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COMPUTER ENGINEERING DEPARTMENT
COMPUTER ORGANIZATION AND ARCHITECTURE
QUESTION BANK

- 1) Write an assembly level program for the following pseudocode.
 SUM = 0
 SUM = SUM + A + B
 DIF = DIF – C
 SUM = SUM + DIF
- 2) Write a program loop using a pointer and a counter to clear the contents of hex locations 500 to 5FF with 0.
- 3) Write the program to multiply two positive numbers. by a repeated addition method. For ex., to multiply 5 x 4, the program evaluates the product by adding 5 four times, or 5+5+5+5.
- 4) Write a program that evaluates the logic ex-or of two logic operands.
- 5) Write a program for the arithmetic shift-left operation. Branch to OVF if an overflow occurs.
- 6) Write an assembly language program to multiply two positive numbers.
- 7) Write an ALP to add two Double-Precision numbers.
- 8) Write a subroutine to subtract two numbers. In the calling program, the BSA instruction is followed by the subtrahend and minuend. The difference is returned to the main program in the third location following the BSA instruction.
- 9) Write a subroutine to complement each word in a block of data. In the calling program, the BSA instruction is followed by two parameters: the starting address of the block and the number of words in the block.
- 10) Explain the different addressing modes with suitable examples.
- 11) List all the three address, two address, one address, zero address
- 12) What is a Memory Stack? Explain its role in managing subroutines with the help of neat diagrams.
- 13) Explain Program Interrupts. Explain clearly, discussing the role of stack, PSW and return from interrupt instruction, how interrupts are implemented on computers.
- 14) What do you understand by Reduced Instruction Set Computers?
- 15) What do you understand by RISC and CISC? List important characteristics of CISC and RISC computers. Also in a tabular form compare their relative advantages / disadvantages.
- 16) What are main types of Interrupts? Explain each type clearly.
- 17) Explain the role of Overlapped Register Windows implemented on some RISC Computers. What are their advantages? With proper diagrams explain their operation.
- 18) Write a note on subroutines.
- 19) Explain the characteristics of RISC and CISC.
- 20) Convert the following into reverse polish notation.

$$1) A+B*[C*D+E*(F+G)]$$

$$2) A*[B+C*(D+E)] / [F+G*(H+I)]$$

- 21) Explain Stack and evaluate the following expression using stack
 $(3+4)*[10(2+6) +8]$
- 22) Draw and explain flow chart of addition and subtraction operation.
- 23) Draw and explain the diagram of hardware implementation of addition and subtraction operation of sign magnitude data.
- 24) Draw and explain the flow chart of simple multiplication operation.
- 25) Explain booth's multiplication algorithm in detail.
- 26) Explain Array Multiplier with proper diagram.
- 27) A bus organized CPU has 16 registers with 32 bits each, an ALU and a destination decoder
 - 1) How many multiplexers are there in the A bus and what is the size of each multiplexer?
 - 2) How many selection inputs are there for MUX A and MUX B?
 - 3) How many inputs and outputs are there in decoder?
 - 4) How many inputs and outputs are there in ALU for data including input and output carries?
 - 5) Formulate the control word for the system assuming that the ALU has 35 operations.
- 28) Let SP= 000000 in the stack. How many items are there on the stack if:
 - 1) FULL =1 and EMPTY =0?
 - 2) FULL =0 and EMPTY =1?
- 29) Give examples of external interrupts and internal interrupts. What is the difference between a software interrupt and a subroutine call?
- 30) List the assembly language program generated by a compiler for the following IF statement:

IF (A-B) 10, 20, 30

The program branches to statement 10 if A-B<0; to statement 20 if A-B =0; and to statement 30 if A-B>0.