

**Question Bank**  
**of**  
**Automobile & IC Engines**



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**MCQ (Multiple choice questions)**  
**Only one answer is correct**

|     |  |  |                                       |                           |
|-----|--|--|---------------------------------------|---------------------------|
| 1.  | Gudgeon pin forms the link between .....and .....  |  |                                       |                           |
|     | (a) Piston and big end of connecting rod   | (b) Piston and small end of connecting rod | (c) connecting rod and crank          | (d) small end and big end |
| 2.  | I.C. engine gives output of 5KW when the input is 20000J/sec. The thermal efficiency is..... |  |                                       |                           |
|     | (a) 0.25   | (b) .50                                    | (c) 0.75                              | (d) 0.20                  |
| 3.  | The volumetric efficiency of the SI engine is comparatively lower than CI engine.            |  |                                       |                           |
|     | (a) True   | (b) False                                  | (c) none of the these                 | (d) can't say             |
| 4.  | Ignition timing is adjusted by   |  |                                       |                           |
|     | (a) Tachometer   | (b) Stroboscopic light                     | (c) Stop watch                        | (d) Accurate clock        |
| 5.  | Friction that occurs between the layers of oil film is called                                |  |                                       |                           |
|     | (a) Viscous friction   | (b) greasy friction                        | (c) dry friction                      | (d) boundary friction     |
| 6.  | The most important property of the lubricant is  |  |                                       |                           |
|     | (a) Density  | (b) Viscosity                              | (c) Thermal conductivity              | (d) None of the above     |
| 7.  | Rotary motion of the steering wheel is converted to a reciprocating motion by                |  |                                       |                           |
|     | (a) Track arm  | (b) Track rod                              | (c) Stub axle                         | (d) Steering Box          |
| 8.  | An axle is located on a leaf spring by a   |  |                                       |                           |
|     | (a) U bolt   | (b) Spring clip                            | (c) Center bolt                       | (d) Shackle pin           |
| 9.  | The most commonly used car heater is the   |  |                                       |                           |
|     | (a) Hot air type   | (b) Hot water type                         | (c) Petrol type                       | (d) Diesel type           |
| 10. | Compression ratio in Petrol engines is of the order of .....                                 |  |                                       |                           |
|     | 5-7  | 7-10                                       | 10-12                                 | 14-20                     |
| 11. | If the contact breaker gap is small, it results in   |  |                                       |                           |
|     | a) Advanced timing   | (b)increased dwell                         | (c) Rapid burning of the pointer gaps | (d) none of the above     |
| 12. | Friction that occurs between the layers of oil film is called                                |  |                                       |                           |
|     | (a) Viscous friction   | (b) Greasy friction                        | (c) Dry friction                      | (d) Boundary friction     |
| 13. | Morse test is applicable only to   |  |                                       |                           |
|     | (a)Single cylinder SI engines  | (b) Single cylinder CI engines             | (c)Multi cylinder CI engines          | (d) None of the above     |
| 14. | Brake shoes are made of  |  |                                       |                           |
|     | (a) Pressed steel  | (b)Cast aluminum                           | (c) Plastic fiber                     | (d)either (a) or (b)      |
| 15. | Crankcase ventilation is provided  |  |                                       |                           |
|     | (a) to cool cylinder   | (b) to cool crankcase                      | (c) to cool piston                    | (d) to remove blowby      |
| 16. | Most commonly used lubrication system in automobiles is the                                  |  |                                       |                           |
|     | (a)splash system   | (b)pressure system                         | (c) Petrol system                     | (d) gravity system        |
| 17. | How many cells are used in a 12-volt car battery?  |  |                                       |                           |
|     | (a) 2  | (b) 4                                      | (c) 6                                 | (d) 8                     |
| 18. | Four-wheel drive vehicles have differential at   |  |                                       |                           |
|     | (a) Front wheels   | (b) Rear wheels                            | (c) Both front and rear wheels        | (d) None of these         |
| 19. | In motorcycles, the following type of cooling system is used                                 |  |                                       |                           |
|     | (a) Air cooling  | (b) Water cooling                          | (c) Both a and b                      | (d) None of these         |
| 20. | Heat engine uses -----energy to produce mechanical work.                                     |  |                                       |                           |

|     |  |   |   |   |
|-----|--|---|---|---|
|     | (a) Thermal  | (b) Fluid   | (c) Kinetic   | (d) Electric  |
| 21. | Which of the following is not used in four stroke compression-ignition (CI) engines?   |   |   |   |
|     | (a) fuel pump  | (b) spark plug  | (c) fuel injector   | (d) inlet and outlet valves   |
| 22. | The power developed by the engine cylinder of an I.C. engine is known as.....  |   |   |   |
|     | (a) Indicated power  | (b) brake power   | (c) frictional power  | (d) none of these   |
| 23. | The force required to stop a vehicle is dependent on   |   |   |   |
|     | (a) Weight of vehicle  | (b) Deceleration rate   | (c) Both a and b  | (d) None of these   |
| 24. | A two-stroke cycle engine gives.....the number of power strokes as compared to the four-stroke cycle engine, at the same engine speed. |   |   |   |
|     | (a) half   | (b) Same  | (c) Double  | (d) two times   |
| 25. | Hydraulic brakes function on the principle of  |   |   |   |
|     | (a) Law of conservation of momentum  | (b) law of conservation of energy                                       | (c) pascal's law  | (d) none of above   |
| 26. | Hand brake is applicable to  |   |   |   |
|     | (a) only rear wheels   | (b) only front wheels   | (c) both (a) & (b)  | (d) none of above   |
| 27. | Heat engine uses _____ energy to produce mechanical work.  |   |   |   |
|     | (a) Thermal  | (b) Fluid   | (c) Kinetic   | (d) Electric  |
| 28. | Which of the following is not used in four stroke compression-ignition (CI) engines?   |   |   |   |
|     | (a) Fuel pump  | (b) Spark plug  | (c) Fuel injector   | (d) Inlet and outlet Valves   |
| 29. | In two stroke engine there is one power stroke in _____ of crankshaft rotation.  |   |   |   |
|     | a. 90°   | b. 180°   | c. 270°   | d. 360°   |
| 30. | Indicated power of a 4-stroke engine is equal to (p=effective pressure, L=stroke, A=area of piston) .....                              |   |   |   |
|     | A. $pLAN/2$  | B. $2pLAN$  | C. $pALN$   | D. $pLAN/4$   |
| 31. | The ascending order of strokes in four stroke engine is  |   |   |   |
|     | Suction stroke – Expansion stroke – Compression stroke – Exhaust stroke  | Suction stroke – Compression stroke – Expansion stroke – Exhaust stroke | Suction stroke – Expansion stroke – Exhaust stroke – Compression stroke | Suction stroke – Compression stroke – Exhaust stroke – Expansion stroke |
| 32. | The relation between Indicated power (ip), Friction power (fp) & Brake power (bp) is   |   |   |   |
|     | a. $I_p = F_p - B_p$   | b. $I_p = F_p + B_p$  | c. $B_p = I_p + F_p$  | d. $B_p = I_p / F_p$  |
| 33. | A two-stroke cycle engine gives.....the number of power strokes as compared to the four-stroke cycle engine, at the same engine speed. |   |   |   |
|     | A. Half  | B. Same   | C. Double   | D. Four times   |
| 34. | Which of the following does not relate with spark ignition engine.....   |   |   |   |
|     | A. Ignition coil   | B. Spark plug   | C. Distributor  | D. Fuel injector  |
| 35. | The power developed by the engine cylinder of an I.C. engine is known as.....  |   |   |   |
|     | A. Indicated power   | B. Break power  | C. Actual power   | D. None of the above  |
| 36. | The break power of an engine is always.....the indicated power   |   |   |   |
|     | A. Equal to  | B. Less than  | C. Greater than   | D. None of the above  |
| 37. | When brakes are applied on a moving vehicle, the kinetic energy is converted into  |   |   |   |
|     | a. Mechanical  | b. Heat   | c. Electrical   | d. Potential  |

|     |  |  |  |  |
|-----|--|--|--|--|
| 38. | The force required to stop a vehicle is dependent on   |  |  |  |
|     | a. Weight of vehicle   | b. Deceleration rate   | c. Both a and b  | d. None of these   |
| 39. | Hydraulic brakes function on the principle of  |  |  |  |
|     | (a) Law of conservation of momentum  | (b) Law of conservation of energy                            | (c) Pascal's law   | (d) None of these  |
| 40. | Hand brake is applicable to  |  |  |  |
|     | (a) Only front wheels  | (b) Only rear wheels   | (c) Both a and b   | (d) All of these   |
| 41. | Four-wheel drive vehicles have differential at   |  |  |  |
|     | (a) Front wheels   | (b) Rear wheels  | (c) Both front and rear wheels                               | (d) None of these  |
| 42. | In motorcycles, the following type of cooling system is used   |  |  |  |
|     | a. Air cooling   | b. Water cooling   | c. Both a and b  | d. None of these   |
| 43. | In Battery coil ignition system, the correct sequence of flow of current is                          |  |  |  |
|     | Battery – Ammeter – Ignition coil – Distributor – Spark plug   | Ammeter – Ignition coil – Battery - Distributor – Spark plug | Spark plug - Battery – Ammeter – Ignition coil – Distributor | Distributor - Battery – Ammeter – Ignition coil – Spark plug |
| 44. | The induction coil steps up low voltage current of 6 or 12 volts to high voltage current up to about |  |  |  |
|     | a. 14000 V   | b. 18000 V   | c. 22000 V   | d. 24000 V   |
| 45. | The function of the ignition system is to _____ the flame propagation process.                       |  |  |  |
|     | a. Stop  | b. Initiate  | c. balance   | d. None of these   |
| 46. | On what principle does the braking system in the car work?   |  |  |  |
|     | Frictional force   | Gravitational force  | Magnetic force   | Electric force   |
| 47. | Generally which brakes are on the front wheels?  |  |  |  |
|     | A) Drum brake  | B) Disk brake  | C) Shoe brake  | D) Double shoe brake   |
| 48. | When brakes are applied on a moving vehicle; the kinetic energy is converted to                      |  |  |  |
|     | (A) Mechanical energy  | (B) Heat energy  | (C) Electrical energy  | (D) Potential energy   |
| 49. | Hydraulic brakes function on the principle of  |  |  |  |
|     | (A) Law of conservation of momentum  | (B) Law of conservation of energy                            | (C) Pascal's law   | (D) None of the above  |
| 50. | Power steering refers to the use of ___ power in assisting the steering motion.                      |  |  |  |
|     | (A) Mechanical   | (B) Hydraulic  | (C) Electrical   | (D) Any of the above   |
| 51. | The type of steering gear mechanism used in automobile power steering is                             |  |  |  |
|     | (A) Worm and Nut steering gear   | (B) Rack and Pinion Steering gear                            | (C) Worm and Roller steering gear                            | (D) All of the above   |
| 52. | Which of the following is not part of automatic transmission?  |  |  |  |
|     | A) Epicyclic gearbox   | B) Torque convertor  | C) Multi-plate clutch  | D) Sliding mesh gearbox                                      |

|     |   |                   |                     |                         |
|-----|---|-------------------|---------------------|-------------------------|
| 53. | In four wheel drive there is (are)                                    |                   |                     |                         |
|     | (A) No live axle  | (B) One live axle | (C) Two live axles  | (D) One dead axle       |
| 54. | Which of these were or are used in automobiles to provide suspension? |                   |                     |                         |
|     | A) Leaf springs   | B) Coil springs   | C) Torsion bars     | D) All of the mentioned |
| 55. | The clutch is located between the transmission and the                |                   |                     |                         |
|     | (A) Engine  | (B) Rear axle     | (C) Propeller shaft | (D) Different           |

## SHORT ANSWER QUESTIONS

1. How are heat engines classified?
2. Give examples of EC and IC engines.
3. What is meant by TDC and BDC? In a suitable sketch, mark the two dead centers.
4. Define the clearance volume.
5. Define the stroke.
6. Define the compression ratio.
7. Define the bore diameter.
8. Write any four differences between four-stroke and two-stroke engines.
9. Compare the SI and CI engines with respect to (a) fuel used and (b) ignition.
10. Define brake thermal efficiency.
11. Define the volumetric efficiency.
12. Draw the actual and ideal indicator diagram of a diesel engine.
13. What is meant by ignition? What is the interrelation between ignition and combustion?
14. Write the classification of the independent suspension system.
15. Draw the systematic layout of the suspension system of a truck.
16. Draw a suitable diagram of the manual steering system.
17. What is the need for a power steering system?
18. Explain in detail the drum braking system with a suitable diagram.
19. Explain in detail the disk braking system with a suitable diagram.
20. Explain in detail the hydraulic braking system with a suitable diagram.
21. Write the components of the transmission system in a truck.
22. Difference between tyre and wheel
23. Explain the working principle of fluid coupling.
24. Write the advantages and disadvantages of the air-cooled system.
25. Explain the function of the thermostat valve.
26. What do you mean by antifreeze mixture and give any two examples.
27. Explain the water-cooled system with its components.
28. Write the purpose of lubrication used in automobiles.
29. How to describe a good quality of lubricant.
30. Draw the systematic layout of battery ignition system.

## DESCRIPTIVE TYPE QUESTIONS

1. What is the main difference between 2-stroke and 4-stroke engines?
2. The cubic capacity of a 4-stroke over-square SI engine is 260 cc. The over-square ratio is 1.2. The clearance volume is 23.4 cc. Calculate the bore, stroke, and compression ratio of the engine.
3. Explain the working principle of 4-stroke SI engine with neat sketch.
4. Draw the actual and theoretical indicator diagram of 4-stroke CI engines.
5. Write the difference between 4-stroke SI engine and 4-stroke CI engine.
6. The cubic capacity of a four stroke over-square spark ignition engine is 245 cc. The over-square ratio is 1.1. The clearance volume is 27.2 cc. calculate the bore, stroke, and compression ratio of the engine.
7. The mechanical efficiency of a single-cylinder four stroke is 80%. The frictional power is estimated to be 25 kW. Calculate the indicated power (ip) and brake power (bp) developed by the engine.
8. A single -cylinder, four-stroke hydrogen fuel spark ignition delivers a brake power of 20kW at 6000 r.p.m. The air -gas ratio is 8:1 and the calorific value of fuel is 11000kj/m<sup>3</sup>. The compression ratio is 8:1. If the volumetric efficiency is 70 %, indicated thermal efficiency is 33 % and the mechanical efficiency is 90 %, calculate (a) the cubic capacity of the engine. (b) mean effective pressure
9. Explain how you can find out IP of a multi cylinder CI engine with the help of Morse test.
10. The following results were obtained during a Morse test on a 4-stroke cycle petrol engine:  
Brake power developed with all cylinders working = 16 kW  
Brake power developed with cylinder No.1 cut-out = 11 kW  
Brake power developed with cylinder No.2 cut-out = 12 kW  
Brake power developed with cylinder No.3 cut-out = 13 kW  
Brake power developed with cylinder No.4 cut-out = 14 kW
11. Calculate the mechanical efficiency of the engine. What is the indicated thermal efficiency of the engine, if the engine uses 8 litres of petrol per hour of calorific value of 44,000 kJ/kg and the specific gravity of petrol is 0.75?
12. Explain suspension system of a car and write it purpose in detail.
13. Explain MacPherson strut, Double Wishbone, and Multilink suspension system and its purpose to use with neat sketch?
14. Explain hydrostatic suspension system and hydrogas suspension system in detail with neat sketch?
15. What is the use of helper spring in suspension system and explain it with neat diagram?
16. Write different type of steering system available for use in detail.
17. What is the need of POWER-ASSISTED STEERING SYSTEM? Draw the neat sketch of typical power steering system.
18. What is the function of transmission system in automobile?
19. Describe the main components of transmission system.



20. How fluid coupling can be act as a mechanical clutch? Describe its construction and operating principle.
21. Write the difference between manual transmission and automatic transmission system.
22. What are the various purposes of lubrication? Explain in detail. Also, explain different type of theories involved in lubrication.
23. Write the required characteristics of a good lubricant. Explain different types of lubricants used with their advantages.
24. What are the important aspects of the engine lubrication system?
25. What is the need of Battery ignition system in IC engines and also write different types of ignition systems used with examples?