

First Edition

S.I. AND C.I. ENGINE

Objective Questions with Answer

FOR MVI
and JE
level
Exams



350+
MCQ

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Q1. The lubricating oil is circulated in an IC engine by

- (a) roots blower
- (b) centrifugal pump
- (c) positive displacement pump
- (d) natural circulation thermo siphon

Ans: (c)

Q2. In an SI engine, the combustion:

- (a) is turbulent flame propagation through a homogeneous mixture of fuel and air
- (b) causes adiabatic flame temperature
- (c) is by laminar flame propagation
- (d) is simultaneous combustion at many points in the combustion chamber.

Ans: (a)

Q3. 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

Ans: (c)

Q4. The engine power is not absorbed as friction in:

- (a) Rope brake dynamometer
- (b) Prony brake dynamometer
- (c) Eddy current dynamometer
- (d) Hydraulic dynamometer

Ans: (c)

Q5. 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

Ans: (c)

Q6 Select the incorrect statement from below about good quality lubricating oils.

- (a) They assist in sealing of piston during operation
- (b) They should have low viscosity at low temperature for ease of starting (c)
- They reduce frictional resistance in bearings
- (d) They do not affect the mechanical efficiency of the engine

Ans: (d)

Q7. Scavenging air in diesel engine means

- (a) air used for combustion sent under pressure
- (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

Ans:(d)

Q8. The piston-cylinder arrangement of a reciprocating engine along with connecting rod, crankshaft and fly wheel

- (a) Has the flywheel as a fixed link
- (b) is a mechanism with 2 turning pairs
- (c) is a kinematic chain
- (d) is a form of slider-crank mechanism

Ans: (c)

Q9. 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

Ans: (a)

Q10. Select the incorrect statement from following about an air cooled IC engine.

- (a) Radiation plays a significant role in the dissipation of heat
- (b) The air is blown over the fins
- (c) The heat is dissipated to atmosphere by convection from fins placed on cylinder walls
- (d) The excess heat of combustion is conducted through the cylinder wall to the exterior of the wall.

Ans: (a)

Q11. 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

Ans: (b)

Q12. 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

Ans: (c)

Q13. In practice, the pressure rise in an SI engine during combustion is lower than that in an air standard Otto cycle for the same heat input because of

- (a) variable specific heat and dissociation
- (b) detonation in the farther regions from the spark plug
- (c) leakage past the piston rings
- (d) resistance to flow in the air filter

Ans: (a)

Q14. Compression ratio of I.C. 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

Ans: (a)

Q15. 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

Ans: (c)

Q16. The calorific value of gaseous fuels is expressed in terms of

- (a) kcal
- (b) kcal/kg
- (c) kcal/m²
- (d) kcal/m³

Ans: (d)

Q17. In an IC engine, combustion was found to proceed during the expansion stroke also. The reason could be:

- (a) rich mixture with ignition advance
- (b) high calorific value of the fuel
- (c) weak mixture without ignition advance
- (d) weak mixture with ignition advance

Ans: (a)

Q18. If the intake air temperature of I.C. engine increases, its efficiency will

- (a) increase
- (b) decrease
- (c) remain same

(d) unpredictable

Ans: (b)

Q19. 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

Ans: (a)

Q20. William's line method, Morse test and motoring test can all be used to find which of the following for an IC engine?

- (a) Brake power
- (b) Indicated mean effective pressure
- (c) Frictional power
- (d) Indicated power

Ans: (c)

Q21. 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.

Ans: (d)

Q22. 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

Ans: (b)

Q23. If the compression ratio of an engine working on Otto cycle is increased from 5 to 7, the percentage increase in efficiency will be

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

Ans: (d)

Q24. In an IC engine, boundary lubrication is likely to occur between surfaces with relative velocity during

- (a) idling
- (b) starting and stopping
- (c) constant speed operation
- (d) maximum power condition

Ans: (d)

Q25. 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

Ans: (b)

Q26. 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

Ans: (a)

Q27. In two-stroke engines, the type of lubrication system employed in the crankcase is the

- (a) mist lubrication system

- (b) wet sump lubrication system
- (c) dry sump lubrication system
- (d) splash lubrication system

Ans: (a)

Q28. 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

Ans: (b)

Q29. 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

Ans: (d)

Q30. 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 occupy more space than diesel engines for same power output.

Ans: (d)

Q31. Which of the following devices is used to find the composition of exhaust gases from IC engines?

- (a) Rope dynamometer
- (b) Bomb calorimeter
- (c) Barometer
- (d) Orsat apparatus

Ans: (d)

Q32. Combustion in compression ignition engines is

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

Ans: (b)

Q33. The air-standard efficiency of an Otto cycle is given by which one of the following equation ? Where r_c = adiabatic index γ is the compression ratio,

- (a) $2 - \frac{1}{r_c^{\gamma-1}}$
- (b) $1 + \frac{1}{r_c^{\gamma-1}}$
- (c) $1 - \frac{1}{r_c^{\gamma-1}}$
- (d) $1 - \frac{1}{r_c^{\gamma+1}}$

Ans: (c)

Q34. The function of a _____ is to maintain the speed of an internal combustion engine within specified limits for varying load conditions.

- (a) belt
- (b) gyroscope
- (c) governor
- (d) gear

Ans: (c)

Q35. 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

Ans: (d)

Q36. Which of the following is an advantage of the liquid cooling system as compared to air cooling system for an IC Engine ?

- (a) Uniform cooling
- (b) Power absorbed by the pump is considerable
- (c) Light in weight
- (d) Low cost

Ans: (a)

Q37. 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

Ans: (b)

Q38. 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

Ans: (c)

Q39. 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

Ans: (a)

Q40. 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) all of the above.

Ans: (d)

Q41. In CI engines the ignition delay period is counted from the start of injection to the

- (a) start of after burning
- (b) start of controlled combustion
- (c) end of combustion
- (d) point where the pressure-time curve separates from the motoring curve

Ans: (d)

Q42. The common lubrication system used in IC Engines of an automobile is called the ____ system.

- (a) splash
- (b) pressure
- (c) gravity
- (d) petroil

Ans: (b)

Q43. The specific fuel consumption per BH hour for a petrol engine is approximately

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

Ans: (c)

Q44. 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

Ans:(b)

Q45. The inlet valve of a four stroke cycle I.C engine remains open for nearly

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

Ans: (c)

Q46. Which of the following is not an internal combustion engine

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

Ans: (d)

Q47. Which is the first stage of combustion in an SI engine ?

- (a) Ignition lag
- (b) Flame propagation
- (c) Rapid combustion
- (d) After burning

Ans: (a)

Q48. 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) S.I. engines are quality-governed engines.

Ans: (d)

Q49. 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) scavenging occurs.

Ans: (d)

Q50. Which of the following is a 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

Ans: (d)

Q51. 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) None of these

Ans: (d)

(Note: Installation of supercharger on a four-cycle diesel engine can result in the 100% percentage increase in power)

Q52. 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) supercharging.

Ans: (d)

Q53. 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 in-crease.

Ans: (a)

Q54. 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

Ans: (a)

Q55. 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)

Q56. The process of breaking up or a liquid into fine droplets by spraying is called

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

Ans: (d)

Q57. 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

Ans: (b)

Q58. Which of the following factors does NOT contribute towards detonation in an engine?

- (a) Engine overheating
- (b) High compression ratio
- (c) Stoichiometric fuel mixture
- (d) Wrong spark plug

Ans: (c)

Q59. 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 Carnot cycles have same efficiency between same temperature limits
- (d) All reversible engines working between same temperature limits have same efficiency

Ans: (d)

Q60. Most high speed compression engines operate on

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

Ans: (c)

Q61. The accumulation of carbon in a cylinder results in increase of

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

Ans: (d)

Q62. Which of the following medium is compressed in a Diesel engine cylinder

- (a) air alone
- (b) air and fuel
- (c) air and lub oil
- (d) fuel alone

Ans: (a)

Q63. The air-fuel ratio of the petrol engine is controlled by

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

Ans: (d)

Q64. In a typical medium speed, 4-stroke cycle diesel engine

- (a) fuel injection starts at 10° before to dead center and ends at 20° after top 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 dead center
- (d) may start and end anywhere

Ans: (a)

Q65. 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

Ans: (c)

Q66. 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) 150CPC

Ans: (c)

Q67. An engine indicator is used to determine the following

- (a) speed
- (b) temperature
- (c) volume of cylinder
- (d) None of these

Ans: (d)

Q68. When crude oil is heated, then which of the following hydrocarbon is given off first

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

Ans: (d)

Q69. 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

Ans: (b)

Q70. A 75 cc engine has following parameter as 75 cc

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

Ans: (c)

Q71. A heat engine utilizes the

- (a) calorific value of oil

- (b) low heat value of
- (c) high heat value of oil
- (d) mean heat value of oil

Ans: (c)

Q72. The fuel air ratio in a petrol engine fitted with suction carburetor, operating with dirty air filter as compared to clean filter will be

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

Ans: (d)

Q73. 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

Ans: (b)

Q74. Increasing the compression ratio beyond a certain limit, results to _____.

- (a) delay in fuel burning
- (b) engine knocking
- (c) excessive heat in the engine
- (d) high fuel consumption

Ans: (b)

Q75. 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

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