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 Qi 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]**

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