B.SC. Part II Physics (General) Practical Exam-2020
Kalyani university
Department of Physics
Kandi Raj College

Subject: Physics (Gen)   Paper: III
<u>Part: Group A</u>   **Full Marks: 100**   Time: 4 Hrs.

Note: You can answer the following questions in <u>English or Bengali</u> language.

Answer any Five Questions: **5×10=50**

1. a) What do you understand by Vernier Constant of a slide caliper?
   b) Explain the theory of finding moment of inertia of a unknown rigid body using a know body.
   c) What is parallel axis and perpendicular axis theorem?   2+4+2+2

2. a) What do you understand by Young's modulus?
   b) Write down the working formula to find the young's modulus of a rectangular bar. Explain how will you find the value of Y experimentally?
   c) What are the geometrical moment of inertia and Flexural rigidity?   2+2+3+1.5+1.5

3. a) Write down the working formula to find the rigidity modulus of a wire by dynamical method?
   b) Find the value of rigidity modulus of a wire having diameter 0.85 mm length 90 cm and the mass of the solid cylinder is 1.9 kg having diameter 7.5 cm and the time period of torsional oscillation is 1.5 sec.
   c) What are the main precautions to find rigidity modulus of the wire?   2+5+3

4. a) What do you mean by viscosity and coefficient of viscosity?
   b) What is the dimension of coefficient of viscosity?
   c) Derive the formula to find the coefficient of viscosity using Poiseuille method.
                                                                                       2+3+5

5. a) Explain how will you measure the unknown frequency of a tuning fork using frequency-resonant length curve?
   b) If you take thick wire in place of a thin wire what will happen to frequency?
   c) Define time period and angular frequency in case of oscillation? What is their relation?
                                                                                       5+2+3

6. a) What do you understand by refractive index of a material?
   b) How will you measure the refractive index of a liquid using travelling microscope?

c) Is it good if depth of the liquid is low to find refractive index? Does the refractive index depend on the depth of the liquid? 2+5+3

7. a) Explain how will you measure the focal length of a concave lens by auxiliary lens method.
   b) What type of image is formed by the concave lens?
   c) What type of convex lens should be used as auxiliary lens?
   d) What are the factors affecting the power of lens?

   5+2+1+2

Part: Group B

Answer any Five Question: **5×10=50**

8. a) What is the type of light used in the experiment to determine the angle of minimum deviation of a prism?
   b) What is Spectrometer I-D curve?
   c) What are the factors that determine the angle of deviation in a prism?
   d) What is angle of deviation in reflection?
   e) Why Newton's rings are circular?
   f) How are Newton's rings used to determine the wavelength of monochromatic light?

   1+2+2+1+2+2

9. a) What is the principle of deflection magnetometer?
   b) What is meant by magnetic moment?
   c) What is the difference between tangent galvanometer and simple galvanometer?
   d) Is galvanometer and ammeter same?
   e) What is a specific resistance?
   f) What is potentiometer and its application?

   2+2+1+2+1+2

10. a) What is the unit of magnetic flux?
    b) How do you draw a phasor diagram for RC circuits?
    c) What is the impedance of capacitor?
    d) What is XC and XL?
    e) What is ohmic loss?
    f) Why is resonance frequency important?

11. a) What is P.O box and why is it so called ?
    b) What is the difference between cell and battery ?
    c) What is the difference between E.M.F and potential distance ?
    d) Explain Wheatstone bridge principle ?

e) What are the advantages of Carey Foster's bridge over a Metre bridge ?

2+2+2+2+2

12. a) What is optical spectrometer ?

b) Write down the function of collimator.

c) Why do you place the prism at minimum deviation position?

d) How many verniers are used to record the readings in a spectrometer and why ?

e) What is the difference between slanting position and normal position ?

2+2+2+2+2

13. a) Define galvanometer resitance.

b) Do you prefer a high or low resistance of the shunt ?

c) Can half deflection method be used to measure the resistance of a tangent

galvanometer?

d) What is the difference between dead-beat and ballistic galvanometer ?

e) Can you measure resistance by a potentiometer ?

2+2+2+2+2