

# 17523

**21819**

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following: 20**
- State four properties of SI engine fuel.
  - Draw P-Q diagram showing stages of combustion in SI engine.
  - State the methods of improving fuel economy.
  - Compare TBI and PFI system.
  - Explain the concept of VGT.
  - Describe four effects of detonation.
  - State four advantages of CRDI system.
- 2. Attempt any TWO of the following: 16**
- Write neat sketch, describe MPFI system.
  - Draw the circuit diagram of glow plug and explain its operation.
  - Explain the effects of engine variables on ignition lag and flame propagation.

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- 3. Attempt any TWO of the following:** **16**
- a) Compare performance characteristics of SI and CI engines.
  - b) What is hybrid vehicle? Explain working with the help of layout of a series hybrid vehicle.
  - c) Explain the working of EGR with neat sketch.
- 4. Attempt any FOUR of the following:** **16**
- a) State the advantages of DTSI.
  - b) Give any four sensors used in MPFI system.
  - c) State the pollutants from gasoline engines. And explain why it is formed.
  - d) Draw the block diagram of electronic diesel control unit (EDC).
  - e) Give advantages and disadvantages of LPG as a fuel for automobile engines.
  - f) State the different types of SI engine combustion chambers. Draw a neat sketch of any one.
- 5. Attempt any TWO of the following:** **16**
- a) State input and output control functions of ECM. Describe the idle speed control with sketch.
  - b) Draw a block diagram of CRDI system and describe its working.
  - c) (i) State the drawbacks of carbureted (SI) engines on the basis of fuel distribution, emission, power output and fuel consumption.  
(ii) Explain gasoline direct ignition system.
- 6. Attempt any FOUR of the following:** **16**
- a) What are the causes of diesel smoke?
  - b) State four properties of CI engine fuels.
  - c) State Euro norms and Bharat stage norms for cars.
  - d) What is delay period? State the variables affecting delay period.
  - e) Explain PFI system with neat sketch.
  - f) What is diesel knock? How is it controlled?
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