Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : X20471

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Seventh Semester

Electrical and Electronics Engineering

EE 6008 – MICROCONTROLLER BASED SYSTEM DESIGN

(Common to Electronics and Instrumentation Engineering, Instrumentation and Control Engineering)

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What are the benefits of having RISC architecture ?

2. Define Brown out reset mode.

3. What is the minimum and maximum clock frequency for PIC 16CXX ?

4. What is the role of TRISx register in I/O Port Management ?

5. Define baud rate.

6. What is baud rate in asynchronous mode ?

7. Write an assembly language program to multiply two 32 bit data using ARM instruction sets.

8. List out the four ARM development tools.

9. List out the various instruction set of ARM processor.

10. What are the pipeline stages in five stage pipeline ?

PART – B   (5×13=65 Marks)

11. a) i) Draw and explain the architecture of PIC 16 Microcontroller.   (8)

       ii) Explain about the instruction set of PIC Microcontroller.   (5)

       (OR)

   b) Explain about the various memory organization of PIC Microcontroller.

12. a) Discuss the interrupt structure in PIC Microcontroller. List out the various interrupt source in PIC.

 (OR)

 b) i) Discuss about the timer of the PIC Microcontroller. **(7)**

  ii) Difference between compare mode and capture mode. **(6)**

13. a) Illustrate with suitable example how I^2C communication is carried out in PIC Microcontroller.

 (OR)

 b) Explain the operation of ADC interfacing with PIC Microcontroller.

14. a) i) Explain the various data operations involved in ARM. **(7)**

  ii) Illustrate the concept of data operations in ARM processor. **(6)**

 (OR)

 b) With neat sketch explain the functional block diagram ARM architecture.

15. a) With neat sketch, explain the 3-stage pipeline ARM organization.

 (OR)

 b) Explain briefly about embedded ARM applications.

PART – C (1×15=15 Marks)

16. a) Develop a suitable algorithm for 16 bit addition and subtraction using a suitable ARM processor.

 (OR)

 b) Develop a suitable algorithm to generate an PWM signal using any of the port available in PIC 16C7X for a duty cycle of 75%.

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