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2023

B.Tech. 8th Semester End-Term Examination

Mechanical Engineering

AUTOMOTIVE MECHANICS

(New Syllabus (w.e.f. 2018 –19) & New Regulation (w.e.f. 2017-18))

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer Question No. 1 and any *four* from the rest

1. Choose the correct option from the following : (10 × 1 = 10)
- (i) The stroke of an engine is the
- (a) Distance between T.D.C and B.D.C
 - (b) Volume of the cylinder
 - (c) Length of the connecting rod
 - (d) Internal diameter of the cylinder
- (ii) The intake charge in a diesel engine consists of:
- (a) air + lubricating oil
 - (b) air alone
 - (c) air + fuel
 - (d) air + fuel + lubricating oil
- (iii) Gudgeon pin forms the link between:
- (a) piston and big end of connecting rod
 - (b) piston and small end of connecting rod
 - (c) connecting rod and crank
 - (d) big end and small end
- (iv) Injection system in which the pump and the injector nozzle is combined in one housing is known as:
- (a) common rail system
 - (b) distributor system
 - (c) unit injector system
 - (d) individual pump and nozzle system

[Turn over

- (v) The skidding of vehicles, while sudden brakes are applied, is avoided through:
- engine management system
 - antilock braking system
 - automatic car parking system
 - hydraulic braking system
- (vi) Leaf springs absorbs shocks by:
- Expanding
 - Bending
 - Compressing
 - Twisting
- (vii) If there are 7 clutch plates in a multi-plate clutch, what is the number of pair of contact surfaces?
- 5
 - 6
 - 4
 - 8
- (viii) An automobile chassis does not include which of the following parts?
- Shock absorbers
 - Steering systems
 - Brakes
 - Differential
- (ix) What is the function of the Electronic control unit in Anti-lock braking system?
- Decreases the stopping distance
 - Monitoring the speed of the wheel
 - Provides electronic stability control
 - Maintaining the tractive force
- (x) Which technology changes the timing of intake/exhaust valves when the engine is running?
- CRDI
 - DOHC
 - VVT
 - TDI

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- What are the causes of wear in connecting rod bearings and how to detect them? How are they made serviceable again? (8)
 - Describe all the parts of a cylinder block with diagram. (7)
- Explain the construction and working of a carburetor. What are the advantages of fuel injector over carburetor? (10)
 - Explain briefly the operation of a bimetal electric fuel gauge. (5)
- Describe the essential parts of the exhaust system. (10)
 - Explain the working of VVT technology. (5)

5. (a) Where is the propeller shaft used in transmission system of a car? How is a propeller shaft connected to the transmission and differential? (7)
- (b) Explain the following terms: (8)
- (i) Caster
 - (ii) Camber
 - (iii) Toe and
 - (iv) Offset
6. (a) Describe the three types of rear end suspensions found in motor vehicles. (10)
- (b) What do you understand by chassis? List the various components of a chassis. (5)
7. (a) Describe the construction and working of integral power steering system. (7)
- (b) What are the advantages and disadvantages of hydraulic brakes? What is the function of master cylinder in hydraulic brakes? (8)

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