

DEPARTMENTAL EXAMINATION OF IAS/HAS OFFICERS OF
HIMACHAL PRADESH
JUNE, 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) Battery
- b) Universal joints
- c) Differential
- d) Wind screen wiper
- e) Ignition Switch
- f) Clutch
- g) Axle shaft
- h) Turbocharger

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

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

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

1. Which is not the common component between a petrol and diesel engine?
 - a. Cam shaft
 - b. Ignition coil
 - c. Crank shaft
 - d. Connecting rod
2. The size of an engine cylinder is referred to in terms of its
 - a. Bore and length
 - b. Diameter and bore

- c. Bore and stroke
3. The brake shoes are curved to conform to the inner diameter of the
 - a. Tyre
 - b. Brake drum
 - c. Wheel
 - d. Pedal
 4. The pump part that rotates and causes water circulation between the radiator and engine is called
 - a. Fan
 - b. Impeller
 - c. Bypass
 5. The operation of removing trapped air from the hydraulic braking system is known as
 - a. Trapping
 - b. Bleeding
 - c. Tapping
 - d. Cleaning
 6. The device for smoothing out the power impulses from the engine is called the
 - a. Clutch
 - b. Flywheel
 - c. Camshaft
 - d. Crankshaft
 7. In an operating engine, the hottest part of the piston is the
 - a. Head
 - b. Pin bosses
 - c. Ring grooves
 - d. Skirt
 8. When air is heated, it
 - a. Contracts and becomes heavier
 - b. Expands and becomes lighter
 - c. Expands and becomes heavier
 9. Engine torque is highest at
 - a. High speed
 - b. Intermediate speed
 - c. Low speed
 10. The ratio of the cylinder volume at BDC and the clearance volume is called
 - a. Clearance ratio
 - b. Volumetric ratio
 - c. Compression ratio
 11. The most commonly used material for tyre tubes is
 - a. Butyl

- b. Natural rubber
- c. Butane

12. The ratio between the power output of an engine and the energy in the fuel burned to produce that power is called
- a. Volumetric efficiency
 - b. Thermal efficiency
 - c. Mechanical efficiency

PART-B

- Q.No. 4.** As per provision of the Motor Vehicle Act, define any five of the following:- (1X5)
- a) Tractor.
 - b) Route.
 - c) HTV, MML & LMV.
 - d) Tourist Vehicle.
 - e) Semi-trailer.
 - f) Gross Vehicle weight.
 - g) Maxi cab.
- Q.No.5.** What is the role of any two of the following authorities? (5)
- a. Motor Accident Claim Tribunal.
 - b. State Transport Authority.
 - c. Registering & Licensing Authority.
- Q.No.6** Explain procedure laid down in Motor Vehicles Act for obtaining driving License of light motor vehicle and heavy motor vehicle and validity thereof. (5)
- Q.No. 7** Under what circumstances Driving License can be suspended and cancelled. (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 is procedure envisaged under Motor Vehicle Act 1988 for regulating Contract carriage? (5)
- Q.No.10.** What are the essential documents/tools required to be kept always with vehicle during operation? (5)