Reg. No. : | | | | | | | | | | |

Question Paper Code: 42952

M.E. DEGREE EXAMINATION, NOVEMBER 2015

Elective

POWER ELECTRONICS AND DRIVES

14PPE511 – MICROCONTROLLER BASED SYSTEM DESIGN

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. How many bytes of bit addressable memory is present in 8051 based micro controllers?

   (a) 8 bytes (b) 32 bytes (c) 16 bytes (d) 128 bytes

2. The device that generates the basic timing clock signal for the operation of the circuit using crystal oscillator is

   (a) timing unit (b) timing and control unit
   (c) oscillator (d) clock generator

3. Give the power down bit position of PSW

   (a) D3 (b) D0 (c) D7 (d) D5

4. What is scratch pad?

   (a) Cache (b) Flash (c) RAM (d) ROM

5. Give the 4 step sequence of a stepper motor if we start with 0110 for clockwise direction

   (a) 0110, 0011, 1001, 1100 (b) 0110, 1001, 0011, 1100
   (c) 0110, 1100, 1001, 0011 (d) 0110, 0011, 1100, 1001

PART - B (5 x 3 = 15 Marks)

6. How many hardware interrupt pins are available in microcontroller 8051 and ROM locations when activated?

7. Differentiate among SJMP, AJMP & LJMP instructions of 8051 microcontroller.

8. How is the internal RAM in PIC microcontroller accessed by indirect addressing?

9. What is the function of TRISA pin?

10. How can the LCD be tested whether it is ready or not to receive a command or data?

PART - C (5 x 16 = 80 Marks)

11. (a) Draw the internal structure of the MC8051 and explain functional blocks. (16)

Or

(b) Write detailed note on how serial communication is handled by 8051. (16)

12. (a) Write 8051 ALP to generate a square wave of 400*Hz* in port pinP1.4 by using timer1 overflow interrupt. (16)

Or

(b) Explain in detail about the LCD clock and thermometer using full RTOS. (16)

13. (a) With a neat diagram discuss in detail about memory organization of a PIC microcontroller. (16)

Or

(b) With a suitable example, Illustrate how anyone of the built-in-timer of PIC is useful. (16)

14. (a) Discuss the flash type ADC and its applications. Also explain how to interface it with PIC. (16)

Or

(b) Explain in detail the compare, capture mode of the PIC microcontroller with a neat circuit diagrams. (16)

15. (a) With necessary diagram, explain the generation of gating signals for a single phase half controlled rectifier used to control speed of a DC Motor using any one Microcontroller. (16)

Or

(b) Perform a case study for controlling AC/DC applications using a PIC microcontroller in a home automation environment. (16)