Reg. No. :

Question Paper Code: 92052

M.E. DEGREE EXAMINATION, DECEMBER 2013.

Elective

Power Electronics and Drives

01PPE511 – EMBEDDED CONTROL BASED ELECTRICAL DRIVES

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A -   (10 x 2 = 20 Marks)

1. Draw and explain the program memory mapping of PIC16C7x.

2. If the content of the STATUS register is 0x 1D, what is the status of the microcontroller?

3. How the destination address is loaded in to the program counter in computed GOTO statement?

4. Draw and explain the operation of instruction pipe line in PIC16C7x.

5. Which are the configuration bits in TIMER0?

6. How the start and stop conditions are activated in I2C bus?

7. Explain the calculation to get a baud rate of 9600. What is the baud rate error?

8. Which are the A/D configuration registers?

9. Explain the implementation of software key de-bouncing.

10. Explain how a temperature sensor is interfaced to PIC microcontroller.

PART - B (5 x 14 = 70 Marks)

11. (a) Draw the block diagram of PIC16C7x microcontroller and explain the architecture.   (14)

   (b) How the memory is mapped in direct and indirect addressing mode in PIC16C8x?. Explain with examples   (14)

12. (a) Which are the bit oriented instructions of PIC microcontroller? Explain with examples.   (14)

Or

   (b) Where the stack of PIC16C8x resides? Explain a simple stack operation.   (14)

13. (a) Explain how the WDT is configured with TIMER0 in PIC16C8x.   (14)

Or

   (b) What are the interrupts available in PIC16C8x? Explain the context saving operations on an interrupt.   (14)

14. (a) Using a D/A converter, design a system to generate 1kHz sinusoidal waveform.   (14)

Or

   (b) Design a system to transmit 32 bytes of data using standard UART module.   (14)

15. (a) Explain how the CCP module can be used to generate a sine triangle PWM waveform with a carrier frequency of 2kHz.   (14)

Or

   (b) Using suitable diagrams, explain how a 16x2 LCD module is interfaced to the PIC microcontroller.   (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Explain the speed and direction control of a DC motor connected to an H – bridge using PIC microcontroller.   (10)

Or

   (b) Draw the interface diagram of a furnace of a furnace temperature control system. Explain the implementation of control algorithm using a PIC microcontroller.   (10)

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