

J.P. Board of Departmental Examination
DEPARTMENTAL EXAMINATION OF IAS/HAS OFFICERS OF
HIMACHAL PRADESH

April, 2015

Paper: 12

Motor Mechanism and Driving

Time: 1.30 hours

Maximum Marks = 50

Note:-

1. Candidate may answer the question in Hindi or English.
2. Attempt all questions from Part A and any five from Part-B.
3. Bar Act is allowed.

PART-A

Q.No.1 Explain the functions of any five in the motor vehicle. (1X5=5)

- a) Turbocharger
- b) Differential
- c) Wind screen wiper
- d) Ignition Switch
- e) Fuel injection pump
- f) Mounting pin
- g) Battery
- h) Speedometer

Q.No. 2 Attempt any five question (2X5=10)

- a) What is the 'Compression ratio' of an engine?
- b) Explain the function of Engine foundation.
- c) Define Turning Radius.
- d) State four advantages of power steering used in an automobile.
- e) What are the functions of a shackle pin?
- f) State any four advantages of independent suspension system over rigid axle suspension system.
- g) Why the four stroke engines do not require 2T oil unlike the two stroke engines?
- h) Explain briefly working of engine cooling system.

Q.No.3 Answer any ten questions by selecting the correct choice. (1X10=10)

1. If the engine coolant leaks into the engine oil, then engine oil
 - a. appears milky
 - b. becomes foamy
 - c. turns black
 - d. none of these
2. When preparing electrolyte, it is important to remember that
 - a. Acid and water should be poured together
 - b. Water should be poured into acid
 - c. Acid should be poured into water

1

(contd. on next page)

3. The motion of the cam is transferred to the valves through
 - a. camshaft pulley
 - b. pistons
 - c. rocker arms
 - d. valves stems

4. What type of bearing is used for main bearings and connecting rod bearings?
 - a. Needle roller bearing
 - b. Ball bearings
 - c. Plain bearings
 - d. Taper roller bearing

5. The main function of intake manifold is that it
 - a. promotes the mixture of air and fuel
 - b. reduces intake noise
 - c. cools the intake air to a suitable temperature
 - d. distributes intake air equally to the cylinders

6. The size of an engine cylinder is referred to in terms of its
 - a. Diameter and bore
 - b. Bore and length
 - c. Bore and stroke

7. Which of the following symptom is caused as a result of brake disc run out?
 - a. Ineffectiveness of the brakes
 - b. Localized wearing of the brake pads
 - c. Judder during braking
 - d. Rapid wearing of the brake pads

8. The oil pump is driven by the
 - a. crank shaft via driven belt
 - b. cam shaft
 - c. alternator shaft
 - d. crankshaft directly

9. It is necessary to maintain the valve clearance as they
 - a. make the crankshaft turn smoothly
 - b. allow the lengthening of the valves owing to the heat of the combustion
 - c. increase the speed at which the valves move up and down
 - d. reduce the resistance to sliding that occurs between the cam and the tappet

10. The piston compression rings are made of
 - a. bronze
 - b. aluminium
 - c. cast iron
 - d. steel

(2)

[Contd. on next page 3]

11. Which part of the automobile tyre is subjected to greatest flexing action?
- Bead
 - Side wall
 - Shoulder
 - Tread
12. The function of anti lock brake system (ABS) is that
- reduce the stopping distance
 - minimizes the brake fade
 - maintain directional control during braking by preventing the wheels from locking
 - prevents nose dives during braking and thereby postponing locking of the wheels
13. The painting of automobiles is done to
- prevent rust from growing on the body
 - improve its external appearance
 - retain the characteristics of steel for long
 - all of these
14. Which is not the common component between a petrol and diesel engine?
- Crank shaft
 - Connecting rod
 - Ignition coil
 - Cam shaft

PART-B

Q.No. 4. Define any 5 of the following: -

(1X5=5)

- Certificate of Registration
- Tourist vehicle.
- Transport Vehicle.
- Educational Institution Bus.
- Maxi cab.
- Contract carriage.
- Articulated vehicle.
- Gross Vehicle weight.

Q.No.5. What is the role of any two of the following authorities?

(2.5X 2=5)

- State Transport Appellate Tribunal
- Motor Accident Claim Tribunal
- Registering & Licensing Authority

(3)

(contd. on next page-4-)

Q.No.6 What is procedure envisaged under Motor Vehicle Act 1988 for regulating Contract carriage? (5)

Q.No.7. Explain law relating to removal and disposal of abandoned or left unattended Vehicle. (5)

Q.No.8. Why insurance of Motor vehicle is necessary? Explain briefly relevant Provisions with regard to insurance of motor vehicle contained in Motor Vehicles Act, 1988. (5)

Q.No. 9. What are the essential documents/ tools required to be kept always with the commercial Vehicle during operation? (5)

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