**Lesson Plan (2nd Semester)**

**Mathematics**

Mrs. Benu Bajaj, HOD (Applied Mathematic)

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory/Practical** | |
| **Lecture Day** | **Topic Including(assignment/Test)** |
| **Ist** | **1** | Introduction to syllabus and evaluation scheme  **Unit1:- Differential Calculus**  **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **2** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **3** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **4** | **1.2** Differentiation of xn , Sin x, Cos x, ex by first principle. |
| **IInd** | **1** | **1.3** Differentiation of sum, product and quotient of functions. |
| **2** | **1.3** Differentiation of sum, product and quotient of functions. |
| **3** | **1.3** Differentiation of sum, product and quotient of functions. |
| **4** | **Unit 2 Differential Calculus and Its Application**  **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **IIIrd** | **1** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **2** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **3** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **4** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **IVth** | **1** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **2** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **3** | Revision |
| **4** | **Unit 3 Integral Calculus**  **3.1** Integration as inverse operation of differentiation with simple examples. |
| **Vth** | **1** | First Sessional Test(Tentative) |
| **2** | First Sessional Test(Tentative) |
| **3** | First Sessional Test(Tentative) |
| **4** | **3.1** Integration as inverse operation of differentiation with simple examples. |
| **VIth** | **1** | **3.1** Integration as inverse operation of differentiation with simple examples. |
| **2** | **3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts. |
| **3** | **3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts. |
| **4** | **3.3** Evaluation of definite integrals with given limits.  Evaluation of x. dx, x dx, x . dx,  Using formula without proof (m and n being positive integers only) using pre-existing mathematical models. |
| **VIIth** | **1** | **3.3** Evaluation of definite integrals with given limits.  Evaluation of x. dx, x dx, x . dx,  Using formula without proof (m and n being positive integers only) using pre-existing mathematical models. |
| **2** | **Unit4:- Application of Integration, Numerical Integration and Differential Equations**  **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
| **3** | **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
| **4** | **4.2** Numerical of integration by Trapezoidal rule and Simpson’s 1/3rd Rule using pre-existing mathematical models. |
| **VIIIth** | **1** | **4.2** Numerical of integration by Trapezoidal rule and Simpson’s 1/3rd Rule using pre |
| **2** | **Deferential, Equations**  **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **3** | **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **4** | Revision |
| **IXth** | **1** | Second Sessional Test(Tentative) |
| **2** | Second Sessional Test(Tentative) |
| **3** | Second Sessional Test(Tentative)., |
| **4** | **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **Xth** | **1** | **Unit 5 Statistics and Software:- Statistics**  **5.1 Measures of Central Tendency:** Mean, Median, Mode |
| **2** | **5.1 Measures of Central Tendency:** Mean, Median, Mode |
| **3** | **5.2 Measures of Dispersion:** Mean deviation, Standard deviation |
| **4** | **5.2 Measures of Dispersion:** Mean deviation,Standard Deviation |
| **XIth** | **1** | **5.2 Measures of Dispersion:** Mean deviation,Standard Deviation |
| **2** | **Software**  **5.3 Sci lab Software**- Theoretical Introduction. |
| **3** | **5.3 Sci lab Software**- Theoretical Introduction. |
| **4** | **5.4** Basic difference between MATLAB and Sci Lab Software, |
| **XIIth** | **1** | **5.4** Basic difference between MATLAB and Sci Lab Software, |
| **2** | **5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2\*2 order),  (b) Additional , Subtraction of matrices (2\*2 order) in MATLAB or Sci Lab |
| **3** | **5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2\*2 order),  (b) Additional , Subtraction of matrices (2\*2 order) in MATLAB or Sci Lab |
| **4** | Revision |
| **XIIIth** | **1** | Third Sessional Test (Tentative). |
| **2** | Third Sessional Test (Tentative). |
| **3** | Third Sessional Test (Tentative). |
| **4** | Revision |
| **XIVth** | **1** | Revision |
| **2** | Revision |
| **3** | Revision |
| **4** | Revision |
| **XVth** | **1** | Revision |
| **2** | Revision |
| **3** | Revision |
| **4** | Revision |

**Lesson Plan (2nd Semester)**

**Mathematics**

Mrs. Sunita Devi, Lecturer (Applied Mathematic)

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory/Practical** | |
| **Lecture Day** | **Topic Including(assignment/Test)** |
| **Ist** | **1** | Introduction to syllabus and evaluation scheme  **Unit1:- Differential Calculus**  **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **2** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **3** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **4** | **1.2** Differentiation of xn , Sin x, Cos x, ex by first principle. |
| **IInd** | **1** | **1.3** Differentiation of sum, product and quotient of functions. |
| **2** | **1.3** Differentiation of sum, product and quotient of functions. |
| **3** | **1.3** Differentiation of sum, product and quotient of functions. |
| **4** | **Unit 2 Differential Calculus and Its Application**  **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **IIIrd** | **1** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **2** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **3** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **4** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **IVth** | **1** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **2** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **3** | Revision |
| **4** | **Unit 3 Integral Calculus**  **3.1** Integration as inverse operation of differentiation with simple examples. |
| **Vth** | **1** | First Sessional Test(Tentative) |
| **2** | First Sessional Test(Tentative) |
| **3** | First Sessional Test(Tentative) |
| **4** | **3.1** Integration as inverse operation of differentiation with simple examples. |
| **VIth** | **1** | **3.1** Integration as inverse operation of differentiation with simple examples. |
| **2** | **3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts. |
| **3** | **3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts. |
| **4** | **3.3** Evaluation of definite integrals with given limits.  Evaluation of x. dx, x dx, x . dx,  Using formula without proof (m and n being positive integers only) using pre-existing mathematical models. |
| **VIIth** | **1** | **3.3** Evaluation of definite integrals with given limits.  Evaluation of x. dx, x dx, x . dx,  Using formula without proof (m and n being positive integers only) using pre-existing mathematical models. |
| **2** | **Unit4:- Application of Integration, Numerical Integration and Differential Equations**  **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
| **3** | **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
| **4** | **4.2** Numerical of integration by Trapezoidal rule and Simpson’s 1/3rd Rule using pre-existing mathematical models. |
| **VIIIth** | **1** | **4.2** Numerical of integration by Trapezoidal rule and Simpson’s 1/3rd Rule using pre |
| **2** | **Deferential, Equations**  **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **3** | **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **4** | Revision |
| **IXth** | **1** | Second Sessional Test(Tentative) |
| **2** | Second Sessional Test(Tentative) |
| **3** | Second Sessional Test(Tentative)., |
| **4** | **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **Xth** | **1** | **Unit 5 Statistics and Software:- Statistics**  **5.1 Measures of Central Tendency:** Mean, Median, Mode |
| **2** | **5.1 Measures of Central Tendency:** Mean, Median, Mode |
| **3** | **5.2 Measures of Dispersion:** Mean deviation, Standard deviation |
| **4** | **5.2 Measures of Dispersion:** Mean deviation,Standard Deviation |
| **XIth** | **1** | **5.2 Measures of Dispersion:** Mean deviation,Standard Deviation |
| **2** | **Software**  **5.3 Sci lab Software**- Theoretical Introduction. |
| **3** | **5.3 Sci lab Software**- Theoretical Introduction. |
| **4** | **5.4** Basic difference between MATLAB and Sci Lab Software, |
| **XIIth** | **1** | **5.4** Basic difference between MATLAB and Sci Lab Software, |
| **2** | **5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2\*2 order),  (b) Additional , Subtraction of matrices (2\*2 order) in MATLAB or Sci Lab |
| **3** | **5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2\*2 order),  (b) Additional , Subtraction of matrices (2\*2 order) in MATLAB or Sci Lab |
| **4** | Revision |
| **XIIIth** | **1** | Third Sessional Test (Tentative). |
| **2** | Third Sessional Test (Tentative). |
| **3** | Third Sessional Test (Tentative). |
| **4** | Revision |
| **XIVth** | **1** | Revision |
| **2** | Revision |
| **3** | Revision |
| **4** | Revision |
| **XVth** | **1** | Revision |
| **2** | Revision |
| **3** | Revision |
| **4** | Revision |

**Lesson Plan**

**Physics (2nd Semester)**

Mrs. Kavita Rathee, Sr. Lecturer (Applied Physics)

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| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Physics (2nd Semester)**

Ms. Anu Bala Lecturer (Applied Physics)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
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| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Physics (2nd Semester)**

Mrs. Madhu Bala, Guest Faculty (Applied Physics)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Physics (2nd Semester)**

Mr. Lavaney Mahajan, Guest Faculty (Applied Physics)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Chemistry**

Mrs. Veena Jakhar, Sr. Lecturer, (Chemistry)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Lecture Day** | **Theory** | **Practical** | |
| **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| 1st | 1st | **Unit1:- Atomic Structure,Periodic Table and Chemical Bonding** Bohr’s model of atom (qualitative treatment only), | 1st | 1.)To prepare standard solution of oxalic acid.(Group-1) |
| 2nd | Dual character of matter: derivation of  de-Broglie’s equation, Heisenberg’s Principle of Uncertainty, |
| 3rd | Modern concept of atomic  structure: definition of orbitals , shapes of s, p and d- orbitals, | 2nd | 1)To prepare standard solution of oxalic acid.(Group-2) |
| 2nd | 4th | Quantum numbers and their  Significance. | 1st | 2)To dilute the given KMnO4 solution(Group-1) |
| 5th | Electronic configuration: Aufbau and Pauli’s exclusion principles |
| 6th | Hund’s rule, electronic configuration of elements up to atomic number 30. | 2nd | 2)To dilute the given KMnO4 solution(Group-2) |
| 3rd | 7th | Modern Periodic law and Periodic table | 1st | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-1) |
| 8th | Classification of elements into s, p, d and f-blocks,  metals, non-metals and metalloids |
| 9th | Chemical bonding: cause of bonding | 2nd | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-2) |
| 4th | 10th | Ionic bond, covalent bond, and metallic bond (electron  sea or gas model) | 1st | Revision/viva |
| 11th | Physical properties of ionic, covalent and metallic substances. |
| 12th | **Unit2:- Metals and Alloys** Metals: mechanical properties of metals such as conductivity, elasticity, strength and  stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact  resistance and their uses. | 2nd | Revision/viva |
| 5th | 13th | Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from haematite using  a blast furnace | 1st | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-1) |
| 14th | Commercial varieties of iron. Definition,necessity of making alloys |
| 15th | Composition, properties and uses of  duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering | 2nd | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-2) |
| 6th | 16th | First Sessional Test(Tentative) | 1st | First Sessional Test(Tentative) |
| 17th | First Sessional Test(Tentative) | First Sessional Test(Tentative) |
| 18th | First Sessional Test(Tentative | 2nd | First Sessional Test(Tentative) |
| 7th | 19th | **Unit3:- Water ,Solutions,Acids and Bases** Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v  and v/v), | 1st | 5)To determine the total hardness of given water sample by EDTA method(Group-1) |
| 20th | Normality, molarity and molality and ppm. |
| 21th | Simple problems on solution  preparation. | 2nd | 5)To determine the total hardness of given water sample by EDTA method(Group-2) |
| 8th | 22th | Arrhenius concept of acids and bases, strong and weak acids and bases | 1st | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-1) |
| 23th | pH value of a  solution and its significance |
| 24th | pH scale. Simple numerical problems on pH of acids and  bases. | 2nd | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-2) |
| 9th | 25th | Hard and soft water, causes of hardness of water, types of hardness – temporary and  permanent hardness | 1st | Revision/viva(Group-1) |
| 26th | Expression of hardness of water, ppm unit of hardness disadvantages  of hard water; |
| 27th | Removal of hardness: removal of temporary hardness by boiling and Clark’s  method; removal of permanent hardness of water by Ion-Exchange method | 2nd | Revision/viva(Group-2) |
| 10th | 28th | Boiler problems caused by hard water: scale and sludge formation, priming and foaming,  caustic embrittlement | 1st | 7)To determine the pH of different solutions using a digital pH meter.(Group-1) |
|  | 29th | Water sterilization by chlorine, UV radiation and RO |
|  | 30th | **Unit4:- Fuels and Lubricants** Fuels: definition and classification of higher and lower calorific values, units of calorific  value, characteristics of an ideal fuel | 2nd | 7)To determine the pH of different solutions using a digital pH meter.(Group-2) |
| 11th | 31st | Second Sessional Test (Tentative) | 1st | Second Sessional Test (Tentative) |
| 32nd | Second Sessional Test (Tentative) |
| 33rd | Second Sessional Test (Tentative) | 2nd | Second Sessional Test (Tentative) |
| 12th | 34th | Petroleum: composition and refining of petroleum;  gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG | 1st | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-1) |
| 35th | Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel |
| 36th | Lubricants- Functions and qualities of a good lubricant, | 2nd | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-2) |
| 13th | 37th | Classification of lubricants with  examples; lubrication mechanism | 1st | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-1) |
| 38th | Physical properties (brief idea only) of a  lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point |
| 39th | **Unit5:-- Polymers and Electrochemistry** Polymers and Plastics: definition of polymer, classification, addition and condensation  polymerization | 2nd | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-2) |
| 14th | 40th | Preparation properties and uses of polythene, PVC, Nylon-66, Bakelite;  definition of plastic | 1st | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-1) |
| 41th | Thermoplastics and thermosetting polymers; natural rubber and  neoprene, other synthetic rubbers (names only) |
| 42nd | Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of  prevention of corrosion | 2nd | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-2) |
| 15th | 43th | Third Sessional Test(Tentative) | 1st | Third Sessional Test(Tentative) |
|  | 44th | Third Sessional Test(Tentative) |
|  | 45th | Third Sessional Test(Tentative) | 2nd | Third Sessional Test(Tentative) |
| 16th | 46th | Hot dipping, metal cladding, cementation, quenching, cathodic  protection methods | 1st | Revision/Viva(Group-1) |
| 47th | Introduction and application of nanotechnology: nano-materials and their classification,  applications of nanotechnology in various engineering applications |
| 48th | Revision | 2nd | Revision/Viva(Group-2) |

**Lesson Plan**

**Chemistry**

Mr. Ravi Saini, Sr. Lecturer, (Chemistry)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Lecture Day** | **Theory** | **Practical** | |
| **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| 1st | 1st | **Unit1:- Atomic Structure,Periodic Table and Chemical Bonding** Bohr’s model of atom (qualitative treatment only), | 1st | 1.)To prepare standard solution of oxalic acid.(Group-1) |
| 2nd | Dual character of matter: derivation of  de-Broglie’s equation, Heisenberg’s Principle of Uncertainty, |
| 3rd | Modern concept of atomic  structure: definition of orbitals , shapes of s, p and d- orbitals, | 2nd | 1)To prepare standard solution of oxalic acid.(Group-2) |
| 2nd | 4th | Quantum numbers and their  Significance. | 1st | 2)To dilute the given KMnO4 solution(Group-1) |
| 5th | Electronic configuration: Aufbau and Pauli’s exclusion principles |
| 6th | Hund’s rule, electronic configuration of elements up to atomic number 30. | 2nd | 2)To dilute the given KMnO4 solution(Group-2) |
| 3rd | 7th | Modern Periodic law and Periodic table | 1st | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-1) |
| 8th | Classification of elements into s, p, d and f-blocks,  metals, non-metals and metalloids |
| 9th | Chemical bonding: cause of bonding | 2nd | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-2) |
| 4th | 10th | Ionic bond, covalent bond, and metallic bond (electron  sea or gas model) | 1st | Revision/viva |
| 11th | Physical properties of ionic, covalent and metallic substances. |
| 12th | **Unit2:- Metals and Alloys** Metals: mechanical properties of metals such as conductivity, elasticity, strength and  stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact  resistance and their uses. | 2nd | Revision/viva |
| 5th | 13th | Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from haematite using  a blast furnace | 1st | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-1) |
| 14th | Commercial varieties of iron. Definition,necessity of making alloys |
| 15th | Composition, properties and uses of  duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering | 2nd | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-2) |
| 6th | 16th | First Sessional Test(Tentative) | 1st | First Sessional Test(Tentative) |
| 17th | First Sessional Test(Tentative) | First Sessional Test(Tentative) |
| 18th | First Sessional Test(Tentative | 2nd | First Sessional Test(Tentative) |
| 7th | 19th | **Unit3:- Water ,Solutions,Acids and Bases** Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v  and v/v), | 1st | 5)To determine the total hardness of given water sample by EDTA method(Group-1) |
| 20th | Normality, molarity and molality and ppm. |
| 21th | Simple problems on solution  preparation. | 2nd | 5)To determine the total hardness of given water sample by EDTA method(Group-2) |
| 8th | 22th | Arrhenius concept of acids and bases, strong and weak acids and bases | 1st | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-1) |
| 23th | pH value of a  solution and its significance |
| 24th | pH scale. Simple numerical problems on pH of acids and  bases. | 2nd | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-2) |
| 9th | 25th | Hard and soft water, causes of hardness of water, types of hardness – temporary and  permanent hardness | 1st | Revision/viva(Group-1) |
| 26th | Expression of hardness of water, ppm unit of hardness disadvantages  of hard water; |
| 27th | Removal of hardness: removal of temporary hardness by boiling and Clark’s  method; removal of permanent hardness of water by Ion-Exchange method | 2nd | Revision/viva(Group-2) |
| 10th | 28th | Boiler problems caused by hard water: scale and sludge formation, priming and foaming,  caustic embrittlement | 1st | 7)To determine the pH of different solutions using a digital pH meter.(Group-1) |
|  | 29th | Water sterilization by chlorine, UV radiation and RO |
|  | 30th | **Unit4:- Fuels and Lubricants** Fuels: definition and classification of higher and lower calorific values, units of calorific  value, characteristics of an ideal fuel | 2nd | 7)To determine the pH of different solutions using a digital pH meter.(Group-2) |
| 11th | 31st | Second Sessional Test (Tentative) | 1st | Second Sessional Test (Tentative) |
| 32nd | Second Sessional Test (Tentative) |
| 33rd | Second Sessional Test (Tentative) | 2nd | Second Sessional Test (Tentative) |
| 12th | 34th | Petroleum: composition and refining of petroleum;  gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG | 1st | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-1) |
| 35th | Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel |
| 36th | Lubricants- Functions and qualities of a good lubricant, | 2nd | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-2) |
| 13th | 37th | Classification of lubricants with  examples; lubrication mechanism | 1st | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-1) |
| 38th | Physical properties (brief idea only) of a  lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point |
| 39th | **Unit5:-- Polymers and Electrochemistry** Polymers and Plastics: definition of polymer, classification, addition and condensation  polymerization | 2nd | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-2) |
| 14th | 40th | Preparation properties and uses of polythene, PVC, Nylon-66, Bakelite;  definition of plastic | 1st | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-1) |
| 41th | Thermoplastics and thermosetting polymers; natural rubber and  neoprene, other synthetic rubbers (names only) |
| 42nd | Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of  prevention of corrosion | 2nd | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-2) |
| 15th | 43th | Third Sessional Test(Tentative) | 1st | Third Sessional Test(Tentative) |
|  | 44th | Third Sessional Test(Tentative) |
|  | 45th | Third Sessional Test(Tentative) | 2nd | Third Sessional Test(Tentative) |
| 16th | 46th | Hot dipping, metal cladding, cementation, quenching, cathodic  protection methods | 1st | Revision/Viva(Group-1) |
| 47th | Introduction and application of nanotechnology: nano-materials and their classification,  applications of nanotechnology in various engineering applications |
| 48th | Revision | 2nd | Revision/Viva(Group-2) |

**Lesson Plan**

**Environmental Studies And Disaster Management**

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory/Practical** | |
| **Lecture Day** | **Topic Including(assignment/Test)** |
| **Ist** | **1** | **Unit1:- Introduction** Basics of Ecology , Eco system Concept and sustainable development |
| **2** | Sources ,advantages ,disadvantages of renewable and non-renewable energy |
| **IInd** | **1** | Rain Water Harvesting |
| **2** | Deforestation – its effects and control measures |
| **IIIrd** | **1** | **Unit2:- Air and Noise Pollution** Air Pollution: Source of Air Pollution |
| **2** | Effect of Air Pollution on Human Health, Economy, Air Pollution control Methods |
| **IVth** | **1** | Noise Pollution: Sources of Noise Pollution, unit of noise ,Effect of Noise Pollution, Acceptable Noise Level, different Methods of minimizing Noise Pollution |
| **2** | Revision of Above topics |
| **Vth** | **1** | **Unit3:- Water and Soil Pollution** Water Pollution: Impurities in water, Cause of water Pollution |
| **2** | Sources of water Pollution. Effect of water pollution on human health |
| **VIth** | **1** | First Sessional Test(Tentative) |
| **2** | First Sessional Test(Tentative) |
| **VIIth** | **1** | Concept of DO ,BOD, COD |
| **2** | Prevention of water Pollution- water treatment processes |
| **VIIIth** | **1** | Sewage treatment ,Water quality standard |
| **2** | Soil Pollution: Sources of soil Pollution |
| **IXth** | **1** | Effect and control of soil pollution |
| **2** | Type of solid waste- House hold, Industrial, Agricultural, Bio-Medical, Disposal of Solid waste. |
| **Xth** | **1** | Solid waste management E-waste ,E-waste management |
| **2** | **Unit4:- Impact of Energy Usage on Environment** Global Warming ,Green House Effect , Depletion of Ozone Layer |
| **XIth** | **1** | Second Sessional Tests(Tentative) |
| **2** | Second Sessional Tests(Tentative) |
| **XIIth** | **1** | Acid Rain .Eco Friendly Material, Recycling of Material, Concept of Green Building |
| **2** | Concept of Carbon credit and Carbon Foot Print |
| **XIIIth** | **1** | **Unit5:- Disaster Management** **A**  Different type of Disaster ,Natural Disasters such as Flood ,Cyclone ,Earth Quake and Landslides etc. |
| **2** | Manmade Disasters such as Fire, Industrial Pollution, Nuclear Disasters, biological Disasters. |
| **XIVth** | **1** | Accidents(Air , Sea Rain and Road) , Structural Failures (Building and Bridges) , War and Terrorism |
| **2** | B Disaster Preparedness Disaster Preparedness plan : Prediction ,Early warnings and safety measures of Disaster Psychological Response and Management (Trauma, Stress, Rumour and Panic) |
| **XVth** | **1** | Third Sessional Test(Tentative) |
| **2** | Third Sessional Test(Tentative) |
| **XVIth** | **1** | Revision of above Syllabus |
| **2** | Revision of above Syllabus |