12168

21314

3 Hours/100 Marks

Seat No. | | | | | | | | |

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) 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) Compare SI and CI engines on the basis of
      1) Fuel consumption
      2) Application
      3) Compression Ratio
      4) Air Fuel Ratio
   ii) List four fuel additives and state one effect of each.
   iii) State two advantages and two disadvantages of LPG as a SI engine fuel.
   iv) What is diesel knock ? How is it controlled ?

   b) Attempt **any one** of the following : **6**
   i) Compare Detonation in SI and CI engine knock. (Four points, P-Q diagram)
   ii) Describe L-MPFI system with the help of block diagram.

2. Attempt **any two** of the following : **16**
   a) State inputs and outputs of Electronic Control Module. Explain spark advance control as output control functions of ECM.
   b) Draw the block diagram of common rail direct injection system and explain its working.
   c) Explain the working of positive Crank case ventilation with neat sketch.

MARKS

3. Attempt **any two** of the following : **16**
   a) State the purpose of selecting the following engines :
      i) Air cooled 4 stroke SI engine for two wheeler.
      ii) Multi cylinder 4 stroke diesel engine for car.
   b) Describe four properties of CI engine fuels.
   c) What is delay period ? State the factors affecting the delay period.

4. a) Attempt **any three** of the following : **12**
      i) Compare SI and CI engines on the basis of :
         i) Power output per unit weight ii) Thermal efficiency
         iii) Operating speed iv) Operating pressure
      ii) Define :
         i) Octane Number ii) Cetane Number
      iii) Draw pressure-crank angle diagram showing stages of combustion in spark ignition engine.
      iv) Compare diesel and Gasoline engine emissions.
   b) Attempt **any one** of the following : **6**
      i) Draw the circuit diagram of glow plug and explain its operation.
      ii) Draw evaporative emission control system schematic diagram and describe its working.

5. Attempt **any four** of the following : **16**
   a) State two advantages and two disadvantages of electric cars.
   b) State four advantages of using MPFI system over carburetted fuel supply system.
   c) Compare TBI and PFI system. (four points)
   d) Draw cut section diagram of Top Feed Electronic fuel injector and label it.
   e) State the effect of engine maintenance on exhaust emission.

6. Attempt **any four** of the following : **16**
   a) What is direct injection type of combustion chamber ? Draw a sketch of the same combustion chamber.
   b) Draw block diagram of a closed loop electronic fuel injection feedback control system.
   c) State four advantages of CRDI system.
   d) Explain the operation of electronically controlled diesel injection system.
   e) State four methods of controlling diesel smoke. Explain any one method.
