c. generator
- (c) capacitor
- (d) magnetic circuit
- (e) a.c. generator.

Ans: b

81. The reason for supercharging in any engine is to

- (a) increase efficiency
- (b) increase power
- (c) reduce weight and bulk for a given out-put
- (d) effect fuel economy
- (e) none of the above.

Ans: c

82. The operation of forcing additional air under pressure in the engine cylinder is known as

- (a) scavenging
- (b) turbulence
- (c) supercharging
- (d) pre-ignition
- (e) dissociation and carburetion of fuel.

Ans: c

83. Supercharging is essential in

- (a) diesel engines
- (b) gas turbines
- (c) petrol engines
- (d) aircraft engines
- (e) marine engines.

Ans: d

84. The minimum cranking speed in case of petrol engine is about

- (a) half the operating speed
- (b) one-fourth of operating speed
- (c) 250-300 rpm

- (d) 60-80 rpm
- (e) 10-20 rpm

Ans: d

85. In a typical medium speed 4 stroke cycle diesel engine

- (a) exhaust valve opens at 35° before bottom dead center and closes at 20° after top dead center
- (b) exhaust valve opens at bottom dead center and closes at top dead center
- (c) exhaust valve opens just after bottom dead center and closes just before top dead center
- (d) may open and close anywhere
- (e) none of the above is true.

Ans: a

86. Flash point of fuel oil is

- (a) minimum temperature to which oil is heated in order to give off inflammable vapours in sufficient quantity to ignite momentarily when brought in contact with a flame
- (b) temperature at which it solidifies or congeals
- (c) temperature at which it catches fire without external aid
- (d) indicated by 90% distillation temperature, i.e. when 90% of sample oil has distilled off
- (e) none of the above.

Ans: a

87. The mean effective pressure obtained from engine indicator indicates the

- (a) maximum pressure developed
- (b) minimum pressure
- (c) instantaneous pressure at any instant
- (d) exhaust pressure
- (e) average pressure.

Ans: e

88. For the same power developed in I.C. engines, the cheaper system is

- (a) naturally aspirated
- (b) supercharged
- (c) centrifugal pump
- (d) turbo charger
- (e) none of the above.

Ans: b

89. Installation of supercharger on a four-cycle diesel engine can result in the following percentage increase in power

- (a) upto 25%
- (b) upto 35%
- (c) upto 50%
- (d) upto 75%
- (e) upto 100%.

Ans: e

90. Scavenging is usually done to increase

- (a) thermal efficiency
- (b) speed
- (c) power output
- (d) fuel consumption
- (e) all of the above.

Ans: c

91. Which of the following is the lightest and most volatile liquid fuel

- (a) diesel
- (b) kerosene
- (c) fuel oil
- (d) gasoline
- (e) lub oil.

Ans: d

92. The theoretically correct air fuel ratio for petrol engine is of the order of

- (a) 6 : 1
- (b) 9 : 1
- (c) 12 : 1
- (d) 15 : 1
- (e) 20 : 1.

Ans: d

93. Air fuel ratio for idling speed of a petrol engine is approximately

- (a) 1 : 1
- (b) 5 : 1
- (c) 10:1
- (d) 15 : 1
- (e) 20 : 1.

Ans: c

94. Air fuel ratio at which a petrol engine can not work is

- (a) 8 : 1
- (b) 10 : 1
- (c) 15 : 1
- (d) 20 : 1 and less
- (e) will work at all ratios.

Ans: d

95. For maximum power generation, the air fuel ratio for a petrol engine for vehicles, is of the order of

- (a) 9 : 1
- (b) 12 : 1
- (c) 15 : 1
- (d) 18 : 1
- (e) 20: 1.

Ans: b

96. The following volume of air is required for consuming 1 liter of fuel by a four stroke engine

- (a) 1 m³
- (b) 5 m³
- (c) 5-6 m³
- (d) 9-10 m³
- (e) 15-18 m³.

Ans: d

97. Pour point of fuel oil is the

- (a) minimum temperature to which oil is heated in order to give off inflammable vapours in sufficient quantity to ignite momentarily when brought in contact with a flame
- (b) temperature at which it solidifies or congeals

- (c) it catches fire without external aid
 - (d) indicated by 90% distillation temperature i.e., when 90% of sample oil has distilled off
 - (e) temperature at which it flows easily.
- Ans: b

98. A 5 BHP engine running at full load would consume diesel of the order of

- (a) 0.3 kg/hr
- (b) 1 kg/hr
- (c) 3 kg/hr
- (d) 5 kg/hr
- (e) 10 kg/hr.

Ans: b

99. Diesel engine can work on very lean air fuel ratio of the order of 30 : 1. A petrol engine can also work on such a lean ratio provided

- (a) it is properly designed
- (b) best quality fuel is used
- (c) can not work as it is impossible
- (d) flywheel size is proper
- (e) engine cooling is stopped.

Ans: c

100. A diesel engine has

- (a) 1 valve
- (b) 2 valves
- (b) 3 valves
- (d) 4 valves
- (e) no valve.

Ans: c

101. A hmh flame speed is obtained in diesel engine when air fuel ratio is

- (a) uniform throughout the mixture
- (b) chemically correct mixture
- (c) about 3-5% rich mixture
- (d) about 10% rich mixture
- (e) about 10% lean mixture.

Ans: d

102. The knock in diesel engine occurs due to

- (a) instantaneous and rapid burning of the first part of the charge
- (b) instantaneous atuo ignition of last part of charge
- (c) delayed burning of the first part of the charge
- (d) reduction of delay period
- (e) all ot the above.

Ans: a

103. The air-fuel ratio in petrol engines-is controlled by

- (a) controlling valve opening/closing
- (b) governing
- (c) injection
- (d) carburettion
- (e) scavenging and supercharging.

Ans: d

104. Volatility of diesel fuel oil is

- (a) minimum temperature to which oil is heated in order to give off inflammable vapours in sufficient quantity to ignite momentarily when brought in contact with a flame
- (b) temperature at which it solidifies or congeals
- (c) it catches fire without external aid
- (d) indicated by 90% distillation temperature, i.e., when 90% of sample oil has distilled off
- (e) temperature at which it flows easily.

Ans: d

105. Which is more viscous lub oil

- (a) SEA 30
- (b) SAE 4£
- (c) SAE 50
- (d) SAE 70
- (e) SAE 80.

Ans: e

106. In the opposed piston diesel engine, the combustion chamber is located

- (a) above the piston & below the piston
- (c) between the pistons
- (d) any where
- (e) there is no such criterion.

Ans: c

107. A stoichiometric air-fuel ratio is

- (a) chemically correct mixture
- (b) lean mixture
- (c) rich mixture for idling
- (d) rich mixture for over loads
- (e) the ratio used at full rated parameters.

Ans: a

108. In a naturally aspirated diesel engine, the air is supplied by

- (a) a supercharger
- (b) a centrifugal blower
- (c) a vacuum chamber
- (d) an injection tube
- (e) forced chamber

Ans: c

109. In loop scavenging, the top of the piston is

- (a) flat
- (b) contoured
- (c) slanted
- (d) depressed
- (e) convex shaped.

Ans: b

110. In the crankcase method of scavenging, the air pressure is produced by

- (a) supercharger
- (b) centrifugal pump
- (c) natural aspirator
- (d) movement of engine piston
- (e) reciprocating pump.

Ans: d