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Paper Code : MCAN-103 Computer Organization and Architecture

UPID : 001609

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

[1 x 10 = 10]

1. Answer any ten of the following :
   (i) The Race around condition can be seen in _____ Flip Flop i) SR ii) JK iii) D iv) T
   (ii) Stack organization is used in i) Memory ii)Arithmetic expression evaluation iii) All of the above iv) None of the above.
   (iii) The _____ is the fastest memory. i) Main ii) Secondary iii) Auxiliary iv) Cache.
   (iv) CISC stands for----------
   (v) During the subroutine call, the address of the calling program is stored in IC register.
   (vi) MOV A,B: is ----------instruction
   (vii) 1 nibble = _____ bits i)3 ii)4 iii)8 iv) None of these
   (viii) POP is an example of---------- instruction
   (ix) 2's complement of 1011001 is a)0100111 b)0101100 c)0100110 d)0110110
   (x) INT in Assembly Language Creates ----------
   (xi) The SR flip flop will give forbidden condition when i) S=1R-0 ii) S=0 R=0 iii) S=1 R=1 iv) S=0 R=1
   (xii) _____ Register stores the address of the next instruction.

Group-B (Short Answer Type Question)

Answer any three of the following [5 x 3 = 15]

2. Explain what happened during a function call with a diagram. [5]
3. Mention and discuss the different components of a processor. [5]
4. Convert the following Hexadecimal numbers to octal numbers i) B21 ii)A0 [5]
5. Write an assembly language program to add two binary numbers. [5]
6. Write an assembly Language program to fin the multiplication of two numbers. [5]

Group-C (Long Answer Type Question)

Answer any three of the following [15 x 3 = 45]

7. (a) State and prove De Morgan's Theorem [5]
   (b) State principle of Duality [5]
   (c) State the differences between combinational circuit and sequential circuit [5]
8. (a) What is addressing mode? [5]
   (b) Write and explain with diagram the different types of addressing modes. [10]
9. (a) What is JK flip flop? What is he disadvantage of JK flip flop? How can we remove the problem of JK Flip Flop? [8]
   (b) Draw the master slave flip flop and explain how the master slave flip flop can overcome the problem f race around condition? [7]
10. (a) What is an Assembler? [5]
    (b) Write down the differences between one pass assembler and two pass assembler. [5]
    (c) Write an assembly language program to subtract two binary numbers [5]
11. Write down about the different types of transfer modes. Differentiate between Programmed I/O, Interrupt initiated I/O and Direct Memory Access. What is the role of CPU in the above three methods? [15]