(for 2024 onwards)

(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED 24UMS4A4

/24UCY4A5

DURING THE ACADEMIC YEAR 2024-27 ONLY) REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS : MONTH AND YEAR

COURSE NAME : Physics for Mathematics—II/ Physics for Chemistry--II

MAXIMUM MARKS: 75

SEMESTER:IV TIME : 3 HOURS

PART - III

SUBJECT CODE – TITLE

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(Objective Questions with four Multiple Choices) (K1)

(Qn. No. 1 - 5)

1. In order to measure current in a resistance present in a circuit, the ammeter is connected
   a)in sereies b) in parallel
   c) in series or parallel d)in parallel with a capacitor
2. Which one of the following can act as a polarizer
   a) gratting b) a mirror
   c) Nichol prism d) a slit
3. Pure germanium is
   a) N type semiconductor b) P type semiconductor
   c)Intrinsic semiconductor d) extrinsic semiconductor
4. Ones complement of the binary number 10001011 is
   a)0111010101 b) 001110111
   c) 01110100 d) 11110100
5. The Boolean expression A.$\bar{A}$ =
   .
   a) 0 b) 1
   c) A d)$\bar{A}$

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

(Qn. No. 6 - 10)

6. Define electric potential.
7. What is grating?
8. Which one of the transistor regions heavily doped?
9. convert the hexa decimal number “F” into decimal number.
10. Give the Boolean expression for XOR operation.

SECTION – B (5 X 5 = 25 MARKS)

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

(Qn. No. 11 to 15)Questions for Short Answers with internal choices – 2 questions from each unit. (K3)

11. a) Derive the expression for energy store in a charged capacitor.

(OR)

b) What are Kirchaffs laws? State and explain

12. a) What are Newton's rings? Obtain the condition for getting bright and dark rings.

(OR)

b)What is polarization? Describe an experiment to convert unpolarized light in to polarized light,

(CONTD …. 2)

13. a) What are known as intrinsic and extrinsic semiconductors? How do they convert into P-type and N-types?

(OR)

b) Deduce the relation betweenα and β .

14. a) Multiply the following binary numbers
i)10101 x 101 ii) 1110 x111

(OR)

b) Describe the conversion methods to convert binary number to gray code with an example.

15. a) Draw the digital circuit for NOR and XOR gate and give their truth table.

(OR)

b) Prove the following Boolean identity
$A+\bar{A}B = A+B$

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.
(Qn. No. 16 to 20 Questions for Long Answers with internal choices – 2 questions from each unit. (K4 (Or) K5)

16. a) Define Potential. Deduce the expression for electric potential due to a uniformly charged conducting sphere.

(OR)

b) Explain the theory of potentiometer. How will you use it to calibrate an ammeter?

17. a) Derive an expression for finding the bandwidth of an interference fringe using Young double slit experiment.

(OR)

b) Give the theory of plane transmission grating with appropriate diagram.

18. a) What is zener diode? Describe the construction and working detail with I-V characteristics curve.

(OR)

b) Draw the circuit diagram for common emitter configuration of a transistor and discuss its input and out put characteristics curves.

19. a)1. Express the following binary numbers into their equivalent decimal numbers.
i)101.11 ii)110.01 (4 marks)
2. What are binary equivalence of the following hexa decimal numbers.
i)1101 0111 ii) 1010 0110 (4 mark)s

(OR)

b) Write a note with an example
i) BCD number system (4 marks)
ii) Gray code (4 marks)

20. a) Draw the circuit diagram for OR and AND gate using discrete components and explain their working with truth table.

(OR)

b) Draw the digital circuit diagram for full adder and give the truth table.

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SUBJECT CODE/-

FONT : TIMES NEW ROMAN
SIZE : 12, 1.5 SPACING, A4 PAPER.

**** PL USE TABLE AND FORMULA FORMATS FOR ACCOUNTS AND STATISTICS QNS AND MATHEMATICS AND PHYSICS DEPARTMENTS.***