

DEPARTMENTAL EXAMINATION OF IAS/HAS OFFICERS OF  
HIMACHAL PRADESH  
December 2018

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) Crown wheel
- b) Clutch
- c) Battery
- d) Propeller shaft
- e) Ignition Switch
- f) Axle shaft
- g) Turbocharger
- h) Wind screen wiper

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

- a) What is the 'Compression Ratio' of an engine ?
- b) Explain briefly working of engine cooling system.
- c) What are the functions of a shackle pin?
- d) Explain Blow by.
- e) What is the effect of Camber on steering control and tyre wear?
- f) State four advantages of power steering used in an automobile.
- g) Explain the function of Engine foundation.
- h) State any four advantages of independent suspension system over rigid axle suspension system.

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

1. The pump part that rotates and causes water circulation between the radiator and engine is called
  - a. Impeller
  - b. Fan
  - c. Bypass
2. 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
3. The brake shoes are curved to conform to the inner diameter of the

- a. Tyre
  - b. Wheel
  - c. Pedal
  - d. Brake drum
4. In an operating engine, the hottest part of the piston is the
- a. Head
  - b. Ring grooves
  - c. Skirt
  - d. Pin bosses
5. The opening and closing of a valve is respectively done by
- a. A cam and a spring
  - b. A spring and a cam
  - c. Gas pressure and cam
  - d. Cylinder vacuum and spring
6. The device for smoothing out the power impulses from the engine is called the
- a. Flywheel
  - b. Camshaft
  - c. Clutch
7. Aluminum alloy pistons are preferred because
- a. They are good absorbers of shock
  - b. They are having less weight
  - c. They have good water resistance
  - d. They are very strong in tension
8. Piston compression rings are manufactured by
- a. Aluminium
  - b. Cast iron
  - c. Steel
  - d. Bronze
9. The rotating effect of the connecting rod on the connecting rod bearing produces
- a. Pressure load
  - b. Inertia load
  - c. Centrifugal load
10. As a rule when comparing the front and rear wheel cylinder pistons, it will be found that the pistons in the front wheel cylinders are
- a. The same size
  - b. Larger in diameter
  - c. Smaller in diameter
11. The ratio of the cylinder volume at BDC and the clearance volume is called
- a. Clearance ratio
  - b. Volumetric ratio
  - c. Compression ratio
12. In normal operation the part of the exhaust valve that gets the hottest is
- a. Face
  - b. Middle of Stem
  - c. Centre of head
  - d. Edge of margin

**PART-B**

- Q.No. 4.** As per provision of the Motor Vehicle Act, define any five of the following:-  
a. Transport Vehicle. (1X5)  
b. Educational Institution Bus.  
c. Maxi cab.  
d. Stage carriage.  
e. Articulated vehicle.  
f. Gross Vehicle weight.  
g. Certificate of Registration
- Q.No.5.** What is the role of any two of the following authorities? (2.5X 2=5)  
a. Motor Accident Claim Tribunal  
b. State Transport Appellate Tribunal  
c. Regional 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** What are the essential documents/tools required to be kept always with vehicle during operation? (5)
- Q.No.8** What is procedure envisaged under Motor Vehicle Act 1988 for regulating Contract carriage? (5)
- Q.No.9** Explain law relating to removal and disposal of abandoned or left unattended Vehicle. (5)
- Q.No.10** Explain law relating to licensing and regulation of establishments for imparting instructions in driving of motor vehicles. (5)