19. (a) Which gates are called as Universal gates? And why?

Or

(b) Explain Full adder with truth table.

20. (a) Define flip flop. Explain the types of flip flop.

Or

(b) Briefly explain JK flip flop.

PART C — (3 × 10 = 30)

Answer any THREE questions.

21. List the types of Logic families in detail.

22. Explain Gray code, ASCII Code BCD Code and its applications.

23. Write the properties of Boolean algebra and describe commutative, associative and distributive law in detail.

24. Explain about Half adder with block diagram and truth table.

25. Give a detailed description about RS flip flop and its block diagram, truth table and applications.

S.No. 7284 **P 22 MCABC 4**

(For candidates admitted from 2022-23 onwards)

M.C.A. DEGREE EXAMINATION, NOVEMBER 2023.

Computer Applications – Bridge Course

DIGITAL ELECTRONICS

Time : Three hours Maximum : 75 marks

PART A — (20 marks)

Answer ALL questions:

I. (A) Multiple choice questions: (5 × 1 = 5)

1. Out of these logic families, which one provides the minimum dissipation of power?

(a) RTL (b) TTL

(c) ECL (d) CMOS

2. What is the binary subtraction of

101001 – 010110 = ?

(a) 010011 (b) 100110

(c) 011001 (d) 010010

3. How many bits are needed to store one BCD digit?

(a) 3 (b) 2

(c) 4 (d) 1

4. A full adder can be made out of _____.

(a) two half adders

(b) two half adders and a OR gate

(c) two half adders and a NOT gate

(d) three half adders

5. In which of the following condition, the RS flip flop is unstable?

(a) S = 0, R = 1

(b) S = 1, R = 1

(c) S = 0, R = 0

(d) S = 1, R = 0

(B) Fill in the blanks: (5 × 1 = 5)

6. _____ majorly determines the number of emitters in a TTL digital circuit.

7. Decimal 43 in hexadecimal is _____.

8. The parity bit is used to _____.

9. In _____ circuit the output is dependent only on the present input.

10. _____ operation occurs in a J-K flip flop when both inputs J and K are equal to 1.

II. Answer ALL questions: (5 × 2 = 10)

11. What do you meant by CMOS?

12. Write note on 2's complement.

13. Define Boolean algebra.

14. Write the difference between combinational and sequential logic circuit.

15. Describe level triggering in flip flop.

PART B — (5 × 5 = 25)

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

16. (a) What is ECL? Explain characteristics of ECL.

Or

(b) Define Integrated circuits. Write the types of Integrated Circuits.

17. (a) Explicate various Number system with examples.

Or

(b) Convert the following:

(i) (475)10 – Decimal to Hexadecimal.

(ii) (0110110)2 – Binary to Octal.

(iii) (1101101)2 – Binary to Decimal.

18. (a) Explain De Morgan's Law with example.

Or

(b) Describe the types of logical gates with truth tables.