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DATE: 29-6-19

ST.JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27

B.Sc. ELECTRONICS – VI SEMESTER

**Special Supplementary Examination, JUNE 2019**

**EL 6215- Pic Microcontroller and Embedded Systems**

Supplementary candidates only.

**Time: 2 ½ hrs Maximum marks: 70**

This question paper has **TWO** printed pages and **THREE** parts.

**PART – A**

**ANSWER ANY FIVE OF THE FOLLOWING 5X8=40 Marks**

1. a) Explain general block diagram of embedded systems.

 b) Explain any two characteristics of embedded systems. (4+4)

2. a) Explain any five design metrics in Embedded systems.

 b) Give any three differences between Harvard and Princeton Architecture. (5+3)

3. a) Explain the General block diagram of Microcontroller.

 b) Give any four differences between RISC and CISC Architecture. (4+4)

4. a) Draw the Architectural block diagram of PIC 16F877A.

 b) Give any four salient features of PIC 16F877A. (6+2)

5. a) With examples explain Addressing modes in PIC16F877A .

 b) Explain the following.

 i) ANDWF f, d ii) DECFSZ f,d iii) MOVWF f iv) SWAPF f, d (4+4)

6. a) Define an Interrupt. Mention types of Interrupts.

 b) Give any five features of Timer2 module. (3+5)

7. a) With the help of diagram explain working principle of stepper motor.

 b) Explain the principle involved in interfacing a hex keyboard with diagrams. (4+4)

**PART – B**

**ANSWER ANY FIVE OF THE FOLLOWING 5x4=20 Marks**

8. Explain customization of a single purpose processor with a suitable example.

9. Write an ALP to perform addition of data block of 8 bit number

10 Write an ALP to find multiplication of two 8 bit numbers.

11. Write an ALP to find two’s compliment of a 16 bit number.

12. Write and ALP to generate triangular wave using DAC.

13. Find a valid range count for delay of 0.16s with 1MHz frequency in Timer0.

14. Write an ALP to display numbers 0-9 using 7 segment display.

**PART – C**

**ANSWER ANY FIVE OF THE FOLLOWING 5x2=10 Marks**

15. Which processor technology has high performance and why?

16. Write any two applications of PWM.

17. Name the flags affected by executing INCF f, d instruction.

18. Expand SPI and I2C.

19. Why we need I/O ports and mention all available ports in PIC16F877A.

20. List out the differences between timer and counter.

21. Write a circuit to interface a relay in PIC16F877A.

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