Total No. of Questions : 12] SEAT No. :

P3323 [Total No. of Pages : 3

[4759]-112
B.E. (Electronics)
Embedded System
(2008 Course)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any three questions from each section***
2) ***Answer to the two sections should be written in separate books***
3) ***Figures to the right indicate full marks***
4) ***Assume suitable data, if necessary***
5) ***Neat diagrams must be drawn wherever necessary***
6) ***Use of non programmable electronic pocket calculators is allowed***

SECTION - I

Q1) a) Define embedded systems. Explain Different Categories of Embedded System and application Areas. **[8]**

b) Explain in brief Design metrics Challenges. The design of particular product has NRE cost of Rs. 1,00,000. How much will we have to add to the cost of the each product if we sell

i) 100 units and ii) 200 units **[10]**

OR

Q2) a) Explain the role of software tools in Integrated Development Environment (IDE) to design Embedded System application. **[10]**

b) Explain different communication protocols used for transferring data in embedded systems. **[8]**

Q3) a) List and explain specifications of a processor. Compare Harvard and Von-Neuman processor architectures. **[8]**

P.T.O.

b) Explain use and type of interrupts in embedded application development. **[8]**

OR

Q4) a) Why selection of memory is critical in Embedded System? Explain the steps involved in designing Embedded System from memory selection point of view **[8]**

b) Explain various processor technologies in design of embedded processors. **[8]**

Q5) a) Explain the pin connect block and general purpose input output registers in LPC 2148 **[8]**

b) Explain the privileged and Non-privileged modes of operation in ARM 7 processor. **[8]**

OR

Q6) a) Draw and explain data flow model of an Arm processor. **[8]**

b) Compare ARM mode and THUMB mode operation of ARM processor **[8]**

SECTION - II

Q7) a) List features of LPC 2148 with block diagram. **[8]**

b) Write and explain the code for interfacing of 4x4 matrix keyboard and LCD with LPC 2148. Display "ELECTRONICS ENGINEER" message on LCD. **[8]**

OR

Q8) a) State different on chip communication protocols available in LPC 2148. **[8]**

b) Explain on chip ADC/DAC of LPC 2148 Also write a program for ADC interfacing to display analog input on LCD. **[8]**

Q9) a) How many tasks can be defined in µcos - II and what type of scheduler is used in µcos - II? **[8]**

b) Compare the traditional OS with RTOS and state the µcos - II RTOS features. **[8]**

OR

Q10)a) Define the context Switching. What are the steps involved in µcos - II context switching? Why it puts additional burden on OS? **[8]**

b) Compare various scheduling algorithms. **[8]**

Q11)a) Explain the message box and queue kernal objects for interprocess communication in µcos - II? **[8]**

b) Explain digital camera with suitable block diagram and state its hardware and software requirements. **[10]**

OR

Q12)a) Explain the interrupt handling in µcos - II and draw the state diagram show interrupt related functions. **[8]**

b) Explain the Embedded Systems application Cruise control **[10]**