

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 <u>THREE</u> 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 <u>ONE</u> 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.	

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| <b>2.</b> | <b>Attempt any <u>FOUR</u> of the following:</b>  | <b>16</b> |
| 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.                            |           |
| <b>3.</b> | <b>Attempt any <u>FOUR</u> of the following:</b>  | <b>16</b> |
| 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.  |           |
| <b>4.</b> | <b>a) Attempt any <u>THREE</u> of the following:</b>  | <b>12</b> |
| (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.   |           |

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| b) <b>Attempt any <u>ONE</u> of the following:</b>   | <b>6</b> |
| (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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