

Total No. of Questions : 8]

SEAT No. :

P3615

[Total No. of Pages : 2

[4959]-1100B

B.E. (E&TC/Electronics)

Advanced Automotive Electronics

(2012 Pattern) (Semester - II) (Open Elective - I)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6 and Q7 or Q8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Assume suitable data if necessary.*

- Q1)** a) What is hybrid technology? Explain various operating models and compare advantages and disadvantages of each. [8]
- b) With suitable block diagram explain automatic cruise control system. List sensors used in such system. [8]
- c) Comment on the various tools and processes involved in automotive electronics. [4]

OR

- Q2)** a) What are selection criteria of sensors for automotive applications? [8]
- b) Explain the necessity of fuel map and ignition map in Engine Management System. [8]
- c) How EGO (Exhaust Gas Oxygen concentration) sensor works? Explain. [4]

- Q3)** a) What is CAN? Explain functionality of Data link layer in CAN? What is bit stuffing in CAN? What is the use of bit stuffing? [8]
- b) What is HIL & SIL testing? State the advantages of HIL over SIL. [6]
- c) Discuss in detail about D2B and DSI communication protocol. [4]

OR

- Q4)** a) Enlist various types of automotive buses. Compare any three types of automotive buses. [8]
- b) How Ethernet protocol is important in automotive systems? Explain the frame structure for the same. [6]

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c) How CAN follow arbitration. Explain with example. [4]

Q5) a) Explain the closed loop ignition control with its waveform. [6]

b) Explain the steps involved for implementation of a model from MATLAB / SIMULINK to Real-Time environment. [6]

c) How does the transient operation of engines cause emission formation? [4]

OR

Q6) a) What is the role of control system strategies in fine tuning of automotive systems? [6]

b) Explain automatic rain operated wiper control. [6]

c) Discuss the significance of PID control in cruise control system. [4]

Q7) a) What is needed to find faults in automotive systems? Explain in brief. [6]

b) List the six-stage diagnostic process. Explain the same with suitable example. [6]

c) Explain active safety and passive safety with suitable example. [4]

OR

Q8) a) Discuss any two applications of Advance driver assistance systems. [6]

b) What is on board diagnostics system? How it indicate various faults? [6]

c) Write a short note on EMC standards. [4]

