

Additional Books for Reference

- ▶ Modern Physics, J.R. Taylor, C.D. Zafiratos, M.A. Dubson, 2004, PHI Learning.
- ▶ Theory and Problems of Modern Physics, Schaum's outline, R. Gautreau and W. Savin, 2nd Edn, Tata McGraw-Hill Publishing Co. Ltd.
- ▶ Quantum Physics, Berkeley Physics, Vol.4. E.H. Wichman, 1971, Tata McGraw-Hill Co.
- ▶ Basic ideas and concepts in Nuclear Physics, K. Heyde, 3rd Edn., Institute of Physics Pub.
- ▶ Six Ideas that Shaped Physics: Particle Behave like Waves, T.A. Moore, 2003, McGraw Hill

1.23 Core P9 – Elements of Modern Physics Lab**Elements of Modern Physics****60 class hours****2 Credits****General Topics:**

Discussion on properties rotational spectra of iodine, working principles of tunnel diode, vacuum diode, discharge tube.

List of Practical

1. To determine the wavelength of H-alpha emission line of Hydrogen atom.
2. To determine the absorption lines in the rotational spectrum of Iodine vapour.
3. To determine the value of e/m by Bar magnet.
4. To determine the wavelength of laser source using diffraction of double slits.
5. To determine wavelength using He-Ne/ solid state laser using plane diffraction grating
6. To determine angular spread of He-Ne/ solid state laser using plane diffraction grating
7. To determine work function of material of filament of directly heated vacuum diode.
8. To show the tunneling effect in tunnel diode using I-V characteristics.
9. Measurement of Planck's constant using black body radiation and photo-detector
10. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
11. To determine the Planck's constant using LEDs of at least 4 different colours.
12. To determine the ionization potential of mercury.
13. To setup the Millikan oil drop apparatus and determine the charge of an electron.
14. To determine the wavelength of laser source using diffraction of single slit.

Reference Books

- ▶ Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
- ▶ Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
- ▶ A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Edn, 2011, Kitab Mahal