Shyampur Siddheswari Mahavidyalaya

B.SC. Sem1(Internal Test) 2019

COMPUTER SCIENCE (Gen.)

Total Marks-30 **Time- 1Hr.**

Q1. Answer Any 4 Question (Each Carrying 1.5 marks) 4X1.5=6

i. What is duality? Explain with a suitable example.

ii. What is Gray code? What are the uses of this code?

iii. What do you mean by a multiplexer?

iv. Write advantages and disadvantages of low level and high level language. Name two primary and two secondary devices.

v. Convert the decimal numbers 168 and 777 into BCD and find their sum(in BCD).

vi. Compare between super computer and main frame computer.

vii. Distinguish between multitasking and multiprogramming.

Q2. Answer Any 4 Question(Each Carrying 6 marks) 4X6=24

i. Write down the Huntington postulates.

ii. Simplify the function using K-map and write down the SOP.
$Y= \sum m(0,2,3,7,8,9,12,15) + \sum d(1,5,6)$

iii. Explain the functionality of 4x1 MUX with block diagram and truth table. Minimize the following expression using K-map: $y= \sum m =(0,2,5,6,7,8,10,13,15)$

iv. Divide the binary number $(100001)_2$ by $(110)_2$ Show the steps of division.

v. State the postulates of Boolean algebra.

vi. Explain the design of a full-subtractor using dual 4 to 1 Multiplexer. Only univeral logic gates can be used if required during construction.

vii. Construct a Synchronous counter using J-K Flip- Flop which will count the sequence 0> 1> 2> 3> 4> 5> 0>…….

viii. Construct a JK flip-flop using D flip-flop. What happens to the Q output of a D flip-flop if the Q output is connected to D input and clocked continuously.

ix. Obtain the canonical product of the sum expression of Y=(ABC)= (A+B)(B'+C)(A+C').