

# 17619

**15162**

**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) State four different types of measuring instruments used while checking signals for system diagnosis.
  - (ii) With a neat sketch describe the working of idle speed actuator.
  - (iii) Draw a neat block diagram to indicate measurement of temperature in vehicle instrumentation.
  - (iv) State the different types of computer memories. Enlist the function of read only memory.
- b) Attempt any ONE of the following: 6
- (i) With a neat sketch describe the construction and working of oxygen sensor.
  - (ii) Draw a neat block diagram to describe the function and working of Electronic suspension.

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- 2. Attempt any FOUR of the following:** **16**
- a) Justify the use of semi conductor diode used in voltage regulation of charging system.
  - b) State the importance of manifold absolute pressure sensor. Describe the principle on which this sensor works.
  - c) State the need of low tyre pressure monitoring system. Describe its working.
  - d) Write the applications of following instruments:
    - (i) Lux meters
    - (ii) Battery testers.
  - e) Draw a neat block diagram to show the configuration of closed loop control system.
  - f) Enlist different types of communication system used in automobile. State the function of bluetooth technology.
- 3. Attempt any FOUR of the following:** **16**
- a) With a suitable example describe binary number system.
  - b) Distinguish between primary memory and volatile memory.
  - c) Describe the application of Global positioning system used as a navigation system in cars.
  - d) List the six-steps followed during component testing. Describe any one step.
  - e) Describe the procedure used to indicate the TDC reference mark of cylinder No. 1 to the ECM.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Enlist the purposes of photo-diode and LED used in ignition system.
  - (ii) Draw a neat block diagram to indicate canister purge control circuit.
  - (iii) With a suitable example describe the application of digital multimeter in sensor testing.
  - (iv) Describe the testing procedure to conduct a test on any one automotive sensor.

- b) **Attempt any ONE of the following:** **6**
- (i) Describe the procedure of conversion of signals from analog to digital.
  - (ii) Define error. State two types of errors.
- 5. Attempt any FOUR of the following:** **16**
- a) Draw a neat block diagram and describe CAN bus system in automobiles.
  - b) State the need of electronic power steering. Enlist different sensors used in the system.
  - c) State the application of oscilloscope as a type of measuring instrument used in system diagnosis.
  - d) State the importance of display devices used in automotive applications. List any two types of digital display devices.
  - e) Draw a neat block diagram of a basic computer used in automobiles. Enlist the functions of the components. (any two)
  - f) State the importance of use of electronics in the automobile. Mention any four potential applications of the same.
- 6. Attempt any FOUR of the following:** **16**
- a) Given a decimal number of 25, convert it into binary number.
  - b) With a neat block diagram describe the working of exhaust gas recirculation as an output control function of ECM.
  - c) Draw a neat labelled diagram indicating an air flow measurement sensor.
  - d) List four different conditions to be sensed in a modern vehicle. Name two different types of principles on which pressure sensor works.
  - e) Draw a neat block diagram to indicate electronic control system used in MPFI system.
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