Lesson plan (Session 2021-2022)

Name of Assistant/Associate professor: Anil Chauhan

Class and section:B.ScIII Year

Subject lesson plan: Physics paper 1st(Atomic,Molecular And Laser Physics)

Week 1 **Unit 1:**
Assignment-I
Week 1, Day1 • 1.1.Vector atom modal
Week 1, Day2 • 1.2.Quantum numbers associated with vector atom modal
Week 1, Day3 • 1.3. Penetrating and non-penetrating orbits

Week 2
Week 2, Day1 • 2.1.Spectral lines in different series of alkali spectra
Week 2, Day2 • 2.2.Spin orbit interaction and doublet term separation part-I
Week 2, Day3 • 2.3. Spin orbit interaction and doublet term separation part-II

Week 3
Week 3, Day1 • 3.1.1. Spin orbit interaction for non-penetrating orbits
Week 3, Day2 • 3.2.1.Spin orbit interaction for penetrating orbits
Week 3, Day3 • 3.3.1 Coupling scheme for two valence electrons atom: • (i) ll-coupling

Week 4
Week 4, Day1 • 4.1.1 Coupling scheme for two valence electron (ii)ss-coupling
Week 4, Day2 • 4.2.1 (iii) LS-coupling or Russell- Saunder's coupling
Week 4, Day3 • 4.3.1 (iv) jj-coupling

Week 5
Week 5, Day1 • 5.1.1 Expression for interaction energy for LS- coupling
Week 5, Day2 • 5.2.1Expression for intraction energy jj- coupling
Week 5, Day3 • Test on unit-I

Week 6**Unit-II**
Assignment-II
Week 6, Day1 • 6.1.1 Zeeman effect (Normal) Part-I
Week 6, Day2 • 6.2.1 Zeeman effect (normal)Part-II
Week 6, Day3 • 6.3.1 Zeeman effect (anomalous)

Week 7
Week 7, Day1 • 7.1.1 Quantum theory of anomalous Zeeman effect
Week 7, Day2 • 7.2.1 Zeeman pattern of D1 and D2 lines of Na-atom
Week 7, Day3 • 7.3.1 Paschen-Back effect of a single valence electron system

Week 8
Week 8, Day1 • 8.1.1 Zeeman shift
Week 8, Day2 • 8.2.1 Weak field Stark effect of Hydrogen atom
Week 8, Day3 • 8.3.1 Discrete set of electronic energies of molecules

Week 9
Week 9, Day1 • 9.1.1 Quantisation of vibrational energy
Week 9, Day2 • 9.2.1Quantisation of rotational energy
Week 9, Day3

• 9.3.1 Raman effect (quantitative description)

Week 10
Week 10, Day1 • 10.1.1 Stokes lines
Week 10, Day2 • 10.2.1 Anti-Stokes line
Week 10, Day3 **Test on unit-II**

Week 11
Unit -III
Assignment-III
Week 11,Day1 • 11.1 Main features of a laser : Directionality • 11.2 High intensity
Week 11, Day2 • 11.2.1 High degree of coherence
Week 11, Day3 • 11.3.1 Special and temporal coherence

Week 12
Week 12, Day1 • 12.1.1 Einstein's coefficients
Week 12, Day2 • 12.2.1 Possibility of amplification
Week 12, Day3 • 12.3.1 Momentum transfer

Week 13
Week 13, Day1 • 13.1.1 life time of level
Week 13, Day2 • 13.2.1 Kinetics of optical absorption
Week 13, Day3 • 13.3.1Threshold condition for laser emission

Week 14
Week 14, Day1 • 14.1.1Laser pumping
Week 14, Day2 • 14.2.1 He-Ne laser and Ruby laser Part-1
Week 14, Day3 • 14.3.1 He-Ne laser and Ruby laser part-II

Week 15
Week 15, Day1 • 15.1.1Application of laser in the field of medicine
Week 15, Day2 • 15.2.1 Application of laser in the field of industry
Week 15, Day3 • **Test on unit-III**

Week 16, Day1

16.1.1 Revision

Day2,

16.2.1 Revision

Day3,

16.3.1 Revision