(FOR THE CANDIDATES ADMITTED   SUBJECT CODE 21 UPS 6E4

DURING THE ACADEMIC YEAR 2021 ONLY)   REG.NO.

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

END-OF-SEMESTER EXAMINATIONS : MAY – 2024

B.Sc. – PHYSICS   **MAXIMUM MARKS: 70**

SEMESTER : VI   **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.   The ASCII code is basically a ……………….

   (a)   5 bit code   (b)   6 bit code   (c)   7 bit code   (d)   4 bit code

2.   Boolean algebra can be used to………………….

   (a)   simplify any algebraic expressions

   (b)   minimize the number of switches in a circuits

   (c)   solve the mathematical problems

   (d)   perform arithmetic calculations

3.   Which of the following is known as half adder?

   (a)   XOR gate   (b)   XNOR gate   (c)   NAND gate   (d)   NOR gate

4.   D flip flop is used as ………………….

   (a)   Differentiator   (b)   divider circuit

   (c)   delay switch   (d)   none of the above

5.   The microprocessor of a computer can operate on any information if it is present

   in………………….. only

   (a)   program counter   (b)   flag

   (c)   main memory   (d)   secondary memory

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

6.   Draw the logic circuit and truth table for NAND gate.

7.   State DeMorgan's theorems.

8.   What is an encoder?

9.   What is flip-flop?

10.   List the types of Buses admitt and mention its functions.

ETHICAL PAPER

SECTION – B **(5 X 4 = 20 MARKS)**

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

11. a) Convert the following binary numbers to Gray code

(i) $(1111)_2$ (ii) $(101011)_2$ (iii) $(1110)_2$ (iv) $(1011010110)_2$

(OR)

b) Analyze the working of basic logic gates with truth table.

12. a) Explain the laws of Boolean algebra

(OR)

b) What is a don't care condition? How will you present the same in Karnaugh simplification? Give examples

13. a) Explain half Subtractor with logic circuit and truth table.

(OR)

b) Explain parallel binary adder with logic circuit.

14. a) Explain the working of RS flip flop with a neat circuit diagram.

(OR)

b) Design a synchronous Mod 5 counter using Master slave J-K flip flop

15. a) Describe the Flags available in 8085 microprocessor.

(OR)

b) Write an assembly language program to add two hexadecimal numbers.

SECTION – C **(4 X 10 = 40 MARKS)**

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. Explain the working of shift registers in detail.

17. (i) Convert the following octal numbers to Decimal:

(a) $(462.123)_8$ (b) $(126)_8$

(ii) Convert the following hexadecimal numbers to Decimal:

(a) $(3EF)_H$ (b) $(35.5)_H$

18. Discuss in detail the pairs, quads and octets in a Karnaugh map.

19. Explain the function of BCD to decimal decoder with a neat diagram.

20. Explain Master slave flip flop with the help of its logic circuit and truth table

21. With necessary diagram, explain in detail the Microprocessor architecture.

ETHICAL PAPER **********************