SUBJECT CODE :15PH/MC/MM54

B.Sc. DEGREE EXAMINATION NOVEMBER 2019
BRANCH III - PHYSICS
FIFTH SEMESTER

COURSE   :   MAJOR – CORE
PAPER   :   MICROPROCESSORS AND MICROCONTROLLERS
TIME   :   3 HOURS   MAX. MARKS :100

SECTION – A

ANSWER ALL QUESTIONS: (30 x 1 = 30)
I. CHOOSE THE CORRECT ANSWER:

1. Microprocessor 8085 has _____ address line.
    a) 8   b) 24   c) 16   d) 32
2. When the instruction RET is executed the stack pointer is incremented by
    a) 4   b) 2   c) 1   d) 0
3. The data bus is
    a) Unidirectional   b) bidirectional
    c) multidirectional   d) None
4. The program that translate the mnemonics into their machine code is
    a) PC   b) STACK   c) Assembler   d) None
5. STA 2050 is _____ byte instruction.
    a) single   b) double   c) triple   d) none
6. XCHG instruction exchanges the contents of _____
    a) BC and HL register pair   b) BC and DE register pair
    c) HL and DE register pair   d) none
7. Data byte 28_H is stored in register B and data byte 97_H is stored in accumulator. Show the contents of the registers B, C and the accumulator after the following two instructions are executed.
    MOV A, B
    MOV C, A
    a) 28_H, 97_H, 28_H b) 97_H, 28_H, 28_H
    c) 28_H, 28_H, 97_H d) 28_H, 28_H, 28_H
8. How many bytes are there in the instruction ADI 47_H
    a) 1 byte   b) 3 bytes
    c) 2 bytes   d) 2 bytes
9. Square root of the hexadecimal number 19_H is?
    a) 06   b) 05   c) 07   d) 0A
10. Which of the following hardware interrupts enjoy the highest priority?
    a) RST 4.5   b) RST 5.5   c) RST 6.5   d) RST 7.5
11. In a PPI 8255A, port B is programmable in _____.
    a) Mode 0   b) Mode 1   c) Mode 2   d) Mode 0/Mode 1
12. Number of 8 Bit I/O ports supported by one 8255 PPI chip is
    a) 2   b) 3   c) 4   d) 8
13. How many RST instructions does 8085 have
    a) 6   b) 8   c) 4   d) 16

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14. What is the size of the stack pointer in microcontroller 8051?
    a) 16 bit   b) 4bit   c) 8 bit   d) 32 bit length
15. 8051 is _____bit microcontroller?
    a) 8   b) 4   c)16   d) 32

Fill in the Blanks:
16. Flag register is also called as a _____.
17. The instruction LHLD, address employs _____ addressing mode.
18. The instruction SUB B is _____ bit wide.
19. Interrupts can be recognized only if the _____signal is inactive.
20. Microcontroller 8051 has ____ general purpose registers.

State whether TRUE or False:
21. Registers are used for the temporary storage of data.
22. The instruction MVI A, 32_H has 3 machine cycles.
23. The instruction RRC rotates the accumulator right without carry.
24. TRAP enjoys the lowest priority among the interrupts.
25. Microcontroller 8051 is a 40 pin device.

Answer Briefly:
26. What is the use of ALE pulse?
27. What operation can be performed by using the instruction XRA A?
28. Distinguish between HLT and NOP instruction.
29. Specify the bit of a control word for the 8255, which differentiates between I/O mode and the BSR mode.
30. What is an embedded system?

SECTION - B
II. Answer any five questions :   (5x5=25)
31. What are flags? What are the different flags in µP 8085?
32. Explain the following instructions:
    a) LDA 8050 H   (2)   b) RLC   (2)   c) CMA   (1)
33. Compare and differentiate SUB r and CMP r.
34. Write an assembly language program to multiply two 8 bit numbers which are stored in memory locations 2050 and 2051 and store the result in 2052.
35. What are SIM and RIM instructions?
36. What is the need and use of EI and DI instruction?
37. Explain the registers available in 8051

SECTION – C
III. Answer any three questions: (3x15=45)
38. Explain the internal architecture of µP 8085 with a neat diagram.
39. Discuss the addressing modes in 8085. Give two examples for each mode.
40. Write an assembly language program to sort an array in ascending order and descending order.
41. Draw the block diagram of 8255 programmable peripheral interface indicating different ports. Explain its various operating modes.
42. What is a microcontroller? How is a microcontroller different from a microprocessor? Enumerate few applications of a microcontroller.

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