MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR

COURSE CURRICULAM AND SYLLABII OF THREE YEAR DEGREE COURSE
(Effective from the session 2016-17)

PHYSICS

Paper Code	Paper & Title	Hrs/week	Max. Marks
1161	I: Mechanics of Particles, Rigid bodies and Continuous Media	2	50
1162	II: Oscillations, Waves and Acoustics	2	50
1163	III: Electricity and Magnetism	2	50
1164	IV: Practical	4	75

Note:

1 Each theory question paper in the annual examination shall have three sections:

Section A shall contain one compulsory question of 5 marks having 10 parts. Two parts shall be set from each unit. The candidate is required to answer each part in one or few words. **(Total: 5 Marks)**

Section B shall contain five compulsory questions of 5 marks each with internal choice. One question with internal choice will be set from each unit. The answer may be given in approximately 250 words. **(Total 25 Marks)**

Section C shall contain four descriptive questions covering all units and candidates have to answer any two questions of ten marks each. The answer may be given in approximately 500 words. There can be two parts in a question from this section. **(Total 20 Marks)**

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Section A shall contain one compulsory question of 5 marks having 10 parts. Two parts shall be set from each unit. The candidate is required to answer each part in one or few words.

Section B shall contain five compulsory questions of 5 marks each with internal choice. One question with internal choice will be set from each unit. The answer may be given in approximately 250 words.

Section C shall contain four descriptive questions covering all units and candidates have to answer any two questions of ten marks each. The answer may be given in approximately 500 words. There can be two parts in a question from this section.

FIRST YEAR, T.D.C., SCIENCE
(Effective from the session 2016-17)

Paper-I: 1161 Mechanics of Particles, Rigid Bodies and Continuous media

UNIT – I

Laws of motion, conservation of energy and momentum, transformation equations for rotating frame, centripetal and Coriolis accelerations, Coriolis force, Coriolis force due to earth's rotation – experimental demonstration by Focualt pendulum.

Motion under a central force, conservation of angular momentum, Kepler's laws.

UNIT – II

Fields and potential, gravitational field and potential due to spherical bodies, Gauss's and Poisson's equations, gravitational self energy.

Two body problem, reduced mass, scattering and scattering cross sections, illustrations, Rutherford scattering by hard spheres, centre of mass and laboratory reference frames, binary stars.

UNIT – III

System of particles, centre of mass, calculation of centre of mass of regular bodies, angular momentum, equations of motion, conservation theorems for energy, momentum and angular momentum,system of variable mass, elastic and inelastic collisions, rigid body, degrees of freedom, Euler's theorem.

UNIT – IV

Molecular rotations (as rigid bodies), moment of inertia, di and tri atomic molecules, intrinsic spin, precessional motion, motion of top, gyroscope.

Elastic constants for an isotropic solid, their inter relation, torsion of a cylinder, bending of beam, applications to cantilever.

UNIT – V

Kinematics of moving fluid, equation of continuity, Euler's law for fluidity.

Viscous fluids, streamline and turbulent flow, flow through a capillary tube, Poisvilles law, Reynold's number, Stoke's law, theory of rotation viscometer, effect of temperature and pressure on the viscosity of liquids.

Recent developments in Physics including discussion of Nobel prizes in Physics (no questions to be set in the theory examination).

Text

1. Mechanics- J.C.Upadhyaya, Ram Prasad & Sons
2. Mechanics- D.C.Mathur S.Chand & Co.
3. Mechanics of Particles, Rigid Bodies and Continous Media (In Hindi) by Kalra, Bhandari and Kakani

Reference Books:

1. E.M. Purcell, Editor, Berkeley Physics Course, Vol. 1, Mechanics, McGraw Hill.
2. R.P. Feynmann, R.B. Lighton, M. Sands, The Feynmann Lectures in Physics, Vol. 1. B.I. publications, Bombay, Delhi, Calcutta, Madras.
3. Mechanics of particles, Rigid Bodies and Continuous Media (In Hindi) by Kalra, Bhandari and Kakani