DBZ-003-1152004 Seat No. _____

M. Sc. (Electronics) (Sem. II) (CBCS) Examination

July - 2022

Advanced Digital Electronics : Paper-8

(New Course)

Faculty Code : 003

Subject Code : 1152004

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions carry equal marks.
(2) Figures on right hand side indicate marks.

1 Answer the following : (Any **seven**) **14**

(1) What is digital electronics?

(2) Draw logic circuit diagram of half subtractor.

(3) What is a flip-flop?

(4) What is a sequential and combinational logic circuits?

(5) Draw logic circuit diagram of half adder.

(6) What is a decoder? Explain in brief.

(7) Explain magnitude comparator with suitable example.

(8) Draw logic circuit diagram for given Boolean expression.

- $Y = \overline{A} \cdot B \cdot \overline{C} + A \cdot \overline{B} \cdot C$

(9) What is the difference between latch and flip flop?

(10) What is an ALU?

2 Answer the Following : (Any **two**) **14**

(1) Draw the logic diagram of a three-digit BCD adder and briefly describe its functional principle.

(2) Draw and explain full-adder with suitable diagram.

(3) Draw and describe full-subtractor logic circuit diagram.

3 Answer the following : **14**

(1) Write a note on controlled inverter.

(2) Explain J-K flip-flop with preset and clear inputs.

OR

3 Answer the following : **14**

(1) Differentiate encoder and priority encoder with its suitable diagram.

(2) Explain 4 to 1 and 8 to 1 multiplexer with its truth table.

4 Answer the following : **14**

(1) Briefly describe the concept of look-ahead carry generation with respect to its Use in adder circuits. What is its significance while implementing hardware for addition of binary numbers of longer lengths?

(2) Write a note on cascading magnitude comparator.

5 Answer the following : **14**

(1) Draw and explain D flip-flop and D latch.

(2) Draw and explain R-S flip-flop with active low inputs.

(3) Draw and explain 4*4 multiplier.

(4) Write a note on demultiplexer.
