

12168

21112

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) Assume suitable data, if necessary.

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| 1. (A) Attempt any THREE of the following : | 12 |
| (a) Compare the SI and CI engines on the basis of fuel consumption and thermal efficiency. | |
| (b) List any four additives to gasoline fuel with its purpose. | |
| (c) Describe any four properties of petrol. | |
| (d) State the effects of Air-fuel ratio and compression ratio on delay period. | |
| (B) Attempt any ONE of the following : | 6 |
| (a) What are the effects of knocking on I.C. engine ? | |
| (b) Explain throttle body injection system. State two advantages of it over conventional system for SI engine. | |
| 2. Attempt any TWO of the following : | 16 |
| (a) What is MPFI system ? State four advantages of it over conventional fuel supply system for petrol engine. | |
| (b) Explain the working of CRDI system. | |
| (c) Explain exhaust gas recirculation system to control oxides of nitrogen. | |
| 3. Attempt any TWO of the following : | 16 |
| (a) Compare SI and CI engines on the basis of thermodynamic and operating variables. | |
| (b) What are the advantages and disadvantages of LPG as an alternative fuel for S.I. engine ? | |
| (c) Explain the stages of combustion for CI engine with sketch. | |

P.T.O.

- 4. (A) Attempt any THREE of the following : 12**
- (a) State the various applications of I.C. engines.
 - (b) State four advantages of Alcohol as an alternative fuel over Gasoline.
 - (c) Explain pre-combustion type chamber for C.I. engine with its advantages.
 - (d) How the exhaust emission is controlled by using a catalytic converter for SI engine ?
- (B) Attempt any ONE of the following : 6**
- (a) Explain the working of fuel injector used in CRDI system with sketch.
 - (b) Explain PCV system with diagram.
- 5. Attempt any FOUR of the following : 16**
- (a) Compare TBI and PFI system.
 - (b) What is ECM ? State any two output control functions of it.
 - (c) Explain the electric motor as a power plant for automobiles with its advantages and disadvantages.
 - (d) Describe the operation of Glow plug circuit.
 - (e) How the diesel smoke is controlled ?
- 6. Attempt any FOUR of the following : 16**
- (a) Explain the phenomenon of Pre-ignition. State two effects of it on I.C. engine.
 - (b) What are the inputs and outputs of ECM ?
 - (c) Name the main components of CRDI system with block diagram of it.
 - (d) State any four advantages of CRDI system over conventional fuel injection system.
 - (e) State the methods of improving fuel economy.
 - (f) Write a note on pollutants from gasoline engine.
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