Roll No. .....

Y– 3632 (A)

B.C.A. (Second Semester) (SPECIAL) EXAMINATION, August 2021

[SECOND CHANCE]

PAPER—202

Computer Organization

Time : Three Hours

Maximum Marks : 80 *Minimum Pass Marks :* 32

Note—Attempt *all* questions.

1. (a) State and explain Duality theorem. Give suitable example. 8

   (b) Write explanatory short notes on any *two*— 8

   (i) Universal gates and their use.

   (ii) Difference between ordinary algebra and Boolean algebra.

   (iii) Demorgan's theorem and its use.

2. (a) Giving neat diagram, explain the working principle and use of Decoder. 8

   (b) Use a Karnaugh map to minimise the following standard POS expression : 8

   $(A+B+C)\times(A+B+\overline{C}) \times(A+\overline{B}+C)\times(A+\overline{B}+\overline{C})\times(\overline{A}+\overline{B}+C)$

3. Giving neat diagram and uses, write short notes on the following : 16

   (i) Encoder

   (ii) Multiplexer

   (iii) K-map

4. Giving neat diagram and suitable examples, write short notes *on any four* of the following : 16

   (i) Advantages of 2's complement usage over 1's complement.

   (ii) Sign magnitude numbers.

   (iii) Half Adder and its use

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(iv) Full Adder and its use.

(v) Circuits for Binary Arithmatic.

(vi) Over flow—its cause and applications.

5. (a) Giving neat circuit diagram, explain the working principle and use of master-slave flip-flop. 8

(b) Giving symbol, truth table and uses, explain the working principle of any *two* of the following : 8

(i) R-S flip-flop.

(ii) Shift registers

(iii) J-K flip-flop.