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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2024 ONLY)

24UBC205

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) POLLACHI

END-OF-SEMESTER EXAMINATIONS MAY-2025

B.C.A **MAXIMUM MARKS: 75**

SEMESTER: II **TIME : 3 HOURS**

PART - III

DIGITAL COMPUTER FUNDAMENTALS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. K1

1. Which symbol is used to represent a decision in a flowchart?
   a) Oval b) Rectangle c) Diamond d) Arrow
2. What is the decimal equivalent of the binary number 1101?
   a) 11 b) 12 c) 13 d) 14
3. What does a NAND gate output when all inputs are HIGH?
   a) HIGH b) LOW c) Depends on the circuit d) None of the above
4. Which type of counter operates based on a common clock signal?
   a) Ripple counter b) Synchronous counter c) Asynchronous counter d) Up counter
5. What does MICR stand for?
   a) Magnetic Ink Character Reader b) Micro Integrated Character Reader
   c) Magnetic Ink Character Recognition d) Magnetic Integrated Card Recognition

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. K2

6. Define program specification analysis.
7. Convert the octal number 75_8 to binary.
8. What are logic gates?
9. What is flipflop?
10. Define alphanumeric codes.

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. K3

11. a) Write a short note on types of flowchart symbols.

(OR)

b) Explain the process of binary to octal number conversion with examples.

12. a) State and explain the basic theorems of Boolean Algebra.

(OR)

b) Write a note on digital logic gates and their functions.

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13. a) Discuss the working of a half subtractor with a logic diagram.

(OR)

b) Explain the concept of binary parallel adders.

14. a) Describe the timing sequence in ripple counters.

(OR)

b) Write a note on the design and working of shift registers.

15. a) Explain the process of character recognition using OCR.

(OR)

b) Discuss the different types of output devices used in digital systems.

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4&K5)

16. a) Explain the process of flowcharting and its role in program development.

(OR)

b) Write a detailed note on binary, octal, and hexadecimal number systems with examples.

17. a) Discuss Boolean functions and the simplification process using Karnaugh Maps.

(OR)

b) Write a detailed note on the different types of memory in digital systems.

18. a) Explain in detail the working of a BCD adder.

(OR)

b) Write a note on multiplexers and their applications.

19. a) Describe the different types of counters with examples.

(OR)

b) Explain the excitation table of flip-flops and their design procedure.

20. a) Write a detailed note on input devices such as punched cards and magnetic tapes.

(OR)

b) Explain error-detecting and error-correcting codes with examples.

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ETHICAL PAPER