Total No. of Questions : 12]

SEAT No. :

P3179

[Total No. of Pages :3

[4859]-188
B.E. (INFORMATION TECHNOLOGY)
Embedded System (Semester - I)
(2008 Pattern)(Elective -II)

Time : 3 Hours] *[Maximum Marks : 100*

Instructions to the candidates:

1) ***Answers 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 design parameters of embedded systems? Explain. **[8]**

b) What do you mean by DSP, SoC and ASSP? **[8]**

OR

Q2) a) What are the embedded systems? Classify them. **[8]**

b) What are the different components of an embedded system? **[8]**

Q3) a) Explain different architectural features considered while selecting microprocessors or microcontrollers for an embedded system? **[8]**

b) What are the techniques of power management used while designing an embedded system? **[4]**

c) What are the types of memory selected and their typical size while designing the data acquisition system? **[6]**

OR

Q4) a) How a designer selects processor, EPROM and RAM required for a digital camera? **[6]**

b) What is UART? How is it useful in an embedded system? **[6]**

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c) Explain the typical memory map for a small scale embedded application. **[6]**

Q5) a) Compare RS-233C and RS-425 communication protocols. **[8]**

b) Describe SPI protocol in brief and the applications where it is preferred. **[8]**

OR

Q6) a) What is CAN protocol? Give its features and applications. **[8]**

b) How does host recognize the device insertion in USB protocol? Explain in detail. **[8]**

SECTION-II

Q7) a) What are the different phases of software development cycle for a typical embedded system? **[8]**

b) What are the different debugging tools available for embedded system programming **[6]**

c) What are the advantages of using high level language instead of 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? Name one. How it is different than generic compiler? **[6]**

c) With an example explain how stacks and queues are used to implement application functionality in embedded system software. **[6]**

Q9) a) What are the different characteristics of real time operating system? Give two example of RTOS. **[6]**

b) With the help of neat diagram, explain cooperative 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) Define and explain interrupt latency period. What is its significance in RTOS? **[4]**

c) What is a mailbox? Give details. **[4]**

Q11)a) Differentiate MicroC/OS-II and VxWorks 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 adaptive cruise control system for a car. **[10]**

OR

Q12)a) How tasks are managed in MicroC/SO-II? Explain in detail. **[8]**

b) With help of neat diagram, explain synchronization of tasks and IPCs for vending machine application. **[8]**

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