(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2020-21 ONLY)

SUB CODE 20 UPS 510

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

B.Sc. – PHYSICS **MAXIMUM MARKS: 70**

V SEMESTER **TIME : 3 HOURS**

PART - III

DIGITAL CIRCUIT SYSTEMS AND MICROPROCESSOR

SECTION - A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. **(K1)**

1. $(12)_{10} = (?)_2$

   a) 1100 b) 110 c) 101 d) 1204

2. Which are universal gates?

   a) and b) or c) not d) nand and nor

3. A+Ă. = …….

   a) 1 b) o c) 2 d) 100

4. Karnaugh map …….

   a) simplifies complicated Boolean expressions b) simplifies addition

   c) simplifies multiplication d) .simplifies division

5. Multiplexer converts ……..

   a) many to one c) many to infinity

   b) one to many d) infinity to one

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

6. How does an encoder work?
7. What is a flipflop? Mention some examples.
8. Give the truth table of mod 5 counter .
9. What is meant by edge triggering?
10. Distinguish between address and data bus .

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SECTION – B (5 X 4 = 20 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (Qn. No. 11 to 15) (K3)

11. a) Perform the one's complement addition of the given numbers 101111, 1011100.

(OR)

b) Explain the operation of AND, OR and NOT gates .

12. a) State and explain the laws of boolean algebra**.**

(OR)

b) With suitable example explain the sum of product method.

13. a) Compare half adder and half subtractor.

(OR)

b) How is a seven segment decoder operating?

14. a) Enumerate the operation of RS flip flop and D flip flop.

(OR)

b) Discuss the mod 5 counter .

15. a) Brief about the addressing modes of microprocessor.

(OR)

b) Write a program to add two 8-bit numbers.

SECTION – C (4 X 10 = 40)

ANSWER ANY FOUR OUT OF SIX QUESTIONS
(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS (FROM Qn. No : 17 to 21) (K4 (Or) K5)

16. Prove that NAND gate can act as the universal building block

17. i) State and prove De Morgan's theorem.
ii) With suitable example explain the simplification of Boolean expression using Karnaugh map.

18. Give an account of operation of full subtractor.

19. Using proper diagram discuss the performance of asynchronous mod 8 up down counter.

20. With suitable block diagram explain the architecture of 8085 microprocessor.

21. Write a program to subtract any two binary numbers.

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