

22440

**21222**

**3 Hours / 70 Marks**

Seat No.

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15 minutes extra for each hour

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**10**

- (a) List stages of combustion in SI engines.
- (b) State four types of combustion chambers used in SI engine.
- (c) Name the sensors used in MPFI engine (any four).
- (d) Write the function of ECM.
- (e) State properties of diesel as a fuel (any four).
- (f) Name the equipments used for checking exhaust emissions from vehicle.
- (g) List pollutants emitted from SI engine.

**2. Attempt any THREE of the following :**

**12**

- (a) Explain phenomena of detonation in SI engine.
- (b) Select combustion chamber for a Bus engine with justification.
- (c) Explain throttle body injection system with neat sketch.
- (d) Describe briefly diagnostic procedure of CRDI engine.

- 3. Attempt any THREE of the following : 12**
- (a) State various alternative fuels used for SI and CI engines.
  - (b) Describe briefly leak detection procedure to locate leakage in a gaseous fuel supply system.
  - (c) Explain VVT Mechanism.
  - (d) Explain – gasoline engine evaporative emissions are control system.
- 4. Attempt any THREE of the following : 12**
- (a) Describe the steps to diagnose MPFI car engine using scan tool.
  - (b) Explain with the help of neat sketch, working of series hybrid vehicle.
  - (c) Write advantage of blend alcohol with petrol.
  - (d) Compare between diesel and gasoline engine emissions.
  - (e) Describe briefly Euro norms and Bharat stage norms for cars.
- 5. Attempt any TWO of the following : 12**
- (a) Describe briefly the factors responsible for abnormal combustion in the engine of a vehicle.
  - (b) Explain working of MPFI system with neat sketch.
  - (c) Explain with neat sketch construction and working of a glow plug circuit diagram.
- 6. Attempt any TWO of the following : 12**
- (a) Write stepwise procedure to dismantle the and assemble of fuel feed pump of the given MPFI engine.
  - (b) (i) Draw a block diagram of electronic diesel control unit.  
(ii) Write six advantages of CRDI system.
  - (c) Describe briefly causes of diesel smoke emissions and state control measures for the same.
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