****

Register Number:

DATE:

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

B.Sc. ELECTRONICS – V SEMESTER

SEMESTER EXAMINATION- OCTOBER 2022

(Examination conducted in December 2022)

**EL 5218- MICROPROCESSORS**

**Time: 2 ½ hrs Max marks: 70**

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

**PART- A**

**Answer any five questions: 5x8=40**

1 a) What do you mean by pipelined architecture?

 b) Draw the architecture of 8086 and label it. (2+6)

2 a) Explain multithreading concept.

 b) Explain any four flag register bits of 8086 microprocessor. (4+4)

3 a) Explain any six addressing modes of 8086 with examples.

 b) Explain the concept of segmented memory? (6+2)

4 a) Explain the following instructions of 8086:

 i) RCR ii) XCHG iii) ADD $ $[BX], 1234 iv) IN AL, 82

 b) Discuss PUSH and POP instructions with suitable examples. (4+4)

5a) What is an interrupt? Discuss sources of 8086 interrupts.

 b) Differentiate between Von Neumann and Harvard architecture. (4+4)

6a) Draw the block diagram of 8259A programmable interrupt controller.

 b) Mention the features of Pentium IV processor. (4+4)

7a) Discuss primary and secondaries memories.

 b) Write a note on EEPROM. (4+4)

**PART- B**

**Answer any five questions: 5x4=20**

8. Draw the timing diagram for memory write for maximum mode of 8086 microprocessor.

9. Write an ALP to subtract two 16-bit numbers.

10.Write an ALP to find the average of eleven 8-bit numbers.

11.Write an ALP to move a string of 10 bytes from memory location 4000:2000 to

 F000:9000 using MOVs but without using the repeat prefix.

12.Calculate the time delay to execute the following set of instructions if frequency of

 operation is 5MHz.

|  |  |  |
| --- | --- | --- |
|  | MOV BX 78F9 | 4T |
|  | NOP | 3T |
| WAIT: | NOP | 3T |
|  | DEC BX | 2T |
|  | JNZ WAIT | 16T/5T |

13. Write an ALP to find number of 1’s in a 16-bit number.

14. Write an ALP to find the smallest of nine 8-bit numbers.

**PART- C**

**Answer any five questions: 5x2=10**

15. Define word length. What is the relation between word length and width of data bus of a

 processor.

16. If AL=90 and BL=70, how are the status flags affected after the execution of

 ADD AL,BL?

17. Identify the addressing mode of the following instructions. (a) MUL AL, BL

 (b) MOV DX, 0040H

18. INTR, NMI and divide by zero interrupt- if all interrupts occur simultaneously, which

 interrupt is served first – substantiate.

19.Mention any two features of ARM architecture.

20.What is flash memory and state its significance.

21.List any four string operation instructions.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*