VIVEKANANDA COLLEGE, ALIPURDUAR

B.sc 2nd Semester-2021

PHYSICS DSC(P) F.M: 10

Internal assessment

Answer the following questions:

Number distributions: 2 + 2 + 2 + 4 = 10

1. If $\vec{F}$ = $xy\hat{\imath} + zx^2\hat{\jmath} + 3xz\,\hat{k}$, then find curl of $\vec{F}$ at the point (1,1,1).
2. A system has two charges, q_A = 2.5 x 10^{-7} C and q_B = - 2.5 x 10^{-7} C are located at points A(0,0,-15) and B(0,0,15). Calculate the dipole moment and also describe its direction.
3. Two wires A and B have the same length equal to 44cm and carry a current of 10 Amp. A is bent into a circle and B is bent into a square.
   (a) Obtain the magnitudes of the fields at the centers of the wires.
   (b) Which wire produces a greater magnetic field at the center?
4. State the Lenz's law. Discuss the physical significance of Maxwell's equations.

VIVEKANANDA COLLEGE, ALIPURDUAR

B.sc 4th Semester-2021

PHYSICS DSC(P) F.M: 10

Internal assessment

Answer the following questions. (Each question carries 5 marks)

1. (i) Show that in case of superposition of waves from two coherent sources of light the resultant intensity is the sum of individual intensities.
   (ii) In Newton ring experiment the diameter of m th dark ring is 8mm and the diameter of (m + 4)th dark ring is 12 mm. If the radius of curvature of the lower surface of the lens is 10m find the wavelength of the light used.

2. (i) Discuss the conditions for maxima and minima in case of Fraunhofer diffraction of light at a single slit.
   (ii) How many orders would be visible, if the wavelength of incident light is 589nm and the number of lines in the grating is 106 per nm.

Send the mail in sciencevc@gmail.com