

DEPARTMENTAL EXAMINATION OF IAS/HAS OFFICERS OF
HIMACHAL PRADESH
October, 2013

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) Carburetor
- b) Thermostat
- c) Injector
- d) Clutch
- e) Universal joints
- f) Gear box
- g) Head gasket
- h) Wind screen wiper
- i) Mounting pin

Q.No. 2 Attempt any five question

(2X5=10)

- a) What is a 'Common Rail' Diesel Engine?
- b) State any four advantages of independent suspension system over rigid axle suspension system.
- c) What is the difference between 2-Stroke and 4-Stroke IC engine?
- d) What are the functions of a shackle pin?
- e) Explain the function of Engine foundation.
- f) What is the effect of Camber on steering control and tyre wear?
- g) State four advantages of power steering used in an automobile.
- h) What do you understand by CC of engines?
- i) How are the wheels and tyres designated?

Q.No.3 Answer any ten questions by selecting the correct choice.

(1X10=10)

1. The motion of the cam is transferred to the valves through
 - a. Pistons
 - b. Rocker arms
 - c. Camshaft pulley
 - d. Valve stems

2. What type of bearing is used for main bearing and connecting rod bearings?
 - a. Ball bearings
 - b. Plain bearings
 - c. Needle roller bearing
 - d. Taper roller bearing
3. The main function of intake manifold is that it
 - a. Promotes the mixture of air and fuel
 - b. Reduce intake noise
 - c. Cools the intake air to a suitable temperature
 - d. Distributes intake air equally to the cylinders
4. 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
5. The pump part that rotates and causes water circulation between the radiator and engine is called
 - a. Bypass
 - b. Fan
 - c. Impeller
6. The brake shoes are curved to conform to the inner diameter of the
 - a. Tyre
 - b. Wheel
 - c. Pedal
 - d. Brake drum
7. The device for smoothing out the power impulses from the engine is called the
 - a. Camshaft
 - b. Flywheel
 - c. Clutch
8. Aluminium alloy pistons are preferred because
 - a. They are good absorbers of shock
 - b. They have good water resistance
 - c. They are having less weight
 - d. They are very strong in tension
9. The ratio of the cylinder volume at BDC and the clearance volume is called
 - a. Clearance ratio
 - b. Volumetric ratio
 - c. Compression ratio
10. The operation of removing trapped air from the hydraulic braking system is known as
 - a. Trapping
 - b. Tapping
 - c. Bleeding
 - d. Cleaning
11. The component that connects the steering rack to the knuckles is
 - a. Tie-rod
 - b. Sector-gear

- c. Pivot
 - d. Spline
12. The connecting rods are generally made of _____ shaped cross-section.
- a. I
 - b. C
 - c. L
 - d. H

PART-B

- Q.No. 4.** As per provision of the Motor Vehicle Act, define any five of the following:-
(1X5)
- a. Transport Vehicle.
 - b. Gross Vehicle weight.
 - c. Certificate of Registration
 - d. Maxi cab.
 - e. Contract carriage.
 - f. Articulated vehicle.
- Q.No.5.** What is the role of any two of the following authorities?
(2.5X 2=5)
- a. State Transport Appellate Tribunal
 - b. Motor Accident Claim Tribunal
 - c. State Transport Authority.
- Q.No.6** What do you understand by any five of the following:-
(1X5=5)
- a. Modification of route
 - b. Extension of route.
 - c. Diversion of route.
 - d. Curtailment of route.
 - e. Restoration of route.
 - f. Corridor.
- Q.No. 7** Explain law relating to licensing and regulation of establishments for imparting instructions in driving of motor vehicles.
(5)
- Q.No.8** . What are the essential documents/tools required to be kept always with vehicle during operation?
(5)
- Q.No. 9** How to obtain a learner's license?
(5)
- Q.No.10** 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)