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53 (CS 817) EBSY

2013

(December)

EMBEDDED SYSTEM

Paper : CS 817

Full Marks : 100

Time : Three hours

***The figures in the margin indicate full marks
for the questions.***

Answer any five questions.

1. (a) What is an Embedded System ? What are the characteristics of an Embedded System ? Why PCs are not considered to be an Embedded System ? 2+6+2=10
(b) What are the challenges in Embedded System Design ? 10

2. Differentiate between the following : 5×4=20
 - (a) Microprocessor Vs. Microcontroller
 - (b) Functional Requirement Vs. Non-functional requirement

Contd.

- (c) Real time system Vs. Embedded system
- (d) Requirement Vs. Specification.
3. (a) How many pins are there in 8051 chip ? Describe the function of all ports in 8051. $2+8=10$
- (b) Describe EDF scheduling algorithm with one example. What are the advantages and disadvantages of EDF scheduling algorithm ? $6+4=10$
4. What is distributed embedded system ? Describe CAN protocol with diagram. $3+17=20$
5. (a) Write a program to add the numbers 56H and 95H using 8051 microcontroller and show how CY, AC and P flags are affected. 5
- (b) What is the default starting address of stack in 8051 ? Write a program to add first ten natural numbers using 8051 microcontroller. $1+5=6$

- (c) What is the difference between long jump and short jump ? How does 8051 CPU know where to return to after executing the RET instruction ? 5+4=9

6. (a) Find the delay with the following program for an 8051 microcontroller with frequency of 11.0592 MHz. 10

	Machine Cycle
DELAY : MOV R2, #100	1
HERE : MOV R3, #255	1
AGAIN : DJNZ R3, AGAIN	2
DJNZ R2, HERE	2
RET	2

- (b) Ten hex numbers are stored in RAM locations 50H onwards, write a program to find the biggest number in the set. The biggest number should finally be saved in 60H. 10

7. Write short notes on : 10×2=20

- (a) Hard Real Time Communication
 (b) Testing of Embedded Systems.