SCHEMEOF WORK 2017-18

School : **Subject/ Class ___PHYSICS/10th__** **Teacher Name**

DAYS	Learning Topic	SLOs	Strategy	Assessment	Home Work	Remarks
1	**Chapter # 10 Simple harmonic motion and waves** **10.1 oscillation**	**Students will be able to** • Define terms like Oscillation, Oscillatory motion, Periodic motion.	**Teachers should** • Explain the topic with interactive lecturing. • Definitions, diagram, mathematical steps will be written on board	**Students will be assessed by asking** • Define wave oscillation and periodic motion	**Students should**	
2	**10.2 Simple harmonic motion**	• Define simple harmonic motion with example	• Interactive lecture method will be used. • Definitions will be written on board • Diagrams should be drawn on board	• Define simple harmonic motion	• Define simple harmonic motion. Describe its characteristic features	
3	**10.3 Simple pendulum**	• Define simple pendulum and draw forces acting on displaced pendulum	• Interactive lecture method will be used. • Definitions will be written on board • Diagrams should be drawn on board	• Define simple pendulum? • What is the formula for the time period of pendulum?	• What is simple pendulum? Show the forces acting on it through diagram.	

4	**10.4 Wave motion** **10.5 Waves as means of energy transfer**	• Know wave as a carrier of energy • Know waves consist of crest and trough	• Interactive lecture method will be used. • Definitions will be written on board • Mathematical steps will be written on board	• Define wave motion, crest and trough?	• What is meant by wave motion? Explain it	
5	**10.6 Types of waves**	• Understand electromagnetic and mechanical waves, transverse waves, longitudinal waves	• Interactive lecture method will be used. • Important definitions will be written on board	• Define electromagnetic and mechanical wave?	• What is a wave? Describe its types.	
6	**10.7 Characteristics wave parameters**	• Define wavelength, amplitude, velocity of wave	• Interactive lecture method will be used. • Definitions will be written on board	• Define wavelength, amplitude.	• Define wavelength, amplitude, velocity • Show that $v=f\lambda$	

7	**10.8 Properties of waves**	• Understand different phenomena of waves by ripple tank	• Explain the topic with interactive lecturing. • Definitions, diagram, mathematical steps will be written on board	• Define reflection, refraction of waves • Define diffraction of waves	• Using ripple tank explain the characteristics of wave, reflection and diffraction. • Solve objective questions from exercise	
8	**Exercise short questions 1,2,3**	• Understand concepts given in questions	• Answers will be discussed with students. • Teachers will write answers on board			
9	**Exercise short questions 4,5,6**	• Understand concepts given in questions	• Answers will be discussed with students. • Teachers will write answers on board			

10	**Exercise short questions 7,8,9**	• Understand concepts given in questions	• Answers will be discussed with students.			
11	**Exercise Numerical 1,2,3**	• Understand concepts given in questions	• Numericals will be discussed with students • Teacher will write answers on board			
12	**Exercise Numerical 4,5,6**	• Understand symbols and calculations	• Numericals will be discussed with students • Teacher will write answers on board		• Test	
13	**TEST**	Prepare • Chapter 10 • Simple harmonic motion • Types of waves	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No Homework	

14	**Chapter #11 Sound** **11.1 Sound Waves**	• Understand sound wave and the medium required for propagation of sound wave	• Interactive lecture method will be used. • Model of structure of ear and tuning fork will be shown to students	• Define sound wave? How many things are required to produce sound	• How sound is produced and how it propagates?	
15	**11.2 Nature and propagation of sound**	• Understand longitudinal nature of sound waves which consists of compressions and rarefactions	• Interactive lecture method will be used. • Diagrams should be drawn on board	• How sound reaches from vibrating body to our ears?	• Discuss nature of sound waves in air.	
16	**11.3 Characteristics of sound** **11.3.1 Loudness of sound** **11.3.2 Intensity of sound**	Understand terms like • Loudness of sound and its dependence • Intensity of sound and decibel scale	• Interactive lecture method will be used. • Mathematical steps will be written on board • Diagrams should be drawn on board	• What is meant by loudness of sound • Define intensity of sound		

17	**11.3.3 Pitch of sound** **11.3.4 Quality of sound**	Define • Pitch of sound • Quality of sound • Effect of change in frequency on pitch of sound	• Diagram related to quality of sound will be shown to students • Related video clips will be incorporated	• What is Weber Fechner law? • Define pitch of sound? • Define quality of sound?	• Define terms like Loudness, Intensity, Pitch and quality of sound. Explain each term by giving examples. • Write note on decibel scale and explain intensity level	
18	**11.4 Noise pollution** **11.5 Speed of sound**	Differentiate between • Musical sound and noise • Sources of noise pollution and their effects • Speed of sound	• Diagrams will be drawn on board • For speed of sound resonance apparatus will be shown to students	• Define noise and musical sound? • Define resonance?	• What are the sources of noise pollution • Discuss effects of noise and how it can be controlled?	
19	**11.6 Reflection of sound** **11.6.1 Echo**	Define • Reflection of sound • What is echo and how it can be avoided	• Interactive lecture method will be used • Definitions will be written on board	• Define and give examples of reflection of sound. • Define echo.	• Find the formula for the speed of sound with help of resonance tube apparatus.	

20	**11.6.2 Acoustic protection**	Know • Acoustic protection	• Interactive lecture method will be used • Examples will be given to students	• What is acoustic protection?	• What is echo? How it can be avoided in the halls?	
21	**11.7 The audible frequency range** **11.8 Ultrasound**	Understand • Audible frequency • Ultrasonic • Infrasonic • Applications	• Interactive lecture method will be used • Related video clips will be incorporated	• What is audible frequency range? • Define ultrasonics and infrasonics.	• What is audible frequency range? Define ultrasonics and infrasonics. • Write a detailed note on ultrasonics. • Describe different applications of ultrasonics. • Solve objective questions from exercise	

22	**Exercise short questions 1,2,3,4,5,6**	• Understand concepts given in questions	• Answers will be written on board • All questions will be discussed with students			
23	**Exercise short questions 7,8,9,10,11,12**	• Understand concepts given in questions	• Answers will be written on board • All questions will be discussed with students			
24	**Exercise Numericals 1,2,3,4**	• Understand symbol and calculations	• Data of numericals will be written on board			
25	**Exercise Numericals 5,6,7,8**	• Understand symbol and calculations	• Data of numericals will be written on board		• Test	

26	**TEST**	Prepare • Chapter 11 • Sound wave and characteristics of sound • Speed of sound • Ultrasound	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No Home work	
27	**Chapter#12 Geometrical optics** **12.1 Reflection of light** **12.1.1 Reflection of light from plane surfaces**	Understand terms • Reflection of light • Angle of incidence • Angle of reflection and normal	• Interactive lecture method will be used • Diagrams should be drawn on board • A plane mirror will be shown to students	• What is meant by reflection of light? • From what kind of surfaces the light reflects? • Define terms • Angle of incidence, angle of reflection, and normal.	• No Home work	
28	**12.1.2 Laws of reflection of light** **12.2 Spherical mirror**	Learn • Laws of reflection • Incident ray, reflected ray and normal • Concave mirror, convex mirror • Important terms related to spherical mirror	• Interactive lecture method will be used • Diagrams should be drawn on board • Definitions will be explained	• Define laws of reflection • Define incident ray, refracted ray, normal • Define concave mirror, convex mirror • Define center of curvature, pole, focal length	• What is meant by reflection of light? State and explain the laws of reflection with diagrams.	

29	**Experiment** **To study laws of reflection using plane mirror**	Learn • Types of reflection regular and irregular • Incident ray, reflected ray and normal	• Experiment will be demonstrated with already set apparatus • Apparatus names will be told to students.	• Name of apparatus • Demonstrate the experiment	• Write the practical with apparatus, procedure and observations on practical notebook.	
30	**12.3 Rules for obtaining images formed by concave mirror** **12.4 Image formation by concave mirror**	Learn • Three basic rules for obtaining images by concave mirror	• All diagrams with important terms will be drawn on board	• What are the three rules for obtaining image formed by concave mirror?	• Write the rules for obtaining images formed by concave mirror.	
31	**12.5 Image by convex mirror** **12.6 Spherical mirror formula**	Conceptualize • Image by convex mirror • Spherical mirror formula with equations and diagrams	• Interactive lecture method will be used • Topic with mathematical steps and diagrams should be drawn on board	• Define spherical mirror formula • What are the symbols for image distance, object distance and focal length?	• Derive the spherical mirror equation for a concave mirror	

32	**12.7 Sign convention and linear magnification** **12.8 Uses of spherical mirror**	Know • Sin conventions for concave and convex mirror • Practical uses of spherical mirror	• Lecture method will be used • Formula with symbols will be written on board • Microscope, shaving mirror will be shown to students	• Define linear magnification. What is its formula? • What are the uses of spherical mirror?	• What are the sign conventions for spherical mirror? • Define linear magnification • Write the uses of spherical mirror	
33	**12.9 Refraction of light** **12.10 Laws of refraction**	Understand • Laws of refraction with formulas • Refraction of light with the help of a diagram	• Interactive lecture method will be used • Topic with mathematical steps and diagrams should be drawn on board	• Define refraction of light. • Define terms like angle of incidence, angle of refraction and normal • Define two laws of refraction? • What is the name of second law of refraction?	• Explain refraction of light • State laws of refraction	
34	**Experiment To study laws of refraction using glass slab**	Know • Names of apparatus • Differentiate between incident ray, refracted ray and normal	• Experiment will be demonstrated with already set apparatus • Apparatus names will be told to students.	• Name of apparatus • Define incident ray, refracted ray and normal	• Write experiment on notebook	

35	**12.11 Refractive index** **12.12 Total internal reflection**	Understand • Refractive index its formula • Total internal reflection definition, rules and relations • Critical angle	• Diagrams will be drawn on board • Definitions, concepts will e told to students • Refractive index of glass, air, ice, water etc. will be told to students	• Define refractive index? What is its formula • Define total internal reflection • Define critical angle	• Explain total internal reflection of light and critical angle	
36	**12.12.1 Applications of total internal reflection**	Understand instruments like • Periscope • Binoculars • Optical fibers and endoscope	• Lecture method will be used • Periscope and optical fibers will be shown to students	• What is the purpose of periscope, binoculars, optical fibers and endoscope?	• Write the applications of total internal reflection of light.	
37	**Experiment** **To find critical angle of glass using prism**	Learn • Name of apparatus • Calculate the critical angle of prism	• Experiment will be demonstrated with already set apparatus • Apparatus names will be told to students. • Arrangement of apparatus will be shown.	• What is the value of critical angle of glass? • What are two conditions for total internal reflection?	• Write the practical procedure, apparatus and diagrams on practical notebook	

38	**12.13 Refraction of light through a prism**	Know • Purpose and body of prism • Angle of incidence • Angle of refraction • Angle of minimum deviation	• Interactive lecture method will be used. • Diagrams should be drawn on board • Prism will be shown to students	• What is prism? Draw diagram. • Define angle of minimum deviation	• Discuss the refraction of light through a prism	
39	**Experiment To find path of rays of light and angle of deviation using prism**	• Know names of apparatus • Demonstration of experiment	• Experiment will be demonstrated with already set apparatus • Apparatus names will be told to students • Terms like angle of deviation, refractive index of glass will be told to students	• Name of apparatus • What is the value for refractive index of glass?	• Write the practical procedure, apparatus and diagrams on practical notebook	
40	**12.14 Lenses**	Know • Lens with its types • Terms associated with lens	• Interactive lecture method will be used • Diagrams should be drawn on board • Concave, convex lens will be shown to students	• Define lens, concave lens, convex lens, optical center, principle axis, principle focus, focal length	• What is lens? Write types of lenses. • Define terms related to lens.	

41	**12.15 Image formation by convex lens** **12.16 Image formation by concave lens**	• Draw diagrams for different position of objects from lens which form images • Understand nature of images	• Interactive lecture method will be used. • Diagrams should be drawn on board • Related video clips will be incorporated	• What is nature of image formed by convex lens when object is beyond 2F, at 2F, between F and 2F, and at F?	• Discuss image formation by concave lens.	
42	**12.17 Sign conversion for lenses** **12.18 Lens formula**	Know • Sign convention for concave and convex lens • Definition and formula of lens formation	• Interactive lecture method will be used. • Diagrams should be drawn on board	• What is nature of focal length of concave and convex lens? • Define lens formula. What is its formula?	• What are sign convention for lens? • Derive lens formula for a convex lens	
43	**12.19 Linear magnification** **12.19.1 Resolving power** **12.19.2 Power of lens**	• Define linear magnification and its formula • Power of lens and its unit	• Definition and formulas will be written on board • Examples related to topics will be given to students	• Define linear magnification? • What is resolving power? • Define power of lens and its unit diopter?	• Define linear magnification. Write its formula • Define resolving power and explain • Define power of lens. What is its unit?	

44	**12.20 Simple microscope**	• Know purpose of simple microscope and its magnification	• Interactive lecture method will be used. • Diagrams should be drawn on board • Mathematical steps will be written on board	• What is simple microscope? Give examples. What is its purpose?	• What is simple microscope? Discuss its working and uses. Also define its magnification	
45	**12.21 Compound microscope**	• Know purpose of compound microscope and its magnification	• Interactive lecture method will be used. • Diagrams should be drawn on board • Compound microscope will be shown to students	• What is compound microscope? Tell its uses	• Write a note on compound microscope.	
46	**Experiment To set a compound microscope**	• Name the apparatus • Students can demonstrate experiment • Differentiate between simple and compound microscope	• Experiment will be demonstrated with already set apparatus • Apparatus names will be told to students.	• Students will be assessed by asking • Name of apparatus • Define simple and compound microscope	• Write the practical procedure, apparatus and diagrams on practical notebook	

47	**12.22 Astronomical telescope**	• Know purpose of astronomical telescope and its magnification	• Interactive lecture method will be used. • All ray diagrams should be drawn on board • Related video clips will be incorporated	• What is astronomical telescope? For what purpose it is used?	• Write note on astronomical telescope	
48	**12.23 Defect of vision**	• Differentiate between long sightedness and short sightedness	• Diagrams will be drawn on board	• What is short sightedness? • What is long sightedness?	• Each defect be corrected • Give diagrams • What are the defects of vision? How can each defect be corrected? Draw diagrams. • Solve objective questions from exercise	
49	**Exercise short questions 1,2,3,4,5**	• Understand the concept in questions	• Answers will be written on board with necessary diagrams			

50	**Exercise short questions 6,7,8,9,10**	• Understand the concept in questions	• Answers will be written on board with mathematical steps			
51	**Exercise short questions 11,12,13,14,15**	• Understand the concept in questions	• Answers will be written on board with mathematical steps			
52	**Exercise short questions 16,17,18,19,20**	• Understand the concept in questions	• Answers will be written on board with mathematical steps			
53	**Exercise short questions 21,22,23,24,25**	• Understand the concept in questions	• Answers will be written on board with mathematical steps			

54	**Exercise numericals 1,2,3,4**	• Know symbols , calculations and findings	• Data and calculations will be written on board			
55	**Exercise numericals 5,6,7,8**	• Know symbols , calculations and findings	• Data and calculations will be written on board and discussed with students		• Test	
56	**Test**	• Prepare chapter #12 • Prepare spherical mirror formula • Prepare lens formula	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No Homework	
57	**Chapter #13 Electrostatics** **13.1 Electric charge**	• Understand electrostatics • Electric charge • Nature of charge	• Lecture method will be used • Glass rood, silk , pith ball, ebonite rod will be shown to students (if available)	• Define electrostatics • Define electric charge • Discuss properties of charges	• Define electrostatics. Give concept of electric charge with experiments.	

58	**13.2 Charging by rubbing** **13.3 Electrostatic induction**	• Know structure of atom • Phenomena of electrostatic induction	• Lecture method will be used • Structure of an atom will be shown to students by chart or diagrams	• What is the charge on proton, electron and neutron? • What is electrostatic induction?	• Explain charging by rubbing. • Explain the phenomena of electrostatic induction. How an insulated conductor is charged by electrostatic induction?	
59	**13.4 Electroscope**	• Learn purpose of electroscope • Detection • Testing the nature of charge	• Lecture method will be used • Important terms will be written on board • Electroscope will be shown to students (if available)	• Define electroscope • Discuss different parts of electroscope	• Describe a gold leaf electroscope by using an electroscope • How can we find the presence of charge on a body • The nature of charge present on a body	

60	**13.5 Coulomb's law**	• Learn coulomb's law with mathematical form • Understand the term coulomb, permittivity	• Lecture method will be used • Mathematical forms will be written on board	• Statement of coulomb's law • Value of K • Define coulomb	• State coulomb's law. Explain and define unit of charge	
61	**13.6 Electric field and its intensity** **13.7 Electric lines of force**	• Understand Electric field and electric field intensity • Units of electric field intensity • Electric lines of charges	• Lecture method will be used • Diagrams and mathematical steps will be written on board	• Define electric field • Electric field intensity and its unit • What are electric lines of force?	• What do you mean by electric field? • Illustrate how electric field is represented by electric lines of force? • Define electric field intensity. Explain its magnitude and direction	
62	**13.8 Electrostatic potential**	• Learn Electric potential • Potential difference • Volt	• Lecture method will be used • Diagrams and mathematical steps will be written on board	• Define electric potential • Define potential difference • Define volt	• Define electrostatic potential, potential difference and explain.	

63	**13.9 Practical applications of electrostatics**	• Understand Electro painting • Dust extraction	• Lecture method will be used • Examples will be given • Related video clips will be incorporated	• What is electro painting process? • Dust extraction in chimney	• Write the practical applications of electrostatics.	
64	**13.10 Hazards of electrostatics** **13.11 Capacitors**	• Learn hazards of thunder with lightening • Capacitor, charging of capacitor • Capacitance and its units	• Lecture method will be used • Definition and mathematical steps will be written on board • Capacitor will be shown to students	• How thunder lightening occurs? • Define capacitor • Define capacitance and its unit	• Discuss the hazards of electrostatics • What is a capacitor? Define and explain capacitance. Also define the unit of capacitance.	
65	**13.12 Combination of capacitors** **13.12.1 Series combination of capacitors**	• Learn arrangement of capacitors in series • Equivalent capacitance, current and voltage	• Interactive Lecture method will be used • Important terms, mathematical steps will be written • Diagrams will be drawn • Arrangement of capacitors in series will be discussed with help of apparatus (if available)	• What is the series combination of capacitors? • What is the nature of current and voltage in series combination? • What is the effect on capacitance when capacitors are connected in series?	• How are the capacitors connected in series? • Describe the characteristic feature of this combination	

66	**13.12.2 Parallel combination of capacitors** **13.13 Different types of capacitors**	• Learn arrangement of capacitors in parallel • Equivalent capacitance, current and voltage • Fixed capacitors, variable capacitors	• Interactive lecture method will be used • Different capacitors will be shown to students (if available)	• What is the series combination of capacitors? • What is the nature of current and voltage in series combination? • What is the effect on capacitance when capacitors are connected in parallel?	• How are the capacitors connected in parallel? Describe characteristic feature of this combination? • Write the different types of capacitors? • Solve objective questions from exercise	
67	**Exercise short questions 1,2,3**	• Understand the concept in questions	• Answers of questions will be discussed and written on board			
68	**Exercise short questions 4,5,6,7**	• Understand the concept in questions	• Answers of questions will be discussed and written on board			

69	**Exercise short questions 8,9,10,11**	• Understand the concept in questions	• Answers of questions will be discussed and written on board			
70	**Exercise numericals 1,2,3**	• Know symbols and calculations	• All numericals will be written on board with data arrangement			
71	**Exercise numericals 4,5,6**	• Know data arrangement and calculations	• Numericals will be discussed and data and solution of numericals will be written on board		• Test	
72	**Test**	• Prepare chapter #13 • Prepare coulomb's law • Series and parallel combination of capacitors	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making the test teacher will come to know that up to what extent students have learnt chapter	• No homework	

73	**Chapter #14 Current electricity** **14.1 Electric current** **14.2 conventional current**	• Define electric current and its units • Conventional current	• Interactive lecture method will be used. • Diagrams should be drawn on board • Important mathematical steps will be written on board	• Define electric current • What are the units of current • Define unit of current • Define conventional current	• Define electric current. • What unit is current measured in? explain the mechanism of the flow of current through a conductor	
74	**14.3 potential difference and emf**	• Know potential difference • E.M.F	• Interactive lecture method will be used. • Important terms and definitions will be written on board	• What is the difference between potential difference and e.m.f?	• Explain the concept of potential difference and e.m.f.	
75	**14.4 Ohm's law** **14.5 Resistance**	• Know ohm's law and its limitations • Resistance and its units	• Interactive lecture method will be used. • Important diagrams, statements, formula, units will be written on board and explained to students	• Statement of ohm's law and its applications • Resistance, its formula and unit	• State and explain ohm's law. What are its limitations? • Define and explain resistance. Also define its unit	

76	**Experiment To verify ohm's law using wire as a conductor**	• Know name of apparatus • Arrangement of apparatus and can find resistance with help of formula	• Experiment will be demonstrated with already set apparatus • Apparatus names and arrangement will be told to students	• Name of apparatus • What is rheostat, voltmeter and ammeter?	• Write the practical procedure, apparatus and diagrams on practical notebook	
77	**14.6 Specific resistance or resistivity** **14.7 Effect of temperature on resistance**	• Know resistivity and its unit • Law of resistance • Effect of temperature on resistance of metals	• All definitions with mathematical steps will be written on board, chart or table of specific resistance of different metals will be shown to students	• Define specific resistance or resistivity • Define unit of resistivity • Define temperature coefficient of resistance	• Explain law of resistance. Also define resistivity and its units • What is the effect of change of temperature on resistance? Also define temperature coefficient of resistance	

78	**14.8 Combinations of resistors in a series circuit**	• Know arrangement of resistors in series • Nature of current, voltage • Equivalent resistance	• Diagrams and mathematical steps will be written on board. Important concepts will be told to students • Related video clips will be incorporated	• Define series circuit • What is the effect on equivalent resistance when resistors are arranged in series?	• How are the resistors connected in series? Describe characteristic feature of this combination. • What is meant by equivalent resistance of a series combination? Find its value	
79	**Experiment To study series circuit of resistors**	• Know name of apparatus • Arrangement of apparatus	• Experiment will be demonstrated with apparatus provided. Apparatus names, arrangement and calculations will be told to students	• Name of apparatus • What is the formula for equivalent resistance in series circuit?	• Write practical with procedure, apparatus, observations on practical notebook	

80	**Parallel circuit** **14.9 Conductors and insulators**	• Know arrangement of resistors in parallel • Nature of current, voltage • Equivalent resistance • Conductors, semi-conductors, insulators	• Diagrams and mathematical steps will be written on board. Important concepts will be told to students • Related video clips will be incorporated	• Define parallel circuit • What is the effect on equivalent resistance when resistors are arranged in parallel? • Define conductors, semi-conductors, and insulators.	• Three resistors R_1, R_2 and R_3 are connected in parallel. Derive the formula for their equivalent resistance. Describe the characteristics of this combination of resistors. • Define conductor, semi-conductors and insulators with examples	
81	**The different characteristics for ohmic and non-ohmic conductors**	• Know applications of ohm's law in • Metallic conductors • Filament of a bulb • Thermistor	• Lecture method will be used. Graph will be drawn on board	• Ohmic and non-ohmic materials • Definition of thermistor	• Discuss i-v characteristics for ohmic and non-ohmic conductors	

82	**14.11 Electrical power and Joule law** **14.11.1 Joule's law of heating**	• Learn Electrical energy • Joule's law	• Mathematical steps and statements will be written on board	• Define electrical energy and its unit • Statement of Joule's law	• No homework	
83	**14.11.2 Electric power**	• Learn Electric power • Unit of electric power	• Lecture method will be used • Mathematical steps and statements will be written on board	• Define electric power and its unit • Define Kilowatt hours.	• Explain the concept of energy and electric power. Discuss their units	
84	**14.12 Direct current (D.C) and alternating current (A.C)**	• Know Direct current and its direction • Alternating current and its direction • Sources of D.C and A.C	• Interactive lecture method will be used. Graph will be drawn on board. Name of appliances produces A.C or D.C will be told to students. • Related video clips will be incorporated	• Define direct current give examples • Define alternating current. Give examples	• Write a comprehensive note on D.C and A.C	

85	**14.13 Circuit components** **I) Switches** **II) Resistors** **III) batteries**	• Know States of switch, function, symbol • function of resistors, its types, symbol • function of batteries, its symbol	• Important terms and definitions will be written on board. • Switch resistors, batteries will be shown to students (if available)	• Function of switch • Function of resistor • Function of batteries	• Discuss the various components of a circuit.	
86	**14.14 Measuring instruments** **14.15 Series and parallel circuits**	• Know purpose of galvanometer • Purpose of ammeter • Purpose of voltmeter • Series and parallel circuits	• Diagrams will be made on board • Concepts will be told to students	• Purpose of galvanometer, ammeter, voltmeter • What is the effect on current and voltage in series and parallel combination	• Write a note on electrical measuring instruments. • Write note on series and parallel circuit	
87	**14.16 House circuit**	• Know Arrangement of house circuit • How electricity reaches to us	• Lecture method will be used • A model of house circuit is shown to students (if available)	• What is value of A.C voltage supply to our houses?	• Discuss house circuit in detail	

88	**14.17 Electricity hazards** **14.17.1 Hazards** **14.17.2 Safe use of electricity in homes**	• Know Hazards of electricity • Safe use of electricity	• Interactive lecture method will be used. • Circuit components like fuse, circuit breaker, earth will be shown to students • Related video clips will be incorporated	• Safety precautions from electricity hazards • Purpose of fuse, circuit breakers, earth wire	• Explain the function of fuse, circuit breakers, earth wire. • Solve objective questions from exercise	
89	**Exercise short questions 1,2,3**	• Understand the concept in questions	• All answers will be told to students and will be written on board			
90	**Exercise short questions 4,5,6**	• Understand the concept in questions	• Answers of questions will be written on board and will be discussed			

91	**Exercise short questions 7,8,9**	• Understand the concept in questions	• Answers of questions will be written on board and will be explained to students			
92	**Exercise numericals 1,2,3,4**	• Know data arrangement and calculations	• All numericals with data and calculations will be written on board			
93	**Exercise numerical 5,6**	• Know data arrangement and calculations	• All numericals will be written on board with data arrangement			
94	**Exercise numerical Exercise numerical 7,8,9,10**	• Know data arrangement and calculations	• All numericals will be written on board with data arrangement		• Test	

95	**Test**	• Prepare Chapter # 14 • Electroscope, Coulomb's law • Combination of capacitors	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No homework	
96	**Chapter # 15 Electromagnetism** **15.1 Magnetic effect of a steady current**	• Know Electromagnetism • Electromagnetic induction • Field lines due to straight wire, coil and solenoid	• Interactive lecture method will be used • All diagrams, definitions will be written on board.	• Define electromagnetism • Define electromagnetic induction • Define solenoid • Define right hand rule	• Define electromagnetism • Discuss the magnetic effects of steady current with examples	
97	**Experiment:** **To draw a magnetic field lines due to a circular coil carrying current**	• Know names of apparatus • Students can demonstrate experiment • Direction of magnetic field lines	• Experiment will be demonstrated in front of students. • Name of apparatus, procedure will be told to students	• Names of apparatus • What are the precautions for experiment • What is the unit of magnetic fields?	• Write the practical procedure, apparatus, observation, and diagrams on practical notebook	

98	**15.2 Force on a current carrying conductor in a magnetic field** **15.3 Torque on a Current carrying coil in a magnetic field**	• Know that 'As long as current carrying coil is placed perpendicular to magnetic field maximum force acts upon it' • Unit of magnetic field i.e. Tesla • Fleming left hand rule • Torque on current carrying coil	• Interactive lecture method will be used • All diagrams, definitions will be written on board.	• What is the unit of magnetic field? • Define tesla • When current carrying coil is placed perpendicular to magnetic field what happens? • Define couple?	• Explain the force acting on a current carrying conductor in a magnetic field. Also discuss units magnetic field and left hand rule • Discuss the phenomena of torque when current carrying coil is placed in a magnetic field.	
99	**15.4 D.C motor**	• Learn Definition of D.C motor • Construction of D.C motor • Working and uses of D.C motor	• Interactive lecture method will be used. • A model or chart of D.C motor will be shown to students. • Different parts of D.C motor and its function will be told to students.	• Define D.C motor • What is the function of brushes in D.C motor • Why D.C power supply is used in D.C motor?	• Sketch and describe a D.C motor	

100	**15.5 Moving coil loud speaker**	• Know The function of moving coil loud speaker in a radio	• Interactive lecture method will be used • Diagrams will be drawn on board. • A moving coil loud speaker will be shown to students (if available)	• How moving coil loudspeaker works?	• Explain the construction and working of moving coil loudspeaker?	
101	**15.6 Electromagnetic induction**	• Know phenomena of electromagnetic induction • Lenz's law and its mathematical form • Lenz's law is based upon law of conservation of energy	• Interactive lecture method will be used • All diagrams, definitions, mathematical form of Lenz's law will be written on board. • An activity will be demonstrated with coil and magnet.	• Define electromagnetic induction • What is induced EMF? • Define Lenz's law	• Explain the phenomena of electromagnetic induction. Also define Lenz's law	

102	**15.7 AC generator**	• Know purpose of generator • Construction of generator • Working of generator and its uses	• Topic will be explained to students with interactive teaching method. • Diagram of A.C generator its different parts with name will be drawn on board. • Function of each part and uses will be told to students.	• Define A.C generator • On what principle A.C generator works • Define frequency of A.C	• Sketch and describe an A.C generator	
103	**15.8 Mutual induction**	• Know phenomena of mutual induction • Unit of mutual induction	• Topic will be explained to students with interactive teaching method. • How mutual induction occurs in transformer will be told to students • Necessary diagrams will be drawn on board.	• Define mutual induction • On what factors induced EMF depends?	• Explain the phenomena of mutual induction	

104	**Transformer**	• Know Transformer • Types of transformer i.e. step up and step down transformer • Uses of transformer	• Topic will be explained to students with interactive and interesting teaching method. • Necessary diagrams will be drawn on board. • Structure or model of transformer will be shown to students	• Define transformer • Define step-up and step-down transformer • What kinds of transformers are used in our supply lines of electricity?	• Write a note on transformer • Solve objective questions from exercise	
105	**Exercise short questions 1,2**	• Understand concept in questions • Why electric and magnetic field are similar and different? • Under what conditions force acting on wire in a magnetic field is maximum?	• Answers of questions will be explained to students ten teacher will write answers of short questions on board and students will write answers on their note books			

106	**Exercise short questions 3,4**	• Understand what happens when transformer is connected to battery? • What are the similarities between motor and transformer?	• Teacher will explain the numericals. • What is given and what is to find • Teacher will solve numericals on board and students will note it in their notebooks			
107	**Exercise Numerical 1,2,3**	• Know data arrangement, symbols, calculations and formulas.	• Teacher will explain the numericals. • Teacher will solve numericals on board and students will note it in their notebooks			
108	**Exercise Numerical 4,5,6**	• Know data arrangement, symbols, calculations and formulas.	• Interactive lecture method will be used • All diagrams, definitions will be written on board and explained • Related video clips will be incorporated		Test	

109	**Test**	• Prepare chapter #15 • D.C motor • A.C generator • Transformer	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No homework	
110	**Chapter #16 Introductory electronics** **16.1 Thermionic emission** **16.2 The electron gun**	• Able to define Electronics • Explain the process of thermionic emission emitted from a filament • Describe the simple construction and use of an electron gun as a source of electron beam	• Interactive lecture method will be used • All diagrams, definitions will be written on board and explained • Related video clips will be incorporated	• Define electronics • Define thermionic emission • What is the source of continuous electron beam?	• Define electronics. Also explain the phenomena of thermionic emission? • Describe the simple construction and uses of electron gun	
111	**16.2.1 Deflection by electric field** **16.2.2 Deflection by magnetic field**	• To describe the effect of electric field on electron beam • Describe the effect of magnetic field on electron beam	• Interactive lecture method will be used • All diagrams, definitions will be written on board • Related video clips will be incorporated	• What is the effect of electric field on electron beam? • What is the effect of magnetic field on electron beam?	• What is the effect of electric and magnetic field on path and direction of electron beam explain?	

112	**16.3 Analog and digital electronics**	• To differentiate between analog and digital electronics • Practical uses of analog and digital electronics	• Interactive lecture method will be used • All diagrams, definitions will be written on board • Practical uses of digital and analog electronics will be told to students	• Define digital electronics • Define analog electronics • Give the examples of digital and analog quantities	• Explain the difference between analog and digital electronics.	
113	**16.4 Cathode ray tube (C.R.O)**	• Know basic principle of cathode ray tube • Different parts of cathode ray tube • Uses of cathode ray tube	• Interactive lecture method will be used • Principle, construction, working and uses of C.R.O will be explained • Diagrams will be drawn and important definitions will be written on board • Related video clips will be incorporated	• What is the basic principle of C.R.O? • Tell the uses of C.R.O • What is the purpose of C.R.O?	• Explain construction, working, principle and uses of C.R.O?	
114	**16.5 Basic operations of digital electronics**	• Know circuit can have two states i.e. on and off • Closed switch is denoted by 2 and open switch is denoted by 0	• Interactive lecture method will be used • Topic will be explained to students • Important terms and symbol will be written on board	• What is the symbol for on or off state? • What are Boolean variables?	• Explain the basic operations of digital electronics.	

115	**16.6 Logic gates**	• To identify and draw the symbols for logic gates (NOT, OR, AND, NOR and NAND) • State the action of the logic gates in truth table form • Describe the simple uses of logic gates	• Interactive lecture method will be used • Definitions of Gates will be explained to students • Truth table will be drawn on board • Uses of logic gates will be explained to students	• Draw the truth table of AND, OR, NOT, NAND and NOR gate onboard. • Where logic gates are used in daily life?	• What are logic gates? draw symbol and truth table of following logic gates • AND gate • OR gate • NOT gate • NAND gate • NOR gate • Solve objective questions from exercise	
116	**Experiment: To verify truth table using OR gate, AND gate, NOR gate, and NAND gate**	• Know names of apparatus • Students can demonstrate experiment • Connections of all gates	• Experiment will be demonstrated with already set apparatus • Apparatus names will be told to students. • Concerned precautions will be told to students	• Names of apparatus • What are the logic gates? • Demonstrate experiment	• Write the practical procedure, apparatus, observation, and diagrams on practical notebook	

117	**Exercise short questions 1,2**	• Grasp concepts in questions • Basic operations of gates and construct truth table with help of gates	• Answers of questions will be explained to students ten teacher will write answers of short questions on board and students will write answers on their note books			
118	**Exercise short questions 3,4**	• Grasp concepts in questions • Uses of digital devices and analog quantities	• Answers of questions will be explained to students ten teacher will write answers of short questions on board and students will write answers on their note books			
119	**Test**	Students will be able to prepare • Chapter #16 • Thermionic emission • Cathode ray tube • Logic gates	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No Homework	

120	**Chapter # 17 Information and communication technology** **17.1 communicating information** **1. Telephone** **a) Cell phone** **b) Photo phone**	• Describe the components of information technology • Explain briefly the transmission of: a) Electric signals through wires b) Radio waves through air c) Light signals through optical fibers • Describe the function and uses of cell-phone, Photo-phone	• Interactive lecture method will be used • Purpose, construction and working of each device will be explained to students • Related video clips will be incorporated	• Define I.T • Define telecommunication • What is the function of telephone? • What is the function of cell-phone? • What is the function of Photo-phone?	• No Homework	
121	**2. Tax machine**	• Know Functions of Fax-machine • Uses of Fax-machine	• Interactive lecture method will be used • Topic will be explained to students in easy and interesting way	• What is the purpose of Fax machine? • How documents are sent to other places by using fax machines?	• Write the importance of I.T • How does a cell-phone works? • How fax machines work? • How photo-phone works?	

122	**17.2 Computer**	• Know different parts of computer • Uses of computer in daily life	• Interactive lecture method will be used • Different parts of computer will be told to students with the help of model or chart or computer (if available)	• What is a computer • Tell the name of input and output devices • What is the purpose of C.P.U?	• What is a computer? Write the parts of computer	
123	**17.2.1 Electronic mail** **17.2.2 Uses of internet and e-mail**	• Uses of email and internet	• Interactive lecture method will be used • Uses of E-mail and internet will be explained to students	• What is the purpose of e-mail? • What are the uses of e-mail and internet?	• What is the importance of e-mail and internet?	
124	**17.3 Audio and video cassettes** **17.3.1 Computer disc** **17.3.2 Floppy disc**	• Uses of information storage devices like a) Computer disc (CD) b) Floppy disc	• Interactive lecture method will be used. Information storage devices i.e. CD and Floppy disc will be shown to students (if available) • Related video clips will be incorporated	• How CD works? • Tell the names of different parts of Floppy disk	• No Homework	

125	**17.3.3 Hard disk** **17.3.4 Flash drive (USB)** **17.4 Word processing**	• Know function of a) USB b) Word processing	• Working of hard disk, USB will be explained to students. Different kinds of word processing will be explained to students.	• Function of USB • Function of hard disk • What is word processing unit?	• Write the functions of Audio and Video cassettes in detail • What is word processing? Explain its different types • Solve objective questions from exercise	
126	**Short questions 1,2,3,4,5**	• To understand concept questions like a) Define I.T b) Input devices of a computer	• Answers of questions will be explained to students ten teacher will write answers of short questions on board and students will write answers on their note books		• Test	
127	**Test**	• Prepare chapter # 17 • Cell-phone • Fax machines and computer	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making test teacher will come to know up to what extent students have learnt chapter	• No Homework	

128	**Chapter #18 Radioactivity** **18.1 Structure of atom**	• Know structure of an atom in terms of a nucleus and electrons • Composition of nucleus in terms of protons and neutrons • Atomic number, mass number	• Interactive lecture method will be used • Model or video clips of structure of an atom will be explained to students	• What is meant by Atomic number? • What is meant by Mass number? • What are nucleons?	• Explain the meaning of following terms a) The atomic number Z b) The mass number A c) Radon has a mass number 222 and atomic number 86. What is the number of neutron?	
129	**18.2 Isotopes**	• To explain that number of protons in a nucleus distinguish one element from another • Define isotopes	• Interactive lecture method will be used • Topic will be explained in a meaningful way • Terms and definitions will be written on board	• Define isotopes • What are the isotopes of Hydrogen?	• Define and explain isotopes with examples	

130	**18.3 Radioactivity**	• Know that some nuclei are unstable, they give out radiations to get rid of excess energy and are said to be radioactive • Unit of radioactivity	• Interactive lecture method will be used • Topic will be explained to students. Definition and equations will be written on board	• What is meant by radioactivity? • What is the unit of radioactivity? • Define unit of radioactivity	• What is meant by radioactivity? Define its unit and explain it.	
131	**18.4 Properties of radioactive rays**	• Know alpha, beta and gamma rays • Nature of these rays • Their relative ionizing effect • Their relative penetrating abilities	• Interactive lecture method will be used • Three kinds of radiations and their properties will be explained tin a meaningful way	• What is the charge on alpha rays? • What is the charge on beta and gamma rays?	• Write the properties of alpha, beta and gamma rays.	
132	**18.5 Half-life of radioactive elements**	• Half-life of elements • Parent element, daughter element	• Important terms and definitions will be explained to students. Examples will be given to students	• Define half life • What is the half-life of radium?	• Radioactive sources are said to have a half-life. Explain the meaning of half life.	

133	**18.6 Radioisotope** **18.6.1 Uses of radioisotopes**	• What are radio-isotopes • What makes them useful for various applications?	• Interactive lecture method will be used • Topic will be explained to students • Important terms will be written on board	• Define radioisotopes • What are the uses of radioisotopes?	• What is radioisotope? How radioisotopes help in our daily life?	
134	**18.7 Einstein mass energy equation** **18.8 Nuclear fission**	• Conversion of matter into energy • Conversion of energy into matter • How heavy nucleus splits? • What is a nuclear bomb?	• Interactive lecture method will be used • Topic will be explained to students • A sketch or video will be shown to students regarding nuclear fission • Related video clips will be incorporated	• What is the mathematical form of Einstein Mass Energy equation? • What is meant by nuclear fission? • How much energy is released in a nuclear fission?	• Write short note on Einstein's mass energy equation • What is meant by nuclear fission? Explain • What is meant by fission chain reaction?	
135	**18.9 Fusion reaction**	• How two smaller nuclei combine? • How fusion reaction is safe if achievable?	• Interactive lecture method will be used • Fusion reaction, its equation, model will be discussed with students. • Related video clips will be incorporated	• Define fusion reaction • How much energy is released in a fusion process?	• What is fusion? How it takes place in the sun and how energy is liberated?	

136	**18.10 Radiation hazards**	• Dangers of radiation to human • Uses of radiation in treatment of cancer • Methods to minimize dangerous radiations	• Interactive lecture method will be used • Dangerous and useful effects of radiations will be explained	• What are radiation hazards? • What are the useful uses of radiations?	• What are two common radiation hazards? • Briefly describe the precaution that are taken about radiation hazards? • Solve objective questions from exercise	
137	**Exercise short questions 1,2,3,4,5**	• Students will be able to understand concept in questions i.e. what is the charge on alpha, beta, and gamma particles? • What are the sources of energy from sun and stars?	• Answers of the questions will be explained to students with interactive method • Teacher will write answers of short questions on board and students will write answers on their note books			

138	**Numerical problems 1,2**	• Students will be able to arrange the data of numericals. • Students will also understand calculations and symbols	• Teacher will solve numericals on board with data arrangement • Students will write numericals in their notebooks			
139	**Numerical problems 3,4**	• Students will be able to know data arrangement, symbols and calculations	• Numerical questions will be explained to students. • Teacher will solve numericals with data given and students will write it in their notebooks		• Test	
140	**Test**	• Students will be able to prepare • Chapter # 18 • Atomic number (Z) • Atomic mass (A) • Radioactivity • Half-life • Nuclear fission • Nuclear fusion	• Students will be seated sequentially according to their roll numbers and provided with test which they have to submit after due time.	• After making the test teacher will come to know that up to what extent students have learnt chapter	• No Homework	