Total No. of Questions :8]

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M.E. (E&TC- VLSI & Embedded Systems)

EMBEDDED AUTOMOTIVE SYSTEMS

(2017 Credit Course) (Semester-II) (End sem.) (504209)

Time :3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Assume suitable data if necessary.***
3) ***Solve any five questions.***

Q1) a) List basic systems that make up an automobile and explain their major components and functions. **[6]**

b) Discuss the future trends in automotive embedded system. **[4]**

Q2) a) What is hybrid technology? Explain various operating models and compare advantages and disadvantages of each. **[6]**

b) What are the safety features in today's automotive cars? Explain anyone in detail. **[4]**

Q3) a) Suggest & explain type of sensor & signal conditioning circuit used for measuring speed of vehicle. **[6]**

b) Elaborate operation of position sensing using throttle plate. **[4]**

Q4) a) With the aid of a neat sketch explain the construction and theory of operation of a typical oxygen sensor used in vehicle. **[6]**

b) Make a clearly labeled sketch to show an exhaust gas recirculation system. **[4]**

Q5) a) Explain electronic steering control system and automatic rain operated wiper control. **[6]**

b) Explain the terms **[4]**

i) Discrete time idle speed control

ii) EGR Control

P.T.O.

Q6) a) What way would you recommend to automate cruise control? Explain with suitable diagram. **[6]**

b) Summarize the control modes in automotive and explain anyone in detail. **[4]**

Q7) a) List six stage diagnosis process in your own words. Explain blackbox fault finding with suitable diagram. **[6]**

b) Explain open issues for Automotive communication systems. **[4]**

Q8) a) State the objectives of FlexRay. Draw a neat sketch of **[6]**

i) FlexRay frame format

ii) FlexRay communication cycle.

b) Comment on Flexible time triggered communication on CAN. **[4]**