

17619

21415

3 Hours / 100 Marks

Seat No.

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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) 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) Enlist the four uses of diodes in Automobiles.
- (ii) Write the meaning of the following:
- 1) PROM
 - 2) EPROM
 - 3) EEPROM
 - 4) RAM
- (iii) List four sensors and four actuators.
- (iv) State the need of following safety systems:
- 1) Collision avoidance
 - 2) Park assist

P.T.O.

- b) **Attempt any ONE of the following:** **6**
- (i) Describe the construction and working of a sensor which is used for cylinder identification. Also show its output voltage signal.
 - (ii) Describe electronic control systems used in CRDI with block diagram.
2. **Attempt any FOUR of the following:** **16**
- a) Describe binary number systems with examples.
 - b) Distinguish between digital visual display and analog visual display.
 - c) Describe closed loop control system with block diagram. Enlist its two applications.
 - d) State the functions of the followings:
 - (i) ROM
 - (ii) KAM
 - e) Describe the construction and operation of oxygen sensor with neat sketch.
3. **Attempt any FOUR of the following:** **16**
- a) Convert $4322_{(10)}$ into equivalent binary number and write the steps involved.
 - b) How photodiode and LED will be useful for ignition system? Describe with suitable sketch.
 - c) Describe the conversion of analog to digital signal with suitable sketch.

- d) Explain the concept of signal conditioning.
- e) Describe with neat sketch construction and operation of Idle speed actuator used in a vehicle that has power steering.
- f) State the instruments used for measuring following parameters:
 - (i) Speed
 - (ii) Level
 - (iii) Distance
 - (iv) Temperature

4. a) Attempt any THREE of the following: 12

- (i) Draw the labelled block diagram of basic computer.
- (ii) Describe construction and working of coolant temperature sensor.
- (iii) State and describe types of errors.
- (iv) Write the applications of following measuring instruments:
 - 1) Oscilloscope
 - 2) Lux meters
 - 3) Digital multimeters
 - 4) Battery testers.

b) Attempt any ONE of the following: 6

- (i) Describe construction and working of electronic power steering with block diagram.
- (ii) Enlist and describe six step approach for components testing.

- 5. Attempt any FOUR of the following:** **16**
- a) How semiconductor diode will be used in voltage regulator of charging system? Describe with suitable sketch.
 - b) State four types of communications system in automobile. Describe optic fibres.
 - c) State various methods of air flow measurement and describe operation of air flow sensor plate.
 - d) How purge control solenoid reduces exhaust emissions and driveability problems? Describe with sketch.
 - e) How the actuators are tested? Describe.
- 6. Attempt any FOUR of the following:** **16**
- a) List four ways of controlling EGR action through ECM. Describe EGR system with Pressure Feedback Electronic (PFE) sensor with neat sketch.
 - b) Describe the working of air bags. Also list materials of air bags.
 - c) Describe the system which display road map marking the exact location of the vehicle.
 - d) Describe working of electronic suspension system. Enlist its two advantages.
 - e) What will happen if throttle position sensor is defective? Also state its procedure for testing.
 - f) How load test of battery can be performed with the help of battery tester? Describe.
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