

Semester - IV (Physics Core)

F-ME10

Paper: CC & CT

Q. ANSWER any two questions

1. What is a complex number. How can it be represented graphically
2. Write Euler's formula
3. Write in brief about De Moivre's Theorem

Sem - IV (Physics Core)
Practical

- Q1. Design a on/off switch (NOT gate) using a transistor (only figure)
- Q2. Design AND, OR, NOT & NOR gates using a NAND gate

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Sem-4 - Core

FM-10

Answer any two -

- ① Outline the de-Broglie theory of matter waves. Find the expression for de-Broglie wavelength. Describe Davisson-Germer expt to demonstrate the wave nature of electrons.
- ② State & Explain Einstein's photoelectric equation. How can it be verified experimentally. What are types of photoelectric cells.
- ③ Discuss the situation which led to the development of wave mechanics. Establish time-independent form of Schrodinger wave equation for a particle. Give the physical interpretation of wave function.

Practical Sem-4

Any any one

- ① To verify & design AND, OR, NOT & NOR gates using NAND gates.
- ② To design a digital to analog converter (DAC)

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Sem - 4 - Group Practical

Answer any ~~two~~ ^{one}!

- ① To determine wavelength of Sodium light using Fresnel's Biprism
- ② To determine wavelength of Sodium light using Newton's ring.

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Sem - 4 - Group theory.

- ① How the Michelson's Interferometer can be used for measuring the wavelength of monochromatic light.
- ② What is zone plate. How is it constructed. Zone plate has multiple foci. Show. Compare zone plate with convex lens. What is phase reversal zone plate.
- ③ Define Phase Velocity and Group velocity. Establish the relation between these two velocities.