(7 pages) **Reg. No. :** .....

Code No. : 10308 E **Sub. Code : AMPH 62**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Sixth Semester

Physics – Core

DIGITAL ELECTRONICS

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Binary coded decimal is a combination of _____.

   (a) Two binary digits

   (b) Three binary digits

   (c) Four binary digits

   (d) Five binary digits

2. The excess-3 code for 597 is given by _____.

   (a) 100011001010

   (b) 100010100111

   (c) 010110010111

   (d) 010110101101

3. According to boolean law: A + 1 = ?

   (a) 1 (b) A

   (c) 0 (d) A'

4. A _____ value is represented by a Boolean expression.

   (a) Positive (b) Recursive

   (c) Negative (d) Boolean

5. In S-R flip-flop, if Q = 0 the output is said to be _____.

   (a) Set (b) Reset

   (c) Previous state (d) Current state

6. When both inputs of a J-K flip-flop cycle, the output will _____.

   (a) Be invalid (b) Change

   (c) Not change (d) Toggle

7. K-map is used for _____.

(a) logic minimization

(b) expression maximization

(c) summing of parity bits

(d) logic gate creation

8. How many select lines are required for a 1-to-8 demultiplexer?

(a) 2 (b) 3

(c) 4 (d) 5

9. A decimal counter has _____ states.

(a) 5 (b) 10

(c) 15 (d) 20

10. BCD counter is also known as _____.

(a) Parallel counter

(b) Decade counter

(c) Synchronous counter

(d) VLSI counter

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Encode the following decimal number to BCD code

(i) 46

(ii) 327.89

(iii) 20.305.

Or

(b) Find one's compliment of the following number

(i) 10100111

(ii) 0111.

12. (a) Discuss briefly positive and Negative logic systems.

Or

(b) Draw the circuit and working of EX-OR gate with truth table.

13. (a) Describe the working of R-S flip flop with diagram.

Or

(b) Describe the workingof T-flip flop with a diagram.

14. (a) Explain term

(i) AND OR realization

(ii) OR AND realization.

Or

(b) Briefly explain Multiplexer with diagram.

15. (a) Differentiate synchronous and Asynchronous Counter. Write a note Binary Counter.

Or

(b) Explain term

(i) Linearity and

(ii) Settling time of a D/A converter.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Determine the decimal number represented by binary number.

(i) 110101

(ii) 101101

(iii) 11111111.

Or

(b) ADD Binary numbers

(i) 1011+1101

(ii) 1010.1101 + 101.01

Perform the following subtraction

(i) 1011-0110

(ii) 1110-1001

17. (a) Write the basic logic gates. Describe the working of OR gate with truth table.

Or

(b) Explain function of NAND and NOR gates.

18. (a) Explain the operation of JK flipflop with a diagram.

Or

(b) Briefly Explain working of Monostable Multivibrator with a circuit diagram.

19. (a) Minimize the following boolean function

$F(A, B, C, D) = \Sigma m\ (0, 1, 2, 5, 7, 8, 9, 10, 13, 15)$

Or

(b) Explain Encoder with a circuit diagram.

20. (a) Explain Parallel in serial out and Parallel in Parallel out shift registers.

Or

(b) Explain MOD-5 counter with diagram.

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