RAMAKRISHNA MISSION VIVEKANANDA CENTENARY COLLEGE, RAHARA
KOLKATA
END SEM EXAMINATION 2021-22
B.Sc. 1ST SEM COMPUTER SCIENCE (HONOURSE)
CORE COURSE -2

Time: 2 Hours **Full marks- 50**

Answer any five (5) questions from the following :

1. (i) Write principle of Duality.
   (ii) Convert $(10110.1111101)_2$ into IEEE 754 biased exponent format (32 bit).
   (iii) Solve the following expression using K-map:

   $F(A,B,C,D)= \Sigma\, m(0,1,2,3,5,7,9,11,12,13,15)$ (2+4+4)

2. (a) Explain the operation of J-K Flip Flop.
   (b) Design a 3-bit asynchronous up Counter and explain its functionality. (5+5)

3. (a) Evaluate the following arithmetic expression using 3-address and 2-address instructions: $F= (X+Y-Z) / (Y\times Z)$.
   (b) Draw the block diagram of Bus Interconnection Scheme and explain its functionality. (5+5)

4. (a) Compare between Sequential interrupt processing and Nested interrupt processing.
   (b) Give an example of pipeline processing and draw respective flow diagram. (4+6)

5. (a) Define Microprogrammed control unit and Control memory.
   (b) With the help of block diagram of three-level cache organization, explain the use of cache memory. (4+6)

6. (a) Compare between High level language and Low level language.
   (b) Draw the circuit diagram of DRAM cell and explain its working. What are the advantages of DRAM cell over SRAM cell? (3+7)

7. (a) Compare between RISC and CISC.
   (b) What is Locality of reference?
   (c) What is Bus arbitration? (6+2+2)

8. (a) Compare between Interrupt driven I/O and Programmed I/O.
   (b) Give brief description of the construction of 20 bit microinstruction code format. (5+5)