

17523

11920

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. a) **Attempt any THREE of the following:** **12**
- (i) Define spark ignition, auto ignition, preignition and surface ignition.
 - (ii) List four drawbacks of carbureted S.I. Engine.
 - (iii) State four features of CRDI system.
 - (iv) Explain the need of hybrid vehicles.
- b) **Attempt any ONE of the following:** **6**
- (i) Describe construction and working of TBI system with suitable sketch.
 - (ii) Draw a labelled block diagram of CRDI system.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Explain the phenomenon of diesel knocking with help of P - θ diagram.
 - b) Compare carburetted engine fuel supply system with MPFI system.
 - c) Describe any four variable affection detonation.
 - d) Define ignition lag? State the factors affecting ignition lag.
 - e) State four advantages of I head combustion chamber.
 - f) Draw neat sketch of swirl type combustion chamber of IDI engine.
- 3. Attempt any FOUR of the following:** **16**
- a) Write function of canister purge control and idle speed control in SI Engine.
 - b) Draw a neat block diagram indicating the inputs and outputs of ECM.
 - c) List three method of fuel injection. Describe any one.
 - d) Describe glow plug? Why and where it is used?
 - e) Explain the working of high pressure accumulator in CRDI system.
 - f) Describe the working of electronically controlled diesel injection pump.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Describe four properties of gasoline as a fuel for SI. engine.
 - (ii) LPG is used as a alternative fuel for SI engine. Justify your answer.
 - (iii) State four environmental benefits of biodiesel in comparison to petroleum based fuels.
 - (iv) Describe DTSI system. Write two advantages of it.

- b) **Attempt any ONE of the following:** **06**
- (i) Describe the working of fuel injector with neat sketch.
 - (ii) Draw a labelled block of LPG conversion kit. Describe its working.
5. **Attempt any TWO of the following:** **16**
- a) How the following factors will effect the delay period in C.I. engine.
 - (i) Ignition quality of fuel
 - (ii) Injection timing
 - (iii) Compression ratio
 - (iv) Engine speed
 - (v) Air fuel ratio
 - (vi) Load
 - (vii) Engine size chamber
 - (viii) Type of combustion
 - b) Describe construction and working of D-MPFI and L-MPFI with help of neat sketch.
 - c) Describe with neat sketch operation of PCV valve under different engine operating conditions to control / emissions.
6. **Attempt any FOUR of the following:** **16**
- a) Describe the concept of Gasoline Direct Injection (GDI).
 - b) Write advantages of VGT over conventional turbocharger.
 - c) Describe the working of EGR valve with neat sketch.
 - d) State Bharat stage IV norms for cars in India.
 - e) List four methods to improve fuel economy.
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