Roll No. : .....

Total No. of Questions : **11**] [Total No. of Printed Pages : **3**

BPMS–521

M.Sc. (Previous) Examination, 2023

COMPUTER SCIENCE

Paper – MCS–101

(Computer Organization)

*Time : **3** Hours*] [*Maximum Marks : **50***

Section–A **(Marks : 2 × 10 = 20)**

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section–B **(Marks : 3 × 5 = 15)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **3** marks.

Section–C **(Marks : 5 × 3 = 15)**

Note :– Answer any *three* questions out of five (Answer limit **500** words). Each question carries **5** marks.

Section–A

1. (i) What is the distinction between computer structure and computer function ?

   (ii) What is the key distinguishing feature of a microprocessor ?

   (iii) What is Logic Circuit ? Define its types.

(iv) What are Flip-flops ?

(v) Define Asynchronous data transfer.

(vi) Define Instruction Cycle.

(vii) What are Encoders ?

(viii) Explain about BCD.

(ix) Define Excess 3 code.

(x) What are opcode and operand ?

Section–B

2. Design the logic circuits of the following :

(a) $F = \overline{AB} + AB + A\overline{C} + ABC$

(b) $Y = A.B.C. + \overline{A}.\overline{B}.C + \overline{A}.B.C + \overline{A}.\overline{B}.\overline{C}.$

Or

Construct the truth table of the following expressions :

(a) $\overline{A}\overline{B}\overline{C} + \overline{A}BD + ABC\overline{D} + A\overline{C}\overline{D} = Y$

(b) $A = (W + X + Y + Z).(W + \overline{Y} + Z)\ (\overline{W} + \overline{Y} + Z)$

3. Explain logic gates.

Or

Define Multiplexers.

4. Explain about Priority Interrupt Process with example.

Or

Describe Direct Memory Access.

5. Describe Memory and its types.

Or

What is Associative memory ?

6. Explain Timing and Control Unit.

Or

Define Registers and its different types.

Section–C

7. Convert the following number system into its defined form :

   (a) $(66.35)_{10} \rightarrow (?)_2$

   (b) $(1011011.101)_2 \rightarrow (?)_{10}$

   (c) $(952)_{10} \rightarrow (?)_8$

   (d) $(2A5B)_{16} \rightarrow (?)_{10}$

   (e) $(146)_8 \rightarrow (?)_{10}$

8. Use a K-Map to simplify the following expression :

$$F(a, b, c, d) = \Sigma m(0, 2, 3, 6, 8, 12, 13, 15).$$

9. Explain Cache memory and Virtual memory.

10. Give a detailed view of flip-flop.

11. What do you mean by Instructions ? Explain its various forms.