

Total No. of Questions : 12]

SEAT No. :

**P4276**

**[4759] - 191A**

[Total No. of Pages : 3

**B.E. (Information Technology)**

**EMBEDDED SYSTEMS**

**(2008 Pattern) (Elective - II)**

*[Time : 3 Hours]*

*[Max. Marks : 100]*

*Instructions to the candidates:*

- 1) *Answer to the two sections should be written in separate answer books.*
- 2) *In section I attempt : Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6.  
In section II attempt: Q.No. 7 or Q. No. 8, Q. No. 9 or Q.No. 10, Q.No. 11 or Q.No. 12.*
- 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) What are the advantages of using ASIC & SOC in embedded systems? Explain. [8]
- b) Classify different embedded systems. List commonly used microcontrollers in each category. [8]

OR

- Q2)** a) What are the embedded systems? How they are different than general purpose systems? [6]
- b) What are the different components of an embedded system? [6]
- c) Name the area of applications for the following processors : [4]
- i) Digital signal processor.
  - ii) Media processor.

- Q3)** a) What are the different applications of timers in Embedded systems? How watchdog timer is different? [6]
- b) Explain the techniques to optimize the use of power in an embedded system? [6]
- c) What are the types of memory that can be used in an embedded system? Justify their used. [6]

OR

**P.T.O**

- Q4)** a) How a designer selects EPROM, RAM and peripherals required for an adaptive cruise control system? Explain. [8]  
b) Explain the process of converting a C program into a file for ROM image. [4]  
c) Explain in brief the use of following in an embedded system : [6]  
i) Real time clock  
ii) UART

- Q5)** a) List and describe five types of device driver functions. [8]  
b) Name features of RS-232C. Explain the RS-232C signals used for communication. [8]

OR

- Q6)** a) Explain different features of CAN protocol. [8]  
b) How does host recognize the device insertion in USB protocol? Explain in detail. [8]

### **SECTION - II**

- Q7)** a) Explain the advantages of programming embedded systems using high-level languages. [8]  
b) Queue data structure of C language is used for networking applications. Explain. [6]  
c) When do you use assembly language for embedded system programming? [4]

OR

- Q8)** a) Compare Java and C++ programming and their suitability for embedded systems. [6]  
b) What is cross compiler? How it is different than generic compiler? Give example for cross compiler. [6]  
c) What is in-circuit emulator? Give details of its use in embedded system development. [6]

- Q9)** a) When do you require RTOS? [6]  
b) With the help of neat diagram, explain cooperative round robin scheduling model for RTOS. What is interrupt latency time for this scheduling model. [10]

OR

- Q10)** a) With the help of neat diagram, explain preemptive scheduling for RTOS. [8]  
b) How can you manage without RTOS? [8]

- Q11)** a) Differentiate MicroC/OS-II and Vx Works based on features and their area of application. [6]  
b) With the help of neat system block diagram, explain the system requirements and tasks for an adaptive cruise control system in a car. [10]

OR

- Q12)** a) How tasks are managed in MicroC/OS-II? Explain in detail. [8]  
b) With help of neat diagram, explain synchronization of tasks and IPCs for TCP/IP network application. [8]

