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

Question Paper Code : 40984

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Seventh Semester

Electrical and Electronics Engineering

EE6008 – 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. Draw the program memory organization of PIC16C6x microcontroller.
2. Write the operation carried out when these instructions executed by PIC.
   BTFSS f, b
   BCF f, b
3. What is the necessity of prescalar in the timer operation ?
4. How to display constant strings ?
5. Draw the start and stop conditions of I^2C.
6. Define baud rate.
7. Write the CPSR format of ARM Processor.
8. Differentiate little-endian and big-endian memory organizations.
9. What is ARM datapath timing ?
10. Write the operation carried out when CLZ instruction executed.

PART – B **(5×16=80 Marks)**

11. a) Explain the architecture of PIC16C6x microcontroller with neat block diagram. **(16)**

(OR)

b) i) Write PIC microcontroller assembly language program to arrange the given array having byte type data in ascending order. (8)

ii) With examples, explain the addressing modes of PIC16C6x microcontroller. (8)

12. a) Explain the various types of interrupts available in PIC microcontroller and also the step-by-step procedure to process an interrupt. (16)

(OR)

b) Explain the modes of Timer 1 of PIC16C6x microcontroller with block diagram. Also explain the function of associated registers. (16)

13. a) Write PIC microcontroller assembly language program to display the characters '2018' in the first row of 2 lines × 20 characters LCD. (16)

(OR)

b) Draw and explain the architecture of on chip ADC of PIC microcontroller and write a suitable assembly language program for configuring the ADC. (16)

14. a) i) Draw and explain the visible registers in an ARM processor. (8)

ii) Write ARM assembly language program to multiply two 32-bit binary numbers. (8)

(OR)

b) i) Explain the structure of the ARM cross-development tool kit. (8)

ii) Write a subprogram which copies a string of bytes from one memory location to another. The start of the source string will be passed in r_1, the length (in bytes) in r_2 and the start of the destination string in r_3. (8)

15. a) Explain the 5-stage pipeline ARM organization with neat diagram. (16)

(OR)

b) i) Discuss on coprocessor data transfer instructions of ARM processor. (8)

ii) Explain the ARM floating-point architecture. (8)