2. APPLIED SCIENCE
(COMMON TO ALL BRANCHES)

Max. Marks: 50 Marks

UNIT-I MECHANICS: 09 Marks

Units : Unit ,types of units, SI unit- Basic and Supplementary units, advantages.

Measuring instruments: Vernier callipers-principle and least count. Screw gauge-principle, ZE, ZC, pitch and least count- simple problems on vernier callipers and screw gauge.

Scalars and vectors: scalar and vector with example, resultant, equilibrium, equilibrant. Laws of vectors-parallelogram law of vectors, triangle law of vectors, Lami's theorem. Expression for magnitude and direction of resultant of two vectors acting at a point. Rectangular component of resolution of a vector-simple problems on laws of vectors.

Parallel forces: Types of parallel forces, moment of force, couple, moment of couple, simple problems on moment of force.

UNIT-II PROPERTIES OF SOLIDS AND LIQUIDS: 09Marks

Properties of solids:

Deforming force, elasticity and plasticity with examples, stress and its types with example, strain and its types with example. Hooke's Law. Modullie of elasticity and its types- simple problems on stress and strain.

Properties of Liquids: Thrust and pressure, expression for pressure at a point inside the liquid at rest-simple problems.

Surface tension: Cohesive and Adhesive forces with examples, surface tension, factors affecting surface tension, application of surface tension. Capillarity and its applications.

Viscosity: viscosity, expression for co-efficient of viscosity, effect of temperature on viscosity of liquid and gas, applications of viscosity- simple problems on co-efficient of viscosity.

UNIT-III HEAT AND PROPERTIES OF GASES: 06 Marks

Concept of Heat and Temperature: Heat and Temperature, Specific Heat of substance. **Transmission of Heat**: conduction, convection and radiation with example, Applications of conduction and convection and radiation.

Gas laws: Boyle's law, Charle's law and Gay- Lussac's law (statement with expression),expression PV=nRT, C_p and C_v and its relation-simple problems on gas laws.

10 Marks

UNIT-IV WAVE MOTION:

Simple Harmonic Motion: Periodic motion with example, SHM, expression for displacement of a particle executing SHM.

Wave: Wave motion, wave period, wave frequency, wave amplitude, wave length and wave velocity, relation between wave frequency, wave length and wave velocity-problems on $V=n\lambda$. Mechanical waves and Non-Mechanical waves with examples, Longitudinal and Transverse waves with example.

Propagation of sound waves in air: Newton – Laplace's formula for velocity of sound in air and various factors affecting velocity of sound in air.

Vibrations: Free vibration, forced vibration and resonance with example. Laws of transverse vibration of stretched string, expression for fundamental frequency of vibration of stretched string –simple problems on fundamental frequency.

Stationary waves: Stationary waves and its characteristics, beat, beat frequency, application of beats.

07 Mark

UNIT- V MODERN PHYSICS:

Electromagnetic waves: Electromagnetic waves and its properties, electromagnetic spectrum and its applications.

Laser: Laser, properties of laser and its applications.

Nano-technology: Nanotechnology, advantages and dis-advantages of nanotechnology.

Communication system: Basic elements of communication system, advantages and dis-advantages of satellite communication system.

Optical fibre: Optical fibre-principle and its applications.

09 Marks

UNIT-VI INDUSTRIAL CHEMISTRY

Electrolysis: Electrolyte, types of electrolyte with example, electrolysis, Postulates of Arrhenius theory of electrolytic dissociation, Faraday's First and Second law of electrolysis-simple problems on Faraday's laws.

Corrosion: Corrosion, conditions for corrosion, preventive methods of corrosion.

Batteries: Battery, classification and its application.

Fuel cells: Fuel cell, types and advantages of fuel cells.

Metallurgy: Definition of mineral, ore, flux, slag and alloys. Purpose of making alloys and its applications.

Polymers: polymers and its types, application of polymers.

Composite materials: Composite material and its types, advantages and dis-advantages of composite material.

pH Value: pH value of a solution , pH scale, application of pH in different fields.