

Total No. of Questions : 8]

SEAT No. :

P3110

[Total No. of Pages : 2

[5354]-600-B

**B.E. (E&TC/Electronics) (Semester - II)**

**ADVANCED AUTOMOTIVE ELECTRONICS**

**(2012 Pattern) (Open Elective)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

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

- Q1)** a) Briefly explain the working of spark plug & disk braking system with suitable diagram. [8]
- b) What is hall effect? Explain a position sensor using principle of hall effect? Compare it with magnetic reluctance position sensor. [8]
- c) Give brief description of why electronics is so widely used on today's vehicles. [4]

OR

- Q2)** a) What is lambda Sensor? Explain the construction and working of Lambda Sensor with a neat sketch. [8]
- b) What is hybrid technology? Explain various operating models and compare advantages and disadvantages of each. [8]
- c) What is catalytic converter and explain the desired functions of catalytic converter? [4]
- Q3)** a) Draw a neat sketch of [6]
- i) FlexRay frame format
  - ii) FlexRay communication cycle
- b) Explain connection schematic of CANcentrate & ReCANcentrate. [6]
- c) State the objectives of FlexRay. [4]

*P.T.O.*

OR

- Q4)** a) With suitable example explain any two applications of telematics in Automotive domain. [6]  
b) Explain Protocol wakeup & startup with respect to FlexRay protocol. [6]  
c) Compare GPS & GPRS with respect to automotive applications. [4]

- Q5)** a) Write a short note on Raspberry Pi and explain how it assists in real-time simulations of automotive systems. [6]  
b) Discuss the significance of system response in terms of tuning the automotive control system. [6]  
c) Draw & explain digital cruise control system. [4]

OR

- Q6)** a) In what way the transient operations of engines cause emission formation? [6]  
b) Write a short note on automotive control systems through various analog and digital control methods involved. [6]  
c) Comment on need of model based development in automotive sector. [4]

- Q7)** a) State the meaning of terms 'fault' and 'symptom'. State the two main pieces of knowledge necessary to diagnose the fault. [6]  
b) What are the sources of engine noise? State their possible cause and required action. [6]  
c) Draw & explain electrical diagnosis procedure in detail. [6]

OR

- Q8)** a) Describe how scanner is connected to a vehicle and what information it can provide. [6]  
b) Write notes on. [6]  
i) Vehicle emission & environmental health.  
ii) Emission control strategies.  
c) Compare active safety & passive safety with suitable examples. [6]

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