

Punjab University B.Sc. Physics

Practicals Syllabus

Practicals: (for two days)

(Time 4 hours each day):

Practical Paper 'A': Mechanics, Thermodynamics, Sound, Optics and Electricity or Magnetism

Time : (Four Hours);

List of Experiments for Practical Paper 'A',

Properties of Matter:

1. Surface tension by capillary rise.
2. Study of compound pendulum and estimate of value of 'g'.
3. Elastic constants by spiral spring.
4. Modulus of rigidity by dynamic method and static method of Maxwell's Needle.

Heat:

5. Therm-couple, Thermal e.m.f. and temperature diagram.
6. Determination of "J" Electrical Method (Callender and Barnes Method) with compensation for heat loss.

Sound:

7. Frequency of A.S. supply.
8. Velocity of sound by Kundt's tube..

Optics:

9. Use of sextant and measurement of altitude with it.
10. Wavelengths of sodium D lines by Newton's Rings.
11. Wavelength of light by Fresnel's biprism.
12. Wavelength of light by diffraction grating .
13. Measurement of the Rotation of the Plane of Polarisation.
14. Resolving power of diffraction grating.
15. Determination of the radius of Lycopodium Particles.

Electricity and Magnetism:

16. Measurement of resistance using a neon flash bulb and condenser.
17. I-H Curve by Magnetometer.
18. Conversion of a Pointer Galvanometer into a voltmeter and an ammeter.
19. Calibration of a meter and voltmeter by potentiometer.
20. Low resistance by Carey Foster bridge.
21. Charge sensitivity of a ballistic galvanometer taking into account Logarithmic decrement.
22. Comparison of capacities by ballistic galvanometer.
23. Determination of temperature coefficient of a resistance.
24. Measurement of magnetic field by fluxmeter or by search coil method.
25. Measurement of H by earth inductor.

**Practical Paper 'B': Electronics, Modern Physics, (Practicals) and Nuclear Physics
(Time-Four Hours):****List of Experiments for Practical Paper "B",**

1. Variation of photo-electric current with the intensity of light.
2. Measurement of Planck's constant using spectrometer.
3. Determination of e.m. of electron by deflection method.
4. Determination of ionization potential of mercury.
5. **Acceptor circuit.**
6. **Reflector circuit.**
7. Characteristic curves of a G.M. Counter.

8. Setting up half and full wave rectifiers and the study of the waveshape on oscilloscope. Effect of smoothing circuit on ripple voltage.
9. To set up a transistor as an oscillator and to measure its frequency by an oscilloscope.
10. Triode valve as a single stage voltage amplifier and measurement of its gain by an oscilloscope.
11. To draw the characteristics of a semi-conductor diode and compare it with that of a vacuum tube diode.
12. Setting up a single stage transistor amplifier and measurement of voltage gain.
13. Determination of range of Alpha particles.
14. Stopping power for alpha-particles in air equivalent of Mica, Ag, Cu and Al.
15. Absorption coefficient of Beta-particles, using an End-on-Geiger Counter.
16. To study the voltage current characteristics of an electric Discharge in gases at low pressures.
17. Production of vacuum and its rough measurement with a manometer.
18. Production of X-rays and the demonstration of their effect on a fluorescent screen.
19. To set up a High-Frequency Oscillator and measure its frequency, with a wave meter

Note: Minimum of 30 experiments should be performed, at least 10 from List of Experiments for Practical Paper "A" and 10 from List of Experiments for Practical Paper "B".