

**APPLIED SCIENCE****Max. Marks: 40****UNIT-I: UNITS, DIMENSIONS AND MEASUREMENT:**

Physical quantities, Systems of units, Advantages of SI, Dimensions, Dimensional formula and its Applications, Principle of Vernier, its usage, Principle of Screw gauge, its usage-Problems.

**1x4=4 marks****UNIT –II: BASICS OF DYNAMICS:**

Equations of motion, Newton's laws of motion, Force, Inertia, Momentum, Law of conservation of momentum, Simple problems. Friction, Advantages and disadvantages.

**1x4=4 marks****UNIT-III: BASICS OF STATICS:**

Scalars, Vectors, Resultant, Equilibrium, Resolution of Vectors. Laws of Vectors (Parallelogram law, Triangle law, Lami's theorem, Polygon law) Simple problems.

Co-planar parallel Forces, Moment of Force, Couple, Moment of Couple, Parallel Forces, Conditions of Equilibrium, Simple problems.

**1x5=5 marks****UNIT-IV: PROPERTIES OF SOLIDS AND LIQUIDS:**

Plasticity and Elasticity, Types of Stress and Strain, Hooke's Law, Types of moduli of elasticity, Compressibility, Poisson's ratio, Factor of safety, simple problems.

Liquid pressure, Cohesive and Adhesive forces, Angle of contact, Surface Tension and its Application, Capillarity and its Applications, Viscosity and its Applications, simple problems.

**1x6= marks****UNIT-V: HEAT AND PROPERTIES OF GASES:**

Heat and Temperature, Specific Heat, Heat Capacity, Specific heats of gases,  $C_p$  and  $C_v$  relation between them, Gas laws-Boyle's law, Charles's law, absolute scale of temperature, Perfect gas equation, simple problems.

**1x3=3 marks**

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**UNIT-VI: WAVE MOTION:**

Basic definitions of vibratory motion, SHM, Wave motion, Types of waves, Stationary Waves and its Characteristics, Resonance, Beats and its applications, Velocity of sound in gas, affecting factors, Laws of transverse vibrations of stretched string, Acoustics of building-Echo, Reverberation, simple problems.

**1x7=7 marks****UNIT-VII: PHYSICAL OPTICS:**

Introduction to theories of light- Newton's corpuscular theory, Huygen's wave theory Maxwell's electromagnetic theory, Planck's quantum theory.

**Interference-** Theory of interference, Expression for amplitude and intensity of resultant wave, conditions for constructive and destructive interference, expression for path difference and fringe width, simple problems on fringe width and path difference.

**Diffraction-** Fresnel's diffraction, Fraunhofer's diffraction, difference between interference and diffraction, Resolving power, expression for resolving power of microscope and telescope.

**Polarisation-**Plane of vibration, plane of polarization, methods of producing plane polarized light, Brewster's law.

**1x5= 5 marks****UNIT-VIII: MODERN PHYSICS:**

**Electron emission-**Thermionic emission, Photoelectric emission, Field emission and secondary emission, Experimental results of photoelectric effect, Einstein's photoelectric equation, Photoelectric cell and its applications, scattering of light, coherent scattering and incoherent scattering, Raman effect-applications

**Laser-**Principle, necessary conditions, properties and applications of laser,

**Radioactivity-**properties of  $\alpha$ ,  $\beta$  and  $\gamma$  rays.

**1x4= marks****UNIT-IX: ENGINEERING CHEMISTRY:**

Corrosion-electrochemical theory of corrosion, methods of prevention.  
pH of solution-pH scale, applications.

**1x2=2 marks.**