



**Note: Attempt all questions on answer sheet.**

**Question No. 1 (Marks=5) (CLO-3):**

Given  $x=1101$  and  $y=1101$  in two's complement notation (i.e.  $x=-3$ ,  $y=-3$ ), compute the product  $p=x \times y$  with Booth's algorithm.

**Question No. 2 (Marks=5) (CLO-3)**

Divide -5 by 3 (i.e. -5 is dividend and 3 is divisor) using signed division rules?

**Question No. 3 (Marks=5) (CLO-1)**

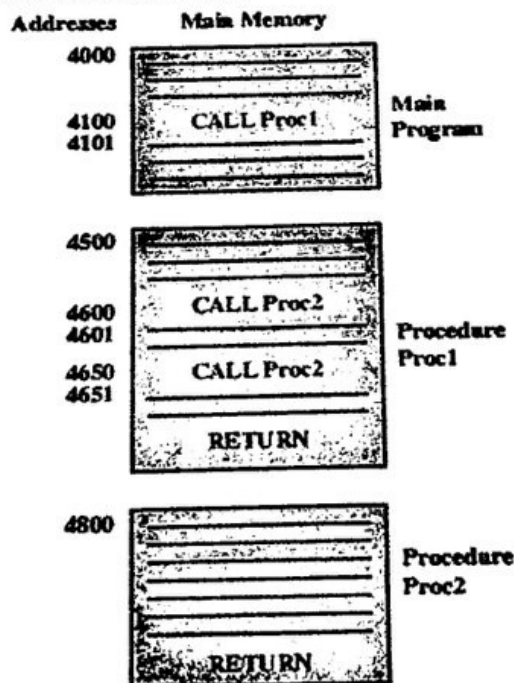
- What are the steps in "Instruction Cycle"? What is the role of "Interrupt Cycle"? Explain it briefly with the help of flowchart.
- What is structure and how it is compared with functionality of the computer architecture?

**Question No. 4 (Marks=5) (CLO-1)**

- What are synchronous and asynchronous systems? Explain it with the help of timing diagram.
- How can we extend the 8-bit signed number to 16-bit signed number? Give examples. What is the range of signed numbers, if number of bits of a word is 16 bit.

**Question No. 5 (Marks=5) (CLO-1)**

- What is stack and stack pointer?
- What will be the contents of stack and stack pointer for the following scenario shown in the picture, assume stack pointer value is 5100H.



(a) Calls and returns