

17619

16117

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.
- (6) 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) Describe the significance of using electronics in automobile systems.
- (ii) Draw and explain a block diagram of basic computer.
- (iii) Describe open loop control system adopted in an engine with the help of a block diagram.
- (iv) Describe EGR system with Pressure Feedback Electronic (PFE) sensor with neat sketch.
- b) **Attempt any ONE of the following:** **6**
- (i) Describe the use of power diodes in charging system with the help of a schematic diagram.
- (ii) Describe closed loop control adopted in electronic fuel injection system. Draw a block diagram for the same.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Compare between digital visual display and analog visual display.
 - b) Draw a sketch of LED and photodiode arrangement used in ignition system. Describe its operation.
 - c) Convert $(5678)_{10}$ into equivalent binary number and write the steps involved.
 - d) State the need for analog to digital and digital to analog conversion in automobiles with an example.
 - e) Describe the need of signal conditioning with an example.
 - f) Describe the application of GSM network and bluetooth in a modern vehicle.
- 3. Attempt any FOUR of the following:** **16**
- a) Differentiate between ROM and RAM. (four points)
 - b) Describe the working of crankshaft position sensor.
 - c) Draw a schematic diagram of idle speed actuator. Describe its working.
 - d) Describe working of oxygen sensor and draw its output versus air : fuel ratio - graphically.
 - e) Describe the concept of ESP. State two benefits of the same.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Describe the working of an air flow sensor. State its location.
 - (ii) Describe the working of electronic suspension system. State its advantages (any two)
 - (iii) State the need of collision avoidance system. Describe its working.
 - (iv) Briefly describe six step approach for component testing.

- b) **Attempt any ONE of the following:** **6**
- (i) Describe In-tank fuel pump operation. Draw a schematic diagram for the same.
 - (ii) Describe global positioning system with the help of a block diagram. How is GPS useful in automobile?
- 5. Attempt any FOUR of the following:** **16**
- a) Describe the working of throttle position sensor.
 - b) Describe electronic control of GDI system.
 - c) State types of error. What is error compensation?
 - d) State four measurement parameters of digital multimeter. State the range for the same.
 - e) Describe procedure of stand alone diagnosis of a coolant temperature sensor.
 - f) Describe application of oscilloscope while checking alternator output signal.
- 6. Attempt any FOUR of the following:** **16**
- a) Describe the working principle of purge control valve.
 - b) Describe working of electronic power steering system.
 - c) What is the need of low pressure warning system? Describe its working.
 - d) Describe the use of Lux meter and frequency meter.
 - e) Describe the procedure of diagnosing MPFI system.
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