

# PHYSICS PRACTICALS

(Autumn / Spring )

ASP 11

L T P  
0 0 2

## List of Experiments (At least Ten)

1. To determine the wavelength of monochromatic light by Newton's ring.
2. To determine the wavelength of monochromatic light with the help of Fresnel's biprism.
3. To determine the focal length of two lenses by nodal slide and locate the position of cardinal points.
4. To determine the specific rotation of cane sugar solution using half shade polarimeter.
5. To determine the wavelength of spectral lines using plane transmission grating.
6. To determine the specific resistance of the material of given wire using Carey Foster's bridge.
7. To determine the variation of magnetic field along the axis of a current carrying coil and then to estimate the radius of the coil.
8. To verify Stefan's Law by electrical method.
9. To calibrate the given ammeter and voltmeter.
10. To study the Hall effect and determine Hall coefficient, carrier density and mobility of a given semiconductor material using Hall-effect set up.
11. To determine energy band gap of a given semiconductor material.
12. To determine E.C.E. of copper using Tangent or Helmholtz galvanometer.
13. To draw hysteresis curve of a given sample of ferromagnetic material and from this to determine magnetic susceptibility and permeability of the given specimen.
14. To determine the ballistic constant of a ballistic galvanometer.
15. To determine the viscosity of a liquid.

**Note : Additional experiments may be added based on contents of syllabus.**

**CHEMISTRY PRACTICALS**  
**(Autumn / spring)**

**ASP 13**

**L T P**  
**0 0 2**

**LIST OF EXPERIMENTS ( AT LEAST TEN)**

1. Determination of alkalinity in the given water sample.
2. Determination of temporary and permanent hardness in water sample using EDTA as standard solution.
3. Determination of available chlorine in bleaching powder.
4. Determination of chloride content in the given water sample by Mohr's method.
5. Determination of iron content in the given ore by using external indicator
6. pH-metric titration.
7. Determination of Equivalent weight of Iron by the chemical displacement method. The equivalent weight of copper is 63.5  
(Note : the procedure to be followed in carrying the above experiment is given as annexure)
8. Viscosity of an addition polymer like polystyrene by Viscometer.
9. Determination of iron concentration in sample of water by colorimetric method. The method involves the use of KCNS as colour developing agent and the measurements are carried out at  $\lambda_{\max}$  480 nm.  
Note : The general procedure of estimation is given on pp653-8 of the textbook of Quantitative Chemical Analysis by A.I. Vogel 6<sup>th</sup> Edition, Publisher : Pearson education Ltd. 2000)
10. Determination of heat of neutralization of Hydrochloric acid and Sodium hydroxide
11. Determination of amount of dissolved oxygen in water
12. Separation of metal ions by paper chromatography
13. Preparation of iodoform from acetone
14. Preparation of Sodium Cobaltinitrile salt.
15. Element detection & functional group identification in organic compounds

**BASIC ELECTRICAL + ELECTRONICS LAB**  
**EE P 11 (Autumn / Spring )**

**List of Practical**

**L T P**  
**0 0 2**

**FEP 11**

**Fundamentals of Electronics Lab (Any Ten)**

1. Study of diode characteristics.
2. To study a half wave and full wave rectifier circuit.
3. Determination of ripple factor of capacitive and non capacitive filter for HW and FW diode rectifier circuit.
4. Study of characteristics of Zener Diode as constant voltage.
5. Verification of Application of Zener Diode as shunt regulator.
6. Study of Clipper and Clamper Circuit with different waveforms.
7. Determination of characteristics of BJT in CB and CE configuration.
8. Determination of characteristics of FET in CS and CD configuration.
9. Study of BJT as single stage amplifier and determination of  $A_v$ ,  $V_i$ ,  $R_i$  and  $R_o$ .
10. Study of AND, NAND, OR, NOR and EXOR gates.
11. Verification of Universal gates.

**List of Practical**

**L T P**  
**0 0 2**

**FEP 11**

**Fundamentals of Electrical Engineering Lab (Any Ten)**

1. Verification of Network Theorems.
2. Study of diode characteristics. Study of phenomenon of resonance in RLC series circuit.
3. Measurement of power in a three phase circuit by two wattmeter method.
4. Measurement of efficiency of a single phase transformer by load test.
5. Determination of parameters and losses in a single phase transformer by OC and SC test.
6. Study of characteristic of DC Motor.
7. Study of characteristic of AC Motor.
8. DC generator characteristics.
9. 10. Speed control of dc shunt motor.
10. Study running and reversing of a three phase induction motor.
11. Study of a single phase energy meter.

**MECHANICAL ENGINEERING LAB**  
**MEP 11 (Autumn / Spring)**

**List of Practical**

**L T P**  
**0 0 2**

**A minimum of 10 experiments from the following :**

1. Study of Steam engine and steam turbine models.
2. Study of 2-stroke and 4-stroke I.C.E. models.
3. Study of Fiat engine and/ or Diesel engine prototype.
4. Study of a vapour compression Refrigeration unit tutor/refrigerator.
5. Study of a window type air conditioner.
6. To conduct the tensile test on a UTM and determine ultimate Tensile strength, percentage elongation for a steel specimen.
7. To conduct the compression test and determine the ultimate compressive strength for a specimen.
8. To conduct the Impact test (Izod / charpy) on the Impact testing machine and to find the impact strength.
9. To determine the value of acceleration due to gravity by Atwood's Machine apparatus.
10. To verify the principle of moment by Bell Crank Lever Apparatus
11. To determine the moment of inertia of a flywheel apparatus about its axis of rotation
12. To verify Newton's second law of motion by Fletcher's Trolley apparatus
13. To find out coefficient of friction by combined inclined plane & friction slide apparatus
14. To determine the velocity ratio, mechanical advantage & efficiency of a single purchase crab apparatus & draw graph between load vs effort, mechanical advantage and efficiency.
15. To determine the velocity ratio, mechanical advantage & efficiency of a double purchase crab apparatus.

## COMPUTERS LABORATORY (Autumn / Spring)

CSP 11

L T P  
0 0 2

### List of Practicals

1. Practice of some internal and External DOS Commands
  2. Write simple batch program.
  3. File and program management in windows
  4. Familiarization with the ftp ,http etc. supported by various protocols
  5. Practice of some UNIX commands
  6. Write simple shell script
  7. Introduction to text editing and word processing
  8. Exposure to advance feature supported by some editors
  9. Net Surfing
  10. Creation and usage of E- mail account
  11. Write small program using C language
  12. Handling of data structure in C
  13. Familiarizing mail account using PINE, deleting, creating folder/ mail-messages, adding signature, creating directory of addresses.
  14. Compressing data file using WINZIP & WINRAR
  15. Introduction to various extension of files as TXT, EXE, BAK, BAT, BMP, DOC, XLS, PPT, PDF, HTML, JPEG, MPEG, MP3, DAT & AVI
- Note :** List may be modified according to new software available.