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53 (IT 816) RTES

**2016**

**REAL TIME AND EMBEDDED SYSTEM**

Paper : IT 816

Full Marks : 100

Time : Three hours

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

Answer **any five** questions.

1. (a) What are the components of an Embedded System ? Give a brief description about function of each component. 10
- (b) Explain the structure of PSW register in 8051 with a diagram specifying function of each bit. 10
2. Differentiate between following : 5×4=20
  - (a) Microprocessor vs. Microcontroller

Contd.

- (b) Functional Requirement vs. Nonfunctional Requirement
- (c) Real-time System vs. Embedded System
- (d) Requirement vs. Specification.
3. (a) What is the difference between LJMP and SJMP instructions ? Find the machine cycle if the crystal frequency is 18 MHz. 5+5=10
- (b) Write a program to toggle all pins of Port 1 continuously with a delay of 1 second between the toggling 10  
 $XTAL = 22MHz.$
4. (a) Differentiate between Event Driven and Clock Driven scheduling algorithms. 10
- (b) Say any real time system has the following *three* periodic tasks : 5+5=10
- $T1 = (e1 = 20, p1 = 150, d1 = 35)$
- $T2 = (e2 = 15, p2 = 100, d2 = 20)$
- $T3 = (e3 = 25, p3 = 200, d3 = 70)$
- Schedule the tasks using DMA and EDF.

5. (a) Define a Real Time System. What is the difference between Hard and Soft Real Time System. Give example of *any five* Real Time Systems which we use in our day to day life.  $2+3+5=10$
- (b) Describe Myrinet System with a diagram. 10
6. Write short notes on :  $10 \times 2 = 20$
- (a) Hard Real Time Communication.
- (b) Testing of Embedded Systems.
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