



## II B.Tech (CSE)-CO-Answers for Assignment Test 1

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1 (a) What are the advantage of using perform 2's complement arithmetic over 1's complement

(b) Perform 2's complement Addition

i)  $-17 + (+2)$

ii)  $-5 + (-33)$

i)  $-17$ —binary— $010001$ ---1's comp--- $101110$ ---2's compl.----  $101111$   
 $+2$  --binary-  $000010$ -----+ $000010$

Add:  $110001$ (neg)

No carry, 2's compl. of  $110001$ ---- $001110$  + $000001$ =  $-001111$ ----  $(-15)$

ii)- $5$ ---binary--- $0000101$ ----1's compl.— $1111010$ ---2's compl.---- $1111011$   
 $-33$ ---binary— $0100001$ ----1's compl.--- $1011110$ ---2's compl.---- $1011111$

Add:  $1011010$  (neg) No carry,--2's compl' of  $1011010$ :  $0100101 + 1$  -  
 $(0100110)$ — $(-38)$



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4) How the following arithmetic expression is explained evaluated using

i) STACK m/c    ii) 1 Address m/c ;  $F = (A+B-C) / (D+E)$

STACK machine

PUSH D  
PUSH E  
ADD  
PUSH A  
PUSH B  
ADD  
DIV  
PUSH C  
SUB  
DIV  
POP F

1 address Machine

LDA D  
ADD E  
STA H  
LDA A  
ADD B  
SUB C  
DIV H  
STA F



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5) Answer the following in a line or two.

(a) What is the maximum amount of memory that can be accessed by the CPU?

Ans. If a machine word is  $N$  bits and memory addressed word is  $M$  bits, then the max. amount of memory that can be addressed is  $2^M \times N$  bits

(b) How data information is stored in the memory?

(c) How memory can be accessed?

(d) What is Random access memory?

Ans. A **random-access memory** device allows data items to be read or written in almost the same amount of time irrespective of the physical location of data inside the memory



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5) Answer the following in a line or two.

(e) What is a Vonneumann machine?

Ans. His computer architecture design consists of a Control Unit, Arithmetic and Logic Unit(ALU), Memory Unit, Registers and Inputs/Outputs . Von Neumann architecture is based on the stored-program computer concept, where instruction data and program data are stored in the same memory.

(f) Explain" stored program concept

Instruction data and program data are stored in the same memory at the time of execution.

(g) What is branching?

**Branching** is a transfer of control from the current **statement** to another **statement** or construct in the program unit. A **branch** alters the execution sequence.

(h) Explain overflow condition

**Overflow** occurs when the number that you trying to represent is out of the range of numbers that can be represented



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5) Answer the following in a line or two.

(i) What type of operation is performed to multiply the number stored in register R by 16?

Use Arithmetic left shift by 4 bits.

(j) Name the assembly instructions used to transfer data between the memory and registers

MOVE Or LOAD/STORE

(k) What is a micro operation?

Smallest operation that can be performed in registers in one clock cycle.

(l) What is the addressing mode use for this statement `ADD #5,R3` ?

Immediate addressing mode

(m) What are assembler directives ?

**Assembler directives** are instructions that direct the **assembler** to do something