DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

**23-0005-AB**

**TEST BOOKLET**
**PAPER-II**
**DIESEL MECHANIC**

**Time Allowed: 1 hr**

**Maximum Marks: 50**

## INSTRUCTIONS TO CANDIDATES

**Read the instructions carefully before answering the questions: -**

1. **This Test Booklet consists of 08 (eight) pages and has 50 (fifty) questions.**
2. **IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET *DOES NOT* HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.**
3. **Please note that it is the candidate's responsibility to fill in the Roll Number and other required details carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the OMR Answer Sheet liable for rejection.**
4. **Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.**
5. **Use only Black Ball Point Pen to fill the OMR Answer Sheet.**
6. **Each question comprises of 04 (four) responses (answers). You are required to select the response which you want to mark on the OMR Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose *ONLY ONE* response for each item.**
7. **After you have completed filling in all your responses on the OMR Answer Sheet and the examination has concluded, you should hand over to the Invigilator *only the OMR Answer Sheet*. You are permitted to take the Test Booklet with you.**
8. **Penalty for wrong answers in case of Multiple Choice based Questions:**
   **THERE WIL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE.**
   - **(i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.**
   - **(ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.**
   - **(iii) If a question is left blank. i.e., no answer is given by the candidate; there will be no penalty for that question.**

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## DIESEL MECHANIC

**Choose the correct answer for the following questions: (1 x 50 = 50)**

1. In which of the following year and country was the first automobile built?
   (a) 1735, Iceland
   (b) 1769, Germany
   (c) 1774, Italy
   (d) 1724, USA

2. In the 1770s, people tried to create cars that ran on which fuel source?
   (a) Steam
   (b) Fire
   (c) Solar power
   (d) Gasoline

3. The type of engine used in heavy commercial vehicles is ____.
   (a) Diesel engine
   (b) Petrol engine
   (c) Spark ignition engine
   (d) External combustion engine

4. For the same maximum pressure and heat supplied, the efficiency is maximum for___.
   (a) Otto cycle
   (b) Diesel cycle
   (c) Dual cycle
   (d) None of the above

5. The thermal efficiency of diesel engine is about
   (a) 15%
   (b) 30%
   (c) 50%
   (d) 70%

6. If the compression ratio in I.C. engine increases, then its thermal efficiency will _____.
   (a) Increase
   (b) Decrease
   (c) Remain same
   (d) none of the above

7. When piston no. 1 of an inline four cylinder four stroke engine is performing the power stroke, then which stroke is piston no. 4 performing?
   (a) Suction
   (b) Compression
   (c) Power
   (d) Exhaust

8. The mixture requirement of a S.I. engine under normal running on road is -
   (a) A stoichiometric mixture
   (b) A lean mixture
   (c) A rich mixture
   (d) None of the above

9. Gudgeon pins are made of
   (a) Same material as that of piston
   (b) Hardened and ground steel
   (c) Cast iron
   (d) Aluminium

10. A crankshaft is made by
   (a) Casting
   (b) Forging
   (c) Pressing
   (d) Turning

11. The rotation of the camshaft with respect to rotation of crankshaft for 4-stroke IC engine is -
   (a) ½
   (b) 1
   (c) 2
   (d) ¼

12. A four cylinder engine has firing order of -
   (a) 1-3-4-2
   (b) 1-2-3-4
   (c) 1-4-3-2
   (d) None of the above

13. A four cylinder engine has a capacity of 2.4 liters. The swept volume of one cylinder is
   (a) 400 $cm^3$
   (b) 600 $cm^3$
   (c) 1200 $cm^3$
   (d) 2400 $cm^3$

14. Air-fuel ratio for idling of an SI engine is approximately -
   (a) 5:1
   (b) 10:1
   (c) 15:1
   (d) 20:1

15. The octane rating of petrol commercially available is usually -
   (a) 85-90
   (b) 90-100
   (c) 100-105
   (d) 110-125

16. The heating value of diesel is approximately -
   (a) 6500 kcal/kg
   (b) 7500 kcal/kg
   (c) 8500 kcal/kg
   (d) 10000 kcal/kg

17. 'Knock' in the CI engine is characterized by -
   (a) 90% Ethanol + 10% Gasoline
   (b) 10% Ethanol + 90% Gasoline
   (c) 50% Ethanol + 50% gasoline
   (d) 40% Ethanol + 60% Gasoline

18. The reason why petrol flows from the float chamber to the venturi is because -
    (a) Of the difference in pressure
    (b) Of the difference in level
    (c) The float lever is higher
    (d) The air sucks out the petrol

19. Multi-point fuel injection system uses -
    (a) Manifold injection
    (b) Direct injection
    (c) Port injection and throttle body injection
    (d) None of these

20. Decrease in air-fuel ratio in SI engine result in -
    (a) Increase of NO x
    (b) Decrease of CO and unburnt hydrocarbons
    (c) Increase of CO and unburnt hydrocarbons
    (d) None of these

21. Radiator tubes are generally made of -
    (a) Steel
    (b) Brass
    (c) Cast iron
    (d) Plastics

22. The quantity of heat lost to the cooling water in an IC engine is about -
    (a) 10%
    (b) 30%
    (c) 50%
    (d) 70%

23. Normally a lubricant is selected for an engine on the basis of -
    (a) SAE viscosity rating number
    (b) Redwood seconds
    (c) Saybolt seconds
    (d) Viscosity in strokes

24. Cushion springs in the clutch plate is meant to reduce -
    (a) Torsion vibration
    (b) Vehicle speed
    (c) Jerky start
    (d) None of these

25. Normally the clutch is mounted in between the
    (a) Engine and gearbox
    (b) Gearbox and propeller shaft
    (c) Final drive and differential
    (d) Propeller shaft and final drive

26. Maximum tractive effort in a 4 speed gearbox vehicle is available in the
    (a) $1^{st}$ gear
    (b) $2^{nd}$ gear
    (c) $3^{rd}$ gear
    (d) $4^{th}$ gear

27. Which term is used to cover the components which are fitted to form the drive line between the engine and road wheels?
    (a) Transmission
    (b) Differential
    (c) Final drive
    (d) Power drive

28. Two advantages of using helical gears rather than spur gears in a transmission are:
    (a) High strength and low cost
    (b) Low noise level and economy
    (c) High strength and less end thrust
    (d) Low noise level and high strength

29. A universal joint which is constructed with two yokes joined by a cross-shaped trunnion -
    (a) Hooke's
    (b) Layrub
    (c) Doughnut
    (d) Constant velocity

30. Propeller shaft is enclosed in a hollow tube in -
    (a) Hotchkiss drive
    (b) Torque tube drive
    (c) Both options (a) and (b)
    (d) None of these

31. The purpose of the sliding joint at the front end of the propeller shaft is to allow -
    (a) The shaft to be removed and refitted
    (b) For the change in distance between the gear box and angle changed by propeller shaft
    (c) The drive to transmit through a varying angle
    (d) For the variation in speed of the front universal joint

32. The crown wheel and pinion is called the -
    (a) Differential
    (b) Rear axle
    (c) Final drive
    (d) Rear drive

33. When a vehicle is cornering the crown wheel is rotating at 500 rpm and the outer wheel is turning at 520 rpm, the speed of the inner wheel is -
    (a) 540 rpm
    (b) 520 rpm
    (c) 480 rpm
    (d) 500 rpm

34. In the differential unit of a passenger car the gear ratio is of the order of -
    (a) 1:1
    (b) 6:1
    (c) 3:1
    (d) 10:1

35. Wheel base of the vehicle is the
    (a) Distance between front and rear axle
    (b) Extreme length of the vehicle
    (c) Distance between the front tyres
    (d) Width of the tyres

36. The amount of camber is generally kept between -
    (a) 0° to 1.5°
    (b) 5° to 7.5°
    (c) 3° to 6°
    (d) None of these

37. The included angle is the sum of -
    (a) Camber and castor
    (b) Castor and S.A.I
    (c) Camber and S.A.I
    (d) Camber and toe-in

38. A vehicle will skid -
    (a) When wheel braking torque is greater than the brake braking torque
    (b) When wheel braking torque is less than the braking torque
    (c) When wheel braking torque is equal to brake braking toque
    (d) None of these

39. When the vehicle is in perfect rolling condition then -
    (a) The outer wheel will turn at larger angle then inner wheel
    (b) The outer wheel turn at a less angle then inner wheel
    (c) Both the angle will turn at same angle
    (d) None of these

40. The king pin inclination is usually -
    (a) Less than 0.5°
    (b) Between 1° to 2°
    (c) Between 2° to 5°
    (d) More than 7°

41. When the vehicle is cornering, each wheel should form a right angle to a line drawn from the -
    (a) Centre line of the vehicle
    (b) Centre of the rear axle
    (c) Instantaneous centre of rotation
    (d) Midpoint of the front suspension system

42. A vehicle will be under steer condition when -
    (a) Front slip angle = rear slip angle
    (b) Front slip angle>slip angle
    (c) Front slip angle = rear slip angle = 0
    (d) Front slip angle<slip angle

43. The reason why a laminated spring is made up of series of leaves is to -
    (a) Reduce interleaf friction
    (b) Allow the leaves to slide during the bump movement
    (c) Soften the spring action and increase the maximum deflection
    (d) Overcome the weakness at the centre of a Single leaf spring

44. A shackle with a leaf spring -
    (a) Prevents squeaking sound
    (b) Provides good traction
    (c) Allow the spring length to change
    (d) Allows pivoting of spring end

45. In case of tractors the springs provided on rear wheels are -
    (a) Leaf spring
    (b) Combination of leaf and helical spring
    (c) Helical spring
    (d) None of these

46. The brake bleeding process removes ____ from the system.
    (a) Air
    (b) Vacuum
    (c) Excess fluid
    (d) Excess pressure

47. Find out the odd one from the following-
    (a) Master cylinder
    (b) Engine cylinder
    (c) Wheel cylinder
    (d) Brake drum

48. The function of the antilock braking system is that it-
    (a) Reduces the stopping distance
    (b) Minimizes the brake fade
    (c) Maintains directional stability during braking by preventing wheels from locking
    (d) Prevents noise during braking and thereby postpones locking of the wheels

49. If the brake pedal of a hydraulically operated brake is 'springy' it indicates that -
    (a) System contains air
    (b) Shoe clearance is excessive
    (c) Brake fluid should be changed
    (d) System is in a good condition

50. A fading of brakes occurs -
    (a) At high speed
    (b) When brake lining is worn
    (c) At low speed
    (d) During continuous brake application

**Space for rough work**