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| **LESSON PLAN**  **(Jan. 01, 2018-April 28, 2018 )**  **Name of Faculty : Dr. Krishan Kumar**  **Designation : Assistant Professor**  **Department of Physics, S.D. College (Lahore), Ambala Cantt.** | | | | | | | | |
| **Week** | **Date** | **B. Sc. –I ( 2nd Sem)**  **Sec-B(Mon.-Wed.)**  **Paper (PH-201): Properties of matter and Kinetic theory of gases** | **B. Sc. – III** **(6th**  **Sem)**  **Sec.-A (Thu.-Sat.)**  **Paper(PH-602): Atomic and Molecular Spectroscopy** | **B. Sc. – III** **(6th Sem)**  **Sec.-B(Mon.-Wed.)**  **Paper(PH-602): Atomic and Molecular Spectroscopy** | **B.Sc.-2nd Sem. Practical**  **(3 Lectures.)**  **Group-VI**  **(Fri.-Sat.)** | | **B.Sc.-4th Sem.**  **Practical**  **(3 Lectures.)**  **Group-VI**  **(Mon.-Tue.)** | **B.Sc.-4th Sem.**  **Practical**  **(3 Lectures.)**  **Group-V**  **(Wed.-Thu.)** |
| 1 | 01.01.2018 | **UNIT-I**  Rotation of rigid body,  Moment of Inertia | ---------- | **UNIT-I**  Introduction of early observations, emission and absorption spectra | ---------- | | Exp: To measure the area of a window using Sexant. | ---------- |
| 02.01.2018 | Torque, angular momentum, Kinetic energy of rotation. | --------- | Spectrum of Hydrogen atom in Balmer series, Bohr atomic model (Bohr’s postulates) | ---------- | | To measure the height of an inaccessible object using Sexant. | ---------- |
| 03.01.2018 | Theorem of perpendicular and parallel axes, | ------------ | spectral series in absorption spectra,effect of nuclear motion on line spectra | ---------- | | ---------- | Exp: To measure the area of a window using Sexant. |
| 04.01.2018 | ---------- | **UNIT-I**  Introduction of early observations, emission and absorption spectra | ---------- | ---------- | | ---------- | To measure the height of an inaccessible object using Sexant. |
| 05.01.2018 | ---------- | spectrum of Hydrogen atom in Balmer series, Bohr atomic model(Bohr’s postulates) | ---------- | Exp: Moment of Inertia of a fly-wheel | | ---------- | ---------- |
| 06.01.2018 | ---------- | spectral series in absorption spectra, effect of nuclear motion on line  spectra |  | Exp-: M.I. of an irregular body using a torsion pendulum | | ---------- | ---------- |
| 07.01.2018 | SUNDAY | | | | | | |
| 2 | 08.01.2018 | Moment of inertia of solid sphere | ---------- | variation in Rydberg constant due to finite mass, shortcomings of Bohr’s theory | ---------- | Exp: Refractive index and dispersive power of a prism by spectrometer | | ---------- |
| 09.01.2018 | Moment of inertia of hollow sphere, spherical shell | ---------- | Wilson sommerfeld quantization rule, de-Broglie interpretation of  Bohr quantization law | ---------- | Exp: To draw a graph between wave length and minimum deviation using Mercury source | | ---------- |
| 10.01.2018 | Moment of inertia of solid cylinder, hollow cylinder | ---------- | Bohr’s corresponding principle, Sommerfeld’s extension of Bohrs model | ---------- | ---------- | | Exp: Refractive index and dispersive power of a prism by spectrometer |
| 11.01.2018 | ---------- | variation in Rydberg constant due to finite mass, shortcomings of Bohr’s theory | ---------- | ---------- | ---------- | | Exp: To draw a graph between wave length and minimum deviation using Mercury source |
| 12.01.2018 | ---------- | Wilson sommerfeld quantization rule, de-Broglie interpretation of  Bohr quantization law | ---------- | Exp: Surface tension by Jeager’s Method | ---------- | | ---------- |
| 13.01.2018 | ---------- | Bohr’s corresponding principle, Sommerfeld’s extension of Bohrs model | ---------- | Exp: Young’s Modulus by bending of beam. | ---------- | | ---------- |
| 14.01.2018 | SUNDAY | | | | | | |
| 3 | 15.01.2018 | Moment of inertia of solid bar of rectangular cross-section | ---------- | Sommerfeld relativistic correction, Short comings of Bohr-Sommerfeld theory | ---------- | Exp: To Characteristics of C.B. Transistor | | ---------- |
| 16.01.2018 | Acceleration of a body rolling down on an inclined plane. | ---------- | Vector atom model; space quantization, electron spin, coupling of orbital and spin angular momentum, | ---------- | Exp: To Characteristics of C.E. Transistor | | ---------- |
| 17.01.2018 | REVISION& PROBLEM DISCUSSION OF UNIT-I | ---------- | quantum numbers associated with vector atom model, Transition probabilities & Selection Rules | ---------- | ---------- | | Exp: To Characteristics of C.B. Transistor |
| 18.01.2018 | ---------- | Sommerfeld relativistic correction, Short comings of Bohr-Sommerfeld theory | ---------- | ---------- | ---------- | | Exp: To Characteristics of C.E. Transistor |
| 19.01.2018 | ---------- | Vector atom model; space quantization, electron spin, coupling of orbital and spin angular momentum, quantum numbers associated with vector atom model | ---------- | Exp: Modulus of rigidity by Maxell’s needle. | ---------- | | ---------- |
| 20.01.2018 | ---------- | quantum numbers associated with vector atom model, Transition probabilities & Selection Rules | ---------- | Exp: Elastic constant by Scarle’s method. | ---------- | | ---------- |
|  | 21.01.2018 | SUNDAY | | | | | | |
| 4 | 22.01.2018 | HOLIDAY (BASANT PANCHMI) | | | | | | |
| 23.01.2018 | **UNIT-II**  Elasticity, Stress and Strain | ---------- | REVISION& PROBLEM DISCUSSION OF UNIT-I | ---------- | Exp: Determination of wave length of Na light using a diffraction grating | | ---------- |
| 24.01.2018 | HOLIDAY (CHHOTU RAM JAYANTI) | | | | | | |
| 25.01.2018 | ---------- | REVISION& PROBLEM DISCUSSION OF UNIT-I | ---------- | ---------- | ---------- | | Exp: Wave length by Newton's Rings |
| 26.01.2018 | REPUBLIC DAY | | | | | | |
| 27.01.2018 | ---------- | **UNIT-II**  Orbital magnetic dipole moment (Bohr megnaton) behavior of magnetic dipole in external magnetic field | ---------- | Exp: Viscosity of water by its flow through a uniform capillary tube | ---------- | | ---------- |
| 28.01.2018 | SUNDAY | | | | | | |
| 4 | 29.01.2018 | Hook’s law | ---------- | **UNIT-II**  Orbital magnetic dipole moment (Bohr megnaton) behavior of magnetic dipole in external magnetic field. | ---------- | Exp: Wave length by Newton's Rings | | ---------- |
| 30.01.2018 | Elastic constant and their relations | ---------- | Larmors precession and theorem Penetrating and Non-penetrating orbits. | ---------- | Exp: Resolving power of a telescope | | ---------- |
| 31.01.2018 | HOLIDAY (GURU RAVIDAS JAYANTI) | | | | | | |
| 01.02.2018 | ---------- | Larmors precession and theorem Penetrating and Non-penetrating orbits. | ---------- | ---------- | ---------- | | Exp: Resolving power of a telescope |
| 02.02.2018 | ---------- | Orbital magnetic dipole moment (Bohr megnaton) behavior of magnetic dipole in external magnetic field. | ---------- | ---------- | ---------- | | ---------- |
| 03.02.2018 | ---------- | Spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbits, | ---------- | ---------- | ---------- | | ---------- |
| 04.02.2018 | SUNDAY | | | | | | |
| 5 | 05.02.2018 | Poisson’s ratio | ---------- | Orbital magnetic dipole moment (Bohr megnaton) behavior of magnetic dipole in external magnetic field. | ---------- | Exp: Resolving power of a telescope | | ---------- |
| 06.02.2018 | Torsion of cylinder | ---------- | Spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbits, | ---------- | Exp: To study the ripple factor in a d.c. power supply | | ---------- |
| 07.02.2018 | Twisting couple | ---------- | quantum mechanical relativity correction, Hydrogen fine spectra, | ---------- | ---------- | | Exp: Resolving power of a telescope |
| 08.02.2018 | ---------- | quantum mechanical relativity correction, Hydrogen fine spectra, | ---------- | ---------- | ---------- | | Exp: To study the ripple factor in a d.c. power supply |
| 09.02.2018 | ---------- | Main features of Alkali Spectra and their theoretical Interpretation. | ---------- | Exp: ‘g’ by Bar pendulum | ---------- | | ---------- |
| 10.02.2018 | HOLIDAY(MAHRISHI DAYANAND SARASWATI JAYANTI) | | | | | | |
| 11.02.2018 | SUNDAY | | | | | | |
| 6 | 12.02.2018 | Bending of beam ( Bending moment and its magnitude) | ---------- | Main features of Alkali Spectra and their theoretical Interpretation. | ---------- | Exp: Study of Hartley oscillator | | ---------- |
| 13.02.2018 | HOLIDAY (MAHA SHIVRATRI) | | | | | | |
| 14.02.2018 | Cantilever and Centrally loader beam. | ---------- | Term Series and limit, Rydeburg-Ritze combination principle | ---------- | ---------- | | Exp: To study the ripple factor in a d.c. power supply |
| 15.02.2018 | ---------- | Term Series and limit, Rydeburg-Ritze combination principle | ---------- | ---------- | ---------- | | Exp: Study of Hartley oscillator |
| 16.02.2018 | ---------- | Absorption spectra of Alkali atoms. | ---------- | Exp: E.C.E. of hydrogen using an Ammeter | ---------- | | ---------- |
| 17.02.2018 | ---------- | Doublet fine structure in the spectra of alkali metals and its Interpretation. | ---------- | **Sec-B**  Exp: Determination of Impedance of an A.C. circuit and its verification | ---------- | | ---------- |
| 18.02.2018 | SUNDAY | | | | | | |
| 7 | 19.02.2018 | ALLOTMENT OF ASSIGNMENT | ---------- | Absorption spectra of Alkali atoms. | ---------- | Exp: To find out the frequency of a tuning fork by Melde's experiment | | ---------- |
| 20.02.2018 | PROBLEM DISCUSSION OF UNIT II | ---------- | Doublet fine structure in the spectra of alkali metals and its Interpretation. | ---------- | Exp: Study of series and parallel resonance circuits | | ---------- |
| 21.02.2018 | SESSIONAL TEST OF UNIT I & II | ---------- | Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum | ---------- | ---------- | | Exp: To find out the frequency of a tuning fork by Melde's experiment |
| 22.02.2018 | ---------- | Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum | ---------- | ---------- | ---------- | | Exp: Study of series and parallel resonance circuits |
| 23.02.2018 | ---------- | DELIVERING ASSIGNMENT & PROBLEM DISCUSSION OF UNIT II | ---------- | Exp: Frequency of A. C. mains by Sonometer using an electromagnet | ---------- | | ---------- |
| 24.02.2018 | ---------- | SESSIONAL TEST OF UNIT I & II | ---------- | Exp:  Measurement of angle of dip by earth inductor | ---------- | | ---------- |
| 25.02.2018 | SUNDAY | | | | | | |
| 8 | 26.02.2018 | **UNIT-III**  Assumption of Kinetic theory of gases | ---------- | DELIVERING ASSIGNMENT & PROBLEM DISCUSSION OF UNIT II | ---------- | Exp: Comparison of Illuminating Powers by a Photometer | | ---------- |
| 27.02.2018 | Pressure of an ideal gas | ---------- | SESSIONAL TEST OF UNIT-I & II | ---------- | Exp: Measurement of Specific rotation & concentration of sugar solution using polarimeter | | ---------- |
| 28.02.2018 | Kinetic interpretation of Temperature | ---------- | **UNIT-III**  Essential features of spectra of Alkaline-earth elements | ---------- | ---------- | | Exp: Comparison of Illuminating Powers by a Photometer |
| 01.03.2018 | ---------- | **UNIT-III**  Essential features of spectra of Alkaline-earth elements | ---------- | ---------- | ---------- | | Exp: Measurement of Specific rotation & concentration of sugar solution using polarimeter |
| 02.03.2018 | HOLIDAY(HOLI) | | | | | | |
| 03.03.2018 | ---------- | Vector model for two valance electron atom: application of spectra. | ---------- | Exp: High resistance by substitution method. | ---------- | | ---------- |
| 04.03.2018 | SUNDAY | | | | | | |
| 9 | 05.03.2018 | Ideal Gas equation | ---------- | Vector model for two valance electron atom: application of spectra. | ---------- | Exp: Study of series and parallel resonance circuits | | ---------- |
| 06.03.2018 | Degree of freedom | ---------- | Coupling Schemes: LS and JJ coupling scheme. | ---------- | Exp: Measurement of peak, average & R.M.S. value of A.C. | | ---------- |
| 07.03.2018 | Law of equipartition of energy | ---------- | Interaction energy in L-S coupling (sp, pd configuration), Lande Interval rule. | ---------- | ---------- | | Exp: Study of series and parallel resonance circuits |
| 08.03.2018 | ---------- | Vector model for two valance electron atom: application of spectra. | ---------- | ---------- | ---------- | | Exp: Measurement of peak, average & R.M.S. value of A.C. |
| 09.03.2018 | ---------- | Coupling Schemes: LS and JJ coupling scheme. | ---------- | Exp: To draw forward and reverse bias characteristics of a semiconductor diode | ---------- | | ---------- |
| 10.03.2018 | ---------- | Interaction energy in L-S coupling (sp, pd configuration), Lande Interval rule. | ---------- | Exp: Zener Diode voltage regulation characteristics | ---------- | | ---------- |
| 11.03.2018 | SUNDAY | | | | | | |
| 10 | 12.03.2018 | Application of law of equipartition for specific heat of gases | ---------- | Pauli principal and periodic classification of the elements. | ---------- | Exp: Study of voltage doubler and trippler circuits | | ---------- |
| 13.03.2018 | specific heat of Real gases | ---------- | Interaction energy in JJ Coupling (sp, pd configuration) | ---------- | Exp: To print out all natural (even/odd) numbers | | ---------- |
| 14.03.2018 | Vander wall’s equation | ---------- | Equivalent and non-equivalent electrons, Two valance electron  System, | ---------- | ---------- | | Exp: Study of voltage doubler and trippler circuits |
| 15.03.2018 | ---------- | Pauli principal and periodic classification of the elements. | ---------- | ---------- | ---------- | | Exp: To print out all natural (even/odd) numbers |
| 16.03.2018 | ---------- | Interaction energy in JJ Coupling (sp, pd configuration) | ---------- | Exp: To draw forward and reverse bias characteristics of a semiconductor diode | ---------- | | ---------- |
| 17.03.2018 | ---------- | Equivalent and non-equivalent electrons, Two valance electron  System, | ---------- | Exp: Zener Diode voltage regulation characteristics | ---------- | | ---------- |
| 18.03.2018 | SUNDAY | | | | | | |
| 11 | 19.03.2018 | Brownian motion | ---------- | spectral terms of non- equivalent and equivalent electrons | ---------- | Exp: To find maximum, minimum and range using computer | | ---------- |
| 20.03.2018 | REVISION OF UNIT III | ---------- | Comparison of spectral terms in L-S And J-J coupling. | ---------- | Exp: To evaluate sum of finite series using computer | | ---------- |
| 21.03.2018 | PROBLEM DISCUSSION OF UNIT III | ---------- | Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin. | ---------- | ---------- | | Exp: To find maximum, minimum and range using computer |
| 22.03.2018 | ---------- | spectral terms of non- equivalent and equivalent electrons | ---------- | ---------- | ---------- | | Exp: To evaluate sum of finite series using computer |
| 23.03.2018 | HOLIDAY(SAHEEDI DIWAS) | | | | | | |
| 24.03.2018 | ---------- | Comparison of spectral terms in L-S And J-J coupling. | ---------- | Exp: To draw forward and reverse bias characteristics of a semiconductor diode | ---------- | | ---------- |
| 25.03.2018 | SUNDAY | | | | | | |
| 12 | 26.03.2018 | **UNIT-IV**  Maxwell’s distribution of speed. | ---------- | REVISION &PROBLEM DISCUSSION OF UNIT III | ---------- | Exp: Find the roots of a quadratic  equation | | ---------- |
| 27.03.2018 | Maxwell’s distribution of velocities | ---------- | **UNIT-IV**  Zeeman Effect (normal and Anomalous) | ---------- | Exp: To find integration by trapezoidal rule | | ---------- |
| 28.03.2018 | Experimental verification of Maxwell’s law of speed distribution | ---------- | Experimental set-up for studying Zeeman effect | ---------- | ---------- | | Exp: Find the roots of a quadratic  equation |
| 29.03.2018 | HOLIDAY(MAHAVIR JAYANTI) | | | | | | |
| 30.03.2018 | ---------- | Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin. | ---------- | Exp: Moment of Inertia of a fly-wheel | ---------- | | ---------- |
| 31.03.2018 | ---------- | REVISION &PROBLEM DISCUSSION OF UNIT III | ---------- | Exp-: M.I. of an irregular body using a torsion pendulum | ---------- | | ---------- |
| 01.04.2018 | SUNDAY | | | | | | |
| 13 | 02.04.2018 | Most probable speed | ---------- | Explanation of normal Zeeman effect(classical and quantum mechanical) | ---------- | Exp: To find the area of a triangle, sphere and cylinder | | ---------- |
| 03.04.2018 | Most probable speed | ---------- | Explanation of anomalous Zeeman effect (Lande g-factor) | ---------- | Exp: To measure the area of a window using Sexant. | | ---------- |
| 04.04.2018 | REVISION | ---------- | Zeeman pattern of D1 and D2 lines of Na atom | ---------- | ---------- | | Exp: To find the area of a triangle, sphere and cylinder |
| 05.04.2018 | ---------- | **UNIT-IV**  Zeeman Effect (normal and Anomalous) | ---------- | ---------- | ---------- | | Exp: To measure the area of a window using Sexant. |
| 06.04.2018 | ---------- | Experimental set-up for studying Zeeman effect | ---------- | Exp: Surface tension by Jeager’s Method | ---------- | | ---------- |
| 07.04.2018 | ---------- | Explanation of normal Zeeman effect(classical and quantum mechanical) | ---------- | Exp: Young’s Modulus by bending of beam. | ---------- | | ---------- |
| 08.04.2018 | SUNDAY | | | | | | |
| 14 | 09.04.2018 | Average Speed | ---------- | Paschen-Back effect of a single valence electron system | ---------- | Exp: Refractive index and dispersive power of a prism by spectrometer | | ---------- |
| 10.04.2018 | R. M. S speed | ---------- | Weak field Stark effect of  Hydrogen atom. | ---------- | Exp: To draw a graph between wave length and minimum deviation using Mercury source | | ---------- |
| 11.04.2018 | REVISION | ---------- | General Considerations, Electronic States of Diatomic Molecules | ---------- | ---------- | | Exp: Refractive index and dispersive power of a prism by spectrometer |
| 12.04.2018 | ---------- | Explanation of anomalous Zeeman effect (Lande g-factor) | ---------- | ---------- | ---------- | | Exp: To draw a graph between wave length and minimum deviation using Mercury source |
| 13.04.2018 | ---------- | Zeeman pattern of D1 and D2 lines of Na atom, Paschen-Back effect of a single valence electron system | ---------- | Exp: Viscosity of water by its flow through a uniform capillary tube | ---------- | | ---------- |
| 14.04.2018 | HOLIDAY(DR. AMBEDKAR JAYANTI) | | | | | | |
| 15.04.2018 | SUNDAY | | | | | | |
| 15 | 16.04.2018 | Mean free path | ---------- | Rotational Spectra (Far  IR and Microwave Region) | ---------- | Exp: To Characteristics of C.B. Transistor | | ---------- |
| 17.04.2018 | Transport of energy and momentum | ---------- | Vibrational Spectra (IR Region), | ---------- | Exp: To Characteristics of C.E. Transistor | | ---------- |
| 18.04.2018 | HOLIDAY (PARSHURAM JAYANTI) | | | | | | |
| 19.04.2018 | ---------- | Weak field Stark effect of  Hydrogen atom. | ---------- | ---------- | ---------- | | Exp: To Characteristics of C.E. Transistor |
| 20.04.2018 | ---------- | Electronic States of Diatomic Molecules | ---------- | Exp: ‘g’ by Bar pendulum | ---------- | | ---------- |
| 21.04.2018 | ---------- | Rotational Spectra (Far  IR and Microwave Region) | ---------- | Exp: E.C.E. of hydrogen using an Ammeter | ---------- | | ---------- |
| 22.04.2018 | SUNDAY | | | | | | |
| 16 | 23.04.2018 | Diffusion of gases. | ---------- | Rotator Model of Diatomic Molecule | ---------- | Exp: Wave length by Newton's Rings | | ---------- |
| 24.04.2018 | REVISION UNIT IV | ---------- | Raman Effect, Electronic Spectra | ---------- | Exp: Resolving power of a telescope | | ---------- |
| 25.04.2018 | PROBLEM DISCUSSION OF UNIT IV | ---------- | REVISION &PROBLEM DISCUSSION OF UNIT IV | ---------- | ---------- | | Exp: Wave length by Newton's Rings |
| 26.04.2018 | ---------- | Vibrational Spectra (IR Region), | ---------- | ---------- | ---------- | | Exp: Resolving power of a telescope |
| 27.04.2018 | ---------- | Rotator Model of Diatomic Molecule, Raman Effect, Electronic Spectra | ---------- | Exp: Frequency of A. C. mains by Sonometer using an electromagnet | ---------- | | ---------- |
| 28.04.2018 | ---------- | REVISION &PROBLEM DISCUSSION OF UNIT IV | ---------- | Exp: Measurement of angle of dip by earth inductor | ---------- | | ---------- |