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

Question Paper Code : 20440

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Seventh Semester

Electrical and Electronics Engineering

EE 6008 – MICROCONTROLLER BASED SYSTEM DESIGN

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the PIC16C6X microcontroller core features?
2. Write short note on register file structure of PIC.
3. Write the various external interrupts of PIC micro controller.
4. What is the purpose of watchdog timer?
5. Define band rate.
6. What are the applications of serial EEPROM?
7. List out some of ARM development tools.
8. What are the main features of ARM processor?
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) Briefly explain and draw the architecture of PIC16CXX microcontroller.

(ii) Explain how the instruction pipelining implemented in PIC.

Or

(b) (i) Briefly explain the instruction set of PIC microcontroller.

(ii) Explain in detail about any two addressing modes of PIC micro controller.

12. (a) What is Interrupt? Explain the interrupt structure of PIC microcontroller with neat diagram.

Or

(b) Briefly explain the timer modules in PIC microcontroller.

13. (a) Draw and explain the architecture of on chip ADC of PIC microcontroller in detail and write a suitable assembly language program for configuration the ADC.

Or

(b) (i) Discuss in detail of I^2C – bus in PIC microcontroller.

(ii) Briefly explain about UART in PIC microcontroller.

14. (a) With neat sketch, explain the functional block diagram of ARM architecture.

Or

(b) Briefly explain ARM programmer's model.

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

Or

(b) Explain briefly about embedded ARM applications.

PART C — ($1 \times 15 = 15$ marks)

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

Or

(b) Develop a suitable algorithm to generate an PWM signal using any of the port available in PIC16C7X for an duty cycle of 75%.

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18/11/19 FN

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

Question Paper Code : 91473

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

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 is PIC Microcontroller ?
2. What is 'W' register in PIC Microcontroller ?
3. What are the three interrupts of PIC 16C6x ?
4. What is key switch ?
5. How does PIC write data through I^2C bus ?
6. What is the function of TRISA pin ?
7. What are the registers available in ARM processor ?
8. List out the types of instructions used in ARM processor.
9. What is stack in ARM ?
10. What are the five stage pipelines ?

PART – B (5×13=65 Marks)

11. a) With a neat diagram discuss in detail about memory organization of a PIC microcontroller.

(OR)

b) Explain in detail the register file structure and addressing modes of PIC microcontroller.

12. a) Explain in detail, the block diagram of timer 1 and its associated registers.

(OR)

b) i) Write a simple program to explain the concept of timer in detail. **(6)**

ii) What is the value of count for a 0.5 second delay using timer 0 ? **(7)**

13. a) Explain interfacing of serial EEPROM using I^2C bus with neat diagram.

(OR)

b) Explain with neat diagram the use of UART to interface two PIC resources.

14. a) With neat sketch, explain the functional block diagram of ARM processor.

(OR)

b) i) Write an assembly level program to print a text in r0 register. **(6)**

ii) Write a subroutine to output a text string immediately following the call. **(7)**

15. a) Briefly explain the 3-STAGE pipeline ARM organization.

(OR)

b) Explain the internal ALU implementation of ARM6 ALU organization.

PART – C

(1×15=15 Marks)

16. a) i) Explain an embedded design process involved in the design of alarm clock. **(8)**

ii) Write an embedded C program on addition of two numbers using inline function and inline assembly. **(7)**

(OR)

b) i) Write an embedded C program for on LED blink on and off at a frequency of 1Hz. **(7)**

ii) Write an ARM ALP to display a text "Hello World". **(8)**