

[5254] - 99

B.E. (Electronics) (Semester - II)
AUTOMOTIVE ELECTRONICS
(2008 Pattern) (Elective - IV)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates :

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section II.*
- 2) Answer to the two sections should be written in separate books.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*
- 5) Assume suitable data, if necessary.*

SECTION - I

Q1) a) How is spark pulse generated? What is the method of spark timing control in ignition system? **[10]**

b) What are the differences in SI & Diesel engine operation? **[8]**

OR

Q2) a) Explain with a neat diagram 4-stroke operation of SI engine? **[10]**

b) Explain different types of Hybrid vehicles. **[8]**

Q3) a) Explain the methods with principle of sensor operations for the following : **[8]**

i) MAP

ii) Exhaust Oxygen sensing

iii) Throttle plate sensing

iv) Engine speed

b) What are the different types of actuators used in automotive electronics? Explain working Principle of Solenoid & its role in fuel injection system. **[8]**

P.T.O.

OR

- Q4) a)** What are the various modes of operation of Hybrid Electric Vehicle (HEV)? [8]
- b) Explain with the help of working Principle, characteristics, limitations and usage for the following sensors in context with automotive system.[8]
- i) Temperature sensor
 - ii) Vibration sensor
- Q5) a)** How steering control system (power/manual) works? Explain with proper diagram. [8]
- b) What are different strategies of 'Engine Management System' used in automotive systems? [8]

OR

- Q6) a)** Explain the importance of ABS. How is it implemented? [8]
- b) Write short notes on : [8]
- i) Wiper control
 - ii) Remote keyless entry

SECTION - II

- Q7) a)** What is the selection criteria for processors of Automotive System.[10]
- b) State and explain hardware and software debugging techniques in context with Automotive application. [8]

OR

- Q8) a)** Explain the tool-chain for developing an Embedded 'C' program. [10]
- b) Compare 'soft real time' with 'hard real time' in context with automotive system. [8]
- Q9) a)** With the help of proper example, justify the relevance of Communication Protocols in automotive applications. [8]
- b) With an example, explain utility of GPS & GPRS in automotive environment. [8]

OR

Q10)a) Explain the features of CAN. How is it suitable for Data Communication in Automotive Electronics? [8]

b) Compare architectural features of ARM 9 and ARM cortex in automotive applications. [8]

Q11)a) What are the future trends for emission control? [8]

b) Explain the diagnostic coder for automotive. [8]

OR

Q12)a) What are the various safety norms and statements used in automotive system? [8]

b) Compare 'On-board' and 'off-board' diagnostics in automotive application. [8]

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