MID-TERM EXAMINATION
(B.Tech/CSE/ECE)
1st semester(January, 2023)
OFF LINE mode

Subject Code: BAS -103	Subject: Applied Physics-I

Time : 1 ½Hours

Maximum Marks : 30

Q1 Attempt all parts (2.5*4)

(a) State the conditions for coherence of two sources. Is it possible to have two independent sources which are coherent?

(b) Un-polarized light falls on two polarizing sheets placed in a row. What must be the angle between the principal sections of the sheets if the intensity of transmitted light is one-fourth the intensity of incident beam ?

(c) Write the expression for a forced damped harmonic oscillator driven by an external harmonic force of angular frequency ω. Plot the resonance curves for low, moderate and high values of damping factor.

(d) A particle executes SHM of period 44 sec and amplitude 10 cm. Calculate its maximum velocity and maximum acceleration.

Q2 (Attempt any Two Parts) UNIT-1 (5,5)

(a) Derive an expression for the intensity distribution due to Fraunhoffer diffraction at a single slit.

(b) Explain the generation of circularly polarized light by superposition of linearly polarized light.

(c) Find whether a 2cm grating having 500 lines per cm can resolve the sodium D-lines (5890Å and 5896Å) in the (i) first order (ii) second order spectrum.

Q3 (Attempt any Two Parts) UNIT-2 (5,5)

(a) Derive the equation of motion of an oscillator under the action of a damping force and discuss the condition of critically damped oscillations.

(b) What is the difference between central and non-central forces? What are the general features of a central force. Also write general form of a central force.

(c) For a Simple - Harmonic oscillator(a) what fraction of total Energy Is kinetic and what fraction is potential when the displacement is one-half the amplitude (b) At what displacement would the energy be half kinetic, half potential?