ANNEXURE - I
PHYSICS
(Common Syllabus for all Diploma Holders in Engineering)

Unit-1:

Units and dimensions: Physical quantity-fundamental and derived physical quantities-units-fundamental and derived units-SI units-multiples and sub-multiples in SIunits-advantages of SI units-dimensions and dimensional formulae-dimensionless quantities- applications and limitations of dimensional analysis-problems.

Unit-2: Elements of vectors:

Scalar and vector quantities-examples–graphical representation of a vector-types of vectors-addition and subtraction of vectors-triangle law-parallelogram law and its cases-polygon law-resolution of a vector-unit vectors (i, j, k)-dot product and cross product of two vectors-characteristics of dot and cross products-examples-problems.

Unit-3: Kinematics and Friction

Equations of motion-acceleration due to gravity-equations of motion under gravity-expressions for maximum height, time of ascent, time of descent, time of flight, velocity on reaching the point of projection-motion of a body projected from the top of a tower-projectile motion-examples-horizontal and oblique projections-expressions for maximum height, time of ascent, time of flight, horizontal range, magnitude and direction of resultant velocity-problems.

Friction-normal reaction-laws of friction-coefficients of friction-angle of friction-methods of reducing friction-advantages and disadvantages of friction-motion of a body over a smooth inclined plane and a rough inclined plane–problems.

Unit-4: Work, Power and Energy

Work, power and energy-definitions and units-potential and kinetic energies-examples and expressions-law of conservation of energy-problems .

Unit-5: Simple harmonic motion and acoustics

Definition-conditions of SHM-examples of SHM-expressions for displacement, velocity, acceleration, time period, frequency and phase of SHM-time period of a simple pendulum-seconds pendulum-problems. Sound-musical sound and noise-noise pollution-Effects and methods of control of Noise Pollution-Beats and echoe-problems-Doppler effect – Explanation, cases and Applications Acoustics of buildings-Reverberation-Sabines' formula- characteristics of a good building-problems.

Unit:6: Heat and Thermodynamics

Expansion of gases-Boyle's law-Absolute scale of temperature-charle's laws-Ideal gas equation-Universal gas constant and its value-SI Units-problems-external work done by a gas-isothermal process-adiabatic process-first law of thermodynamics and its applications to isothermal process and adiabatic process-two specific heats of a gas-relation between Cp and Cv-problems-second law of thermodynamics and its applications.

Unit:7 Modern Physics

Photoelectric effect – explanation and its laws-applications of photoelectric effect (photocell) – critical angle and total internal reflection – optical fibers - principle, working , types and applications-concept of super conductivity – its properties and applications.

ANNEXURE - II

Number of Questions to be Set Unit Wise (TOTAL 25)

UNIT NO	TOPICS	MARKS
I	Units and Dimensions	02
II	Elements of Vectors	02
III	Kinematics and Friction	06
IV	Work, Power and Energy	03
V	Simple Harmonic Motion and Acoustics	05
VI	Heat and Thermodynamics	05
VII	Modern Physics	02
Total		**25**

ANNEXURE - III
MODEL QUESTIONS FOR PHYSICS

1. If young's modulus 'Y', surface tension 'S' and velocity 'V' are chosen as fundamental quantities, the dimensional formula for force is
    2. Y-5V-4S6
    3. $Y^{-3}V^5S^5$
    4. $Y^{-5}V^{-4}S^5$
    5. $Y^{-3}V^{-4}S^6$

2. A ballon moves up with constant velocity 10m/s. An object is dropped from it when it is at a height of 100 m above the ground. The distance between the object and the ballon after 5 sec is (g=10m/s^2)
    1. 120 m
    2. 125 m
    3. 100 m
    4. 150 m

3. The time period of an oscillating simple pendulum is 'T'. If its length is increased by 5 cm then the time period is 'T$_1$' and the time period is 'T$_2$' if the length is reduced by 5 cm. The relationship among T, T$_1$, T$_2$
    1. $T^2 = T_1^2 + T_2^2$
    2. $T^2/2 = T_1^2 + T_2^2$
    3. $2T^2 = T_1^2 + T_2^2$
    4. $3T^2 = T_1^2 + T_2^2$

4. A gas is heated through 4 K in a closed vessel. If its pressure is increased by 0.8%, the initial temperature of the gas is
    1. 227 K
    2. 454 K
    3. 454 ºC
    4. 227 ºC

5. If light travels through two media with velocities 2.5 x 10^8 m/s and 2 x 10^8 m/s respectively, the critical angle for the combination of the two media is
    1. $Sin^{-1}(4/5)$
    2. $Sin^{-1}(3/5)$
    3. $Sin^{-1}(2/5)$
    4. $Sin^{-1}(1/5)$