

SYMBIOSIS INTERNATIONAL UNIVERSITY

(Established under Section 3 of the UGC Act, 1956 vide notification No. F.9-12/2001-U.3 of the Government of India)
Accredited by NAAC with 'A' grade



Name of the Institute: SIT

Programme Name: B.Tech.

Batch: 2012-16

Programme Code: 070121

Semester: III

Course Name: Computer Organization (CS & IT)

Course Code: 070121304 CS, 070121304 IT

Maximum Marks: 60

Date: 5/12/2013

Time: 1.30 PM to 4.00 PM

Day: Thursday

Instructions:

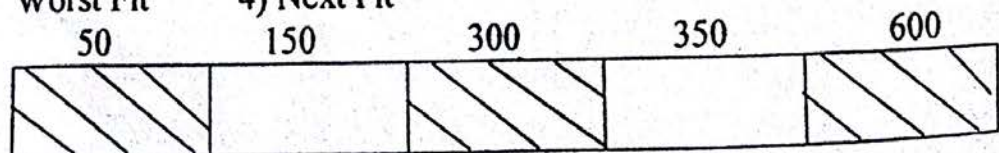
1. All Question from Part A are compulsory.
2. Attempt any three questions from Part B.
3. Draw neat diagrams wherever necessary.
4. Use of Functional calculators are allowed.

PART A

- Q.1
- a. What is the Recording pattern for 11011101111? Find out number of additions, number of subtractions, and number of shift operations? 3
 - b. Explain Look-aside cache organization with neat diagram. 4
 - c. Consider 5 stage instruction pipeline which is used to implement 200 instructions for Program A and 400 instructions for Program B. All the stages are having same amount of delay of 20 ns. Ignore the overhead. What is speedup factor for Program A and Program B? 3
 - d. Explain Data flow, fetch cycle with neat diagram. 3
 - e. Explain Touch screen panel. 2

PART B

- Q.2
- a. Explain booths algorithm for signed number multiplication (draw flowchart). Multiply following numbers using booths algorithm. 8
Multiplicand (M) = 2 (00010)
Multiplier (Q) = -5 (11011)
 - b. Consider following heap, in which blank regions are not in use and hatched regions are in use. Let the sequence of request for blocks are of size 300, 25, 125, 50. Explain how request can be satisfied using: 7
 - 1) First Fit
 - 2) Worst Fit
 - 3) Best Fit
 - 4) Next Fit



- Q.3** a. Explain characteristics and types of I/O channels with neat diagram. 7
b. In an interrupt driven I/O, how does CPU reacts to an occurrence of an Interrupt? What changes occur in Memory and Registers? 8
- Q.4** a. Consider the following 16-bit register which is used to store floating point number. Mantissa is normalized sign magnitude fraction. Exponent is in excess-32 form and base is 8. 7
Find out:
1) Bits allocated for mantissa
2) Expression for value V
3) Bit, Octal and Hex pattern for - (45.75) base 10
- b. What are Microinstructions? Explain functioning of Micro-programmed Control Unit with suitable diagram. 8
- Q.5** a. Explain Address Translation scheme used in Segmentation and Hardware Support for Segmentation. 7
b. Explain major factors affecting design of an Instruction Format. 8