PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024
(Third Semester)

Common to Branches – **CHEMISTRY & BIOCHEMISTRY**

PHYSICS-I

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1 The frequency of ultrasonic waves is
   (i) 20 Hz   (ii) 20 Hz to 20 kHz
   (iii) Above 20 kHz   (iv) Below 20 Hz

2 Raindrops are spherical in shape because of
   (i) Capillary   (ii) surface Tension
   (iii) Downward motion   (iv) Acceleration due to gravity

3 The process of heat transfer in which heat is transferred with actual migration
   of medium particles is known as
   (i) Conduction   (ii) Convection
   (iii)Radiation   (iv) Reflection

4 The instrument used for measuring electric current is:
   (i) Ammeter   (ii) Galvanometer
   (iii) Voltmeter   (iv) Potentiometer

5 When light travels from one medium to another, which of the following does not
   Change
   (i) Frequency   (ii) refractive index
   (iii) Velocity   (iv) wavelength

SECTION - B (15 Marks)
Answer ALL Questions
ALL Questions Carry EQUAL Marks   (5 x 3 = 15)

6   a   Discuss the laws of transverse vibration of strings.
                        OR
     b   Write the applications of ultrasonic waves.

7   a   Determine the rigidity modulus of a wire by torsional pendulum
          method.
                        OR
     b   Explain the molecular theory of surface tension.

8   a   Discuss about Joule-Kelvin effect.
                        OR
     b   Write the difference between liquid Helium 1 and liquid Helium 11.

9   a   Derive an expression for the RMS Value of alternating Voltage.
                        OR
     b   Derive an expression for the Energy stored in a capacitor.

10   a   Explain the combination of two prisms to produce Deviation without
          Dispersion.
                        OR
     b   With a neat diagram explain the construction and use of constant
          deviation Prism.

SECTION -C (30 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks   (5 x 6 = 30)

11   a   Explain how the AC frequency is measured using sonometer.
OR
     b   With a neat diagram explain the production of ultrasonic waves using Piezoelectric method.

12   a   Explain the determination of viscosity of a liquid by stokes method.
OR
     b   Obtain an expression for the pressure inside.
          i) a spherical soap bubble   ii) a Spherical liquid drop

13   a   Explain about the porous plug experiment. Discuss the significance of the experiment in liquefaction of gases.
OR
     b   Describe the Lindes process of liquefaction of air.

14   a   Explain about peak, average and RMS value of an AC current and voltage.
OR
     b   Derive an expression for the field along the axis of a circular coil carrying Current.

15   a   Discuss about the refraction of grazing incidence and grazing emergence in prism.
OR
     b   Describe the air cell method of determining the refractive index of a liquid.

Z-Z-Z   END