Programme	:	**Diploma in ET**/CE/EE /ME/MT/CM/IT/DDGM
Programme Code	:	01/02/**03**/04/05/06/07/08/**17**/21/22/**23**/24/26
Course	:	**Engineering Physics**
Course Code	:	**SC183**

Teaching Scheme:

	Hours/Week	Total Hours
Theory	**03**	**48**
Term Work/Practical	**02**	**32**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term Work
Duration	Two class test each of 20 Marks -1hr	3 Hrs	2 Hrs	--	--
Marks	20	80	50	--	--

Course Aim:

1. To understand various phenomena, principles and concepts in physics.

2. To understand the applications in Engineering Physics.

3. To solve the applied numerical problems.

Course Objective:

1. The student should able to appreciate the role of physics.

2. The student should able to think in scientific manner and apply the basic Knowledge in different situations.

Course Content :

Chapter No	Topic / Sub topic	Hrs	Marks
1	**Motion**	06	08
	1.1 Introduction **1.2 Circular Motion**: UCM, angular displacement, angular velocity, Angular acceleration, radial velocity, tangential velocity, periodic time, frequency, relation between linear and angular velocity, explanation of centripetal and centrifugal force, with application, relation between velocity frequency and wavelength. **1.3 SHM**: Definition, SHM as a projection of UCM on the diameter, Equation of SHM, displacement and graphical representation.		
2	**Properties of Matter**	08	12
	2.1 Surface Tension : Molecular theory of surface tension, Cohesive and adhesive forces, Angle of contact, shape of liquid surface in capillary tube, capillary action (Examples). Surface tension by capillary rise method, (no derivation), simple problem, effect of impurity and temperature on surface tension. **2.2 Viscosity:** Definition, velocity gradient, Newton's & Stokes' law of viscosity, terminal velocity, coefficient of viscosity by stokes method(No derivation), type of flow of liquid - stream line flow, turbulent flow, Reynolds's number (significance), applications and simple problems. **Elasticity:** Elastic, plastic and rigid bodies, stress and strain Hook's law, types of elastic modulii with its relation, problems. Behaviour of wire under continuously increasing load.		
3	**Sound**	03	06
	Wave motion, Transverse and longitudinal waves, free and forced vibrations, Resonance - explanation and example. absorption, reflection and transmission of sound.		
4	**Heat**	04	06
	Explanation of Gas laws, Boyle's law, Charles's law, Gay Lussac's law, General Gas Equation, problems on gas laws, units of temperature ^0C, ^0K with their conversion, absolute scale of temperature, modes of heat transfer, conduction, convection and radiation.		
5	**Optics**	06	12
	5.1 Introduction to reflection and refraction of light, Snell's law, physical significance of refractive index, critical angle, total internal refraction of Light. **5.2 Fiber optics** : Propagation of light through optical fiber, numerical aperture, types of optical fibers, applications and comparison with		

	Electrical cable. **5.3 LASER:** Definition, spontaneous and stimulated emission, population inversion, He-Ne laser- construction and working, applications and properties of LASER.		
6	**Electrostatics**	06	10
	6.1 Electric charge, Coulomb's law in Electrostatics, unit of charge, electric field, intensity of electric field, electric lines of forces (Properties), electric flux, flux density. **6.2 Electric potential:** Explanation, definition, potential due to a point charge, potential due to a charged sphere, absolute electric Potential, simple problems.		
7	**Current Electricity**	06	10
	7.1 Current, resistance, specific resistance, Whetstone's network, meter bridge, balancing condition of meter bridge, measurement of Unknown resistance using meter bridge, problems. **7.2 Principle of potentiometer,** potential gradient, E.M.F., comparison of E.M.F. using potentiometer. **7.3 Electric work**, electric power, energy, units and calculations of electric bill.		
8	**Electromagnetism**	03	06
	Magnetic effect of electric current, Ampere's rule, intensity of magnetic field, magnetic induction, Biot- Savert's Law (Laplace's Law), Fleming's left hand rule, force experienced by current carrying straight conductor placed in magnetic field, problems.		
9	**Modern Physics**	06	10
	9.1 X- ray's, principle, production, properties and applications. **9.2 Photo electricity**: Plank's quantum theory, photoelectric effect (circuit diagram and working), threshold frequency, stopping potential, work function, Einstein's photoelectric equation, photocell, problems.		
	Total	**48**	**80**

List of Practicals: (Any Eight)

Sr. No.	Name of Experiment
1	Use of vernier calliper to measure the dimensions of different objects.
2	To understand the concept of error in instrument and to measure the dimensions of different objects using micrometer screw gauge.
3	To determine the velocity of sound using resonance tube method.
4	To determine period of simple pendulum.
5	To determine surface tension by capillary rise method.
	Repeat turn for experiments No.1 to 4
6	To determine the specific resistance using Ohm's law
7	To understand the concept of Whetstone's network and to determine the specific resistance using the meter bridge.
8	Comparison of EMF using single cell method.
9	To understand the concept of viscosity and hence to determine the coefficient of viscosity using Stokes' method.
10	Study of concept of total internal reflection.
11	Study of characteristics of photoelectric cell.
12	To determine permittivity of free space.
	Repeat turn for experiments No.5 to 8

Reference Books:

Author/s	Title	Publisher
R.K. Gaur and S. L. Gupta	Engineering Physics	Dhanpat Rai and Sons Publications
Manikpure, Prakash Deshpande and Dagwar	Basic Applied Physics	S. Chand and Co. New Delhi.
Modern Physics	Text book in Physics for diploma Engg. Student.	Sony Publications Pvt. Ltd.
Applid Physics	Schum's Series.	
Kshirsagar, Avdhanalu-	Engineering Physics	
M.S.Pawar, M.A.Sutar	Basic Physics (E Scheme)	

Learning Recourses:

1. Chart 2. Black Board 3.Television 4. Internet 5. Educational CD's
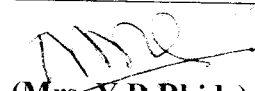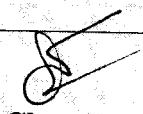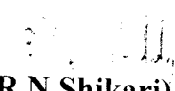6. Models 7. Experimentation 8. Diagram Demonstration

Specification Table:

Sr. No	Topic	Cognitive Level			Total
		Knowledge	Comprehension	Applications	
1	General Physics	02	04	02	8
2	Properties of matter	04	04	04	12
3	Sound	02	02	02	06
4	Heat	02	02	02	06
5	Optics	04	04	04	12
6	Electrostatics	04	02	04	10
7	Current Electricity	04	02	04	10
8	Electromagnetism	02	02	02	06
9	Modern Physics	04	02	04	10
	Total	**26**	**24**	**30**	**80**

Note: Figures in the bracket indicate the marks for which question will be set to account for internal options.

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