2022

5th SEM PHYSICS PRACTICAL

Paper: PHY-HE- 5046

(Physics of Devices and Instruments)

Full Marks: 20

Time: Two hours

1. Design a power supply using bridge rectifier and study effect of C-filter.
2. Design an Astable multivibrator using transistor and calculate the ON and OFF time.
3. Design a 1st order active low pass and high pass filters using SPICE software.
4. Design a series LCR circuits and calculate the resonant frequency, BW and Q-factor.
5. Design a parallel LCR circuits and calculate the resonant frequency, BW and Q-factor.
6. Design an Astable multivibrator using IC555 of given duty cycle.
7. Design 4-bit asynchronous counter using Flip-Flop ICs.
8. Study the output and transfer characteristics of a JFET.
9. Study the output characteristics of a MOSFET.
10. Study the characteristics of a UJT and design a simple Relaxation Oscillator.
11. Design an Amplitude Modulator using Transistor.

D. Kalita
(Dhaneswar Kalita)
External Examiner

Gogoi
17.01.2023
Dr. Dhruba Jyoti Gogoi
Signature of Internal Exam.

B. Sc. 1st Sem. (CBCS) Examination,2023

Sub.: PHYSICS (PRACTICAL)

Paper: PHY-HG/RC-1016

Paper Name: Mechanics

Full marks: 20 Time: 3 Hours

1. Measurements of length (or diameter) using vernier caliper, screw gauge and Spherometer.

2. To determine the Moment of Inertia of a Symmetrical body about an axis by torsional oscillation method.

3. To determine the Young's Modulus of the material of a wire by Searle's apparatus.

4. To determine the Modulus of Rigidity of a Wire Static method.

5. To determine the elastic Constants of a wire by Searle's method.

6. To determine the value of g using Bar Pendulum.

7. To determine the value of g using Kater's Pendulum.

8. To study the Motion of Spring and calculate (a) Spring constant and (b) value of g.

Pulama Talukdar

External Examiner

Nipan Mazumdar

25.01.2023

Signature of Internal Examiner

B. Sc. 1st Sem. (CBCS) Examination,2022

Sub.: PHYSICS (PRACTICAL)

Paper: PHY-HC-1026

Paper Name: Mechanics

Full marks: 20 Time: 2 Hours

1. Measurements of length (or diameter) using vernier caliper, screw gauge, Spherometer and travelling micro- scope.

2. To study the Motion of Spring and calculate (a) Spring constant and (b) Rigidity modulus.

3. To determine the Moment of Inertia of a cylinder about two different axes of symmetry by torsional oscillation method.

4. To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).

5. To determine the Young's Modulus of the material of a wire by Searle's apparatus.

6. To determine the Modulus of Rigidity of a Wire Static method.

7. To determine the value of g using Bar Pendulum.

8. To determine the value of g using Kater's Pendulum.

9. To determine the height of a building using a Sextant.

10. To determine g and velocity for a freely falling body using Digital Timing Technique.

(Mahendra Kalita)
External Examiner

SURAJIT SARMA
Int. Examiner

15/12/2022

3rd Semester B Sc Examination (CBCS) 2022

Subject : Physics Practical

Paper: PHY-HC-3026

Paper name : Thermal Physics

Full marks: 20 Time: 2 hours

1. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
2. To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
3. To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
4. To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method.
5. To determine the Temperature Coefficient of Resistance by Platinum Resistance Thermometer (PRT).
6. To study the variation of Thermo-emf of a Thermocouple with Difference of Temperature of its Two Junctions.
7. To calibrate a thermocouple to measure temperature in a specified Range using (1) Null Method, (2) Directmeasurement using Op-Amp difference amplifier and to determine Neutral Temperature.

External

Dr. Hargobindhar Rajkhowa

External examiner

Dr. Kuldeep Deka

B.Sc. 3rd Semester Examination, 2022

Paper: PHY-SE-3024(P)

COMPUTATIONAL PHYSICS SKILLS

Time 3 hour

Marks: 50

Write the program in C/C++/Scilab/Python of any one of following

a) To print out all natural even/ odd numbers between given limits.

b) To find maximum, minimum and range of a given set of numbers.

c) Calculating Euler number using exp(x) series evaluated at x=1

d) To evaluate sum of finite series and the area under a curve.

e) To find the product of two matrices

f) To find a set of prime numbers and Fibonacci series.

g) To write program to open a file and generate data for plotting using Gnuplot.

h) Plotting trajectory of a projectile projected horizontally.

i) To find the roots of a quadratic equation.

16/01/2023

B.Sc. 3rd Semester Examination, 2022

Paper: PHY-HC-3016 (P)

Mathematical Physics II

Time 2 hour

Marks: 20

Write the program in C/C++/Scilab/Python of any one of following

a) Ohms law to calculate R

a) Hooke's law to calculate spring constant

b) Solution of Linear system of equations by Gauss elimination method

c) Solution of Linear system of equations by Gauss Siedal method

d) Diagonalisation of matrices

e) Inverse of a matrix

a) Eigen vectors and eigenvalues of matrix

b) Solution of first order Differential equation Euler/modified Euler/ Runge-Kutta second order methods

c) Solution of Wave equation

d) Solution of Heat equation

16/01/2023