SEVENTH SEMESTER B TECH DEGREE EXAMINATION
ELECTRICAL AND ELECTRONICS ENGINEERING
MODEL QUESTION PAPER

13.701 EMBEDDED SYSTEMS (E)

Time: 3 Hours
Maximum: 100 marks

Part A
(Answer all questions from part A)

1. Explain main features of an embedded system with the help of examples
2. Describe the main assembler directives of 8051 microcontroller
3. Explain the different data types available in embedded C
4. Differentiate the various modes of operation of timers in 8051
5. Draw the timing diagram explaining the operation of ADC 0804

(5 x 4 = 20 marks)

Part B
(Answer any one question from each module (20x4=80))

Module I

6. a) Why embedded systems are termed as real time systems? Explain the concept with the help of examples.
   b) Describe the embedded system product development life cycle model

   OR

7. a) Explain the current trends and challenges in the field of embedded systems.
   b) Explain with necessary diagrams the different software life cycle models

Module II

8. a) With a neat diagram explain the architecture of 8051.
   b) Write an Assembly Language program to add two 32 bit numbers and save in 60H onwards.

   OR

9. a) Explain the different addressing modes of 8051 with example.
   b) Write an embedded C program to convert packed BCD to ASCII numbers and vice versa

Module III
10. a) Assume that a 1Hz frequency pulse is connected to input pin P3.4. Write an Assembly Language Program to count the number of pulses during 1 sec. XTAL=22 MHz.
   b) Write an 8051 C program to transfer serially the message “GOODBYE” continuously at 57,600 baud rate.

   OR

11. a) Switch is connected to P1.2. Write a program to monitor the switch and create the following frequencies on pin P1.7 SW= 0; 500Hz  SW=1; 750 Hz Timer 0 in mode 1.
   b) Explain how serial port programming is done in 8051. What are the ways of doubling the baud rate?

Module IV

12. a) With a neat block diagram, explain an application of embedded system
   b) Discuss how an 8051 can be interfaced to an LCD. Write an embedded C program to send the letters ‘I’, ‘E’ and ‘S’ to the LCD continuously with a delay of 1 second.

   OR

13. a) With a neat connection diagram explain how DAC can be interfaced with 8051 and write a program to output a 5 step staircase waveform.
   b) Explain how Interrupt programming is done in the case of 8051 programming.