



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<sup>2</sup>C 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<sup>2</sup>C 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)