ISRO 26th April 2009 Computer Science  Placement Paper  
  
1. A full binary tree with n leaves contains?(2N-1)  
  
2. The expression 1\*2^3\*4^5\*6 will be evaluated as?  
  
3. The feature in object oriented programming that follows  he same operation to be carried out differently ,depending on the object, is?  
  
4. The microistructions stored in the control mamory of a  processor have a width of 26 bits. Each microinstructionsion. is divided into  three fields: a microoperation field of 13 bits, a next address field(x), and a  MUX select field(y).There are 8 status bits in the inputs of the MUX. How many  bits are there in the X and Y fields, and what is the size of the control memory  in number of words?  
  
5. A cpu has 24-bit instructions. A program starts at  address 300(in decimal).Which one of the following is a legal program counter  (all values in decimal)?  
  
6. Consider a disk pack with 16 surfaces,128 tracks per  surface and 256 sectors per track.512 bytes of data are stores in a bit serial  manner in a sector.The capacity of the disk and the number of bits required to  specify a particular in the disk are respectively.  
  
7. Consider a pipelined processor with the following four  stages  
IF:Instruction Fetch  
ID:Instruction Decode and Operand Fetch EX:Execute WB:Write  Back  
The IF,ID and WB stages take one clock cycle each to complete the operation.The  ADD and SUB instructions need 1 clock cycle and the MUL instruction need 3 clock  cycles in the EX stage.Operand forwarding is used in the pipelined  processor.What is y the number of clock cycles taken to complete the following  sequence of instructions?  
  
ADD R2,R1,R0 R2 R1+R0  
MUL R4,R3,R2 R4 R3+R2  
SUB R6,R5,R4 R6 R5+R4  
  
8. The use of multiple register windows with overlap causes  a reduction in the number of memory accesses for:-  
    1.Function locals and parameters  
    2.Registers saves and restores  
    3.Instruction fetches  
  
9. A processor that has carry, overflow and sign flag bits  as part of its program status word(PSW) performs addition of the following two  2's complement numbers 0100101 and 11101001.After the execution of this addition  operation, the status of the carry, overflow and sign flags, respectively will  be  
  
10. The two numbers given below are multiplied using the  Booth's algorithm.  
    Multiplicand:0101 1010 1110 1110 Multiplier:0111 0111 1011  1101 How many additions/Subtractions are required for the multiplication of the  above two numbers?  
  
11. The addition of 4-bit, two's complement,binary numbers  1101 and 0100 results in  
  
12. Which of the following statements about relative  addressing mode is FALSE?  
    1.It enables reduced instruction size  
    2.It allows indexing of array element with  same instruction  
    3.It enables easy relocation of data  
    4.It enables f asters address calculation  than absolute addressing  
  
13. Substitution of values for names(whose values are  constants) is done?  
  
14. A root alpha (symbol) of equation f(x) =0 can be  computed to any degree of accuracy if a 'good' initial approximation x0 is  chosen for which?  
  
15. Which of the following statement is correct?  Ans.delta(Uk Vk)=Uk+1 delta Vk+Vk+1 delta Uk