

(FOR THE CANDIDATES ADMITTED

20UMS4A4 / 20UCY4A4

DURING THE ACADEMIC YEAR 2020-21 ONLY)

REG.NO.:

N.G.M.COLLEGE (AUTONOMOUS): POLLACHI
END-OF-SEMESTER EXAMINATIONS: JULY- 2022

B.Sc. MATHEMATICS/B.Sc. CHEMISTRY

MAXIMUM MARKS: 70

SEMESTER: IV

TIME: 3 HOURS

PART - III

PHYSICS FOR MATHEMATICS AND CHEMISTRY - II

SECTION - A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS.

(K1)

1. What happens to the magnetic field in the solenoid when the length of the solenoid increases?
a) Increases b) decreases c) becomes zero d) remains constant
2. The phase difference between two waves is fluctuating with time, and then they are referred to as _____.
a) coherent waves b) standing waves
c) incoherent waves d) transverse waves
3. The number of diodes in a half wave rectifier is _____.
a) two b) four c) zero d) one
4. The gray code for the decimal value 2 is _____.
a)10 b)11 c) 01 d) 100 \
5. 1010_2 the decimal equivalent is _____.
a)10 b) 9 c) 12 d) 100

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. Define the term capacitance
7. What is known as corresponding points in a grating?
8. What is known as zener diode?
9. What are Hexa decimal numbers?
10. According to the rules of Boolean algebra $A+AB = \dots\dots\dots$

SECTION - B

(5 X 4 = 20 MARKS)

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

(Qn. No. 11 to 15)10 questions (a & b) – 2 questions from each unit.

(K3)

11. a) Prove that energy stored in a charged capacitor is $\frac{1}{2} Q^2/C$

(OR)

b) State and prove Kirchoff 's law.

12. a) What is Newton's ring? Describe a method of construction.

(OR)

b) Distinguish between polarized and unpolarized light with an experimental method.

(CONTD....2)

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13. a) What are the types of semiconductors? Explain in detail on any one of them.
(OR)
b) Draw the V-I characteristic curve of a P-N junction diode and discuss the forward and reverse biasing activities.
14. a) Convert the following hexadecimal numbers into decimal
i) $(2C7)_{16}$ ii) $(1A7D)$
(OR)
b) Give a note on excess 3 codes.
15. a) State and prove De Morgan's theorem
(OR)
b) Draw the circuit diagram of OR gate with discrete components and its working with truth table with symbol.

SECTION - C

(4 X 10 = 40 MARKS)

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

16. What is grating? Give the theory of transmission grating with construction details.
17. Derive the expression for magnetic induction at a point in a current-carrying circular coil.
18. Deduce the conditions for getting dark and bright fringes while interference takes place in Young's double-slit experiment.
19. Draw the circuit diagram for the center trapped full-wave rectifier circuit and explain its working with the output diagram.
20. Elaborate the binary addition, binary subtraction, binary multiplication, and binary division with at least one example in each.
21. Draw the logic circuit diagram for the full adder and explain its works with truth table.
