

DEPARTMENT EXAMINATION OF IAS/HAS OFFICERS OF
HIMACHAL PRADESH

May 2021

Paper: 12

Motor Mechanism and Driving

Timing: 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. Bare Act is allowed.

PART -A

Q. No.1 Explain the functions of any five in the motor vehicle.

(1x5=5)

- a) Crown Wheel
- b) Gear Box
- c) Self Starter
- d) Propeller Shaft
- e) Ignition Switch
- f) Turbocharger
- g) Front Wind Shield
- h) Flywheel

Q.No.2 Attempt any five questions

(2x5=10)

- a) What is the 'Compression Ratio' of an engine?
- b) Explain briefly working of Deaeration System in the Engine Cooling System.
- c) What is the function of Tie Rod & drop arm.
- d) Explain Blow by.
- e) What is toe-in & toe- out in vehicle?
- f) State four advantages of power steering used in an automobile.
- g) Explain the function of Air after cooler.
- 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
 - d. Break

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

3. The brake shoes are curved to conform to the inner diameter of the
 - a. Tyre
 - b. Wheel
 - c. Pedal
 - d. Brake drum

4. The Air- fuel mixtures in a spark ignition engines in too rich, than air- fuel ratio is about
 - a. 17:1
 - b. 15:1
 - c. 13:1
 - d. 10:1

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. Two advantages of using helical gears rather than spur Gears in a transmission system are
 - a. Strength & cost
 - b. Strength & less end thrust
 - c. Noise level & Strength
 - d. Noise level & economy

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. The value tappet clearance is measured by
 - a. Screw pitch gauge
 - b. Engineering scale
 - c. Feeler gauge
 - d. Vernire caliper

9. Which of the following Diesel Exhaust fluid (DEF) is being used for reducing pollution in BS-VI Vehicles.
 - a. Urea
 - b. Benzene
 - c. Soap
 - d. Water

10. As a rule when comparing the front and rear wheel cylinder pistons in break system, 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 Firing order for an inline four cylinder I.C. engines is
 - a. 1-2-3-4
 - b. 1-3-4-2
 - c. 1-2-4-3
 - d. 1-3-2-4

12. Which of the following type of Licenses are being issued nowadays?
 - a. LTV & MTV
 - b. LMV & HTV
 - c. LMV & PSV
 - d. MTV & HTV

PART-B

- Q.No.4** As per provision of the Motor Vehicle Act, define any five of the following:-
(1x5=5)
- a. Transport Vehicle.
 - 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? (2.5x2= 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** which testing agencies have been authorized to give Type Approval Certificate?
(5)
- Q.No.8** Explain the importance of Chapter VI of Motor Vehicle Act for STU's (State Transport Undertakings). (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)