B.M.D. College, Dayalpur (Vaishali)

CIA – 30 Marks, Semester – III (2023-27)
Mid Term Exam 2024

Subject : MJC - 3 (Physics Assignment)   **Total : 10 Marks**

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4 x 2.5 = 10

1. At what temperature will the rms speed of hydrogen molecules be equal to the rms speed of nitrogen molecules at 35^0C, given that $M_N = 14\ M_H$.

2. Calculate the probability of the speed of oxygen molecule lying between 99.5 m/sec. and 100.5 m/sec at 200 K.

3. Calculate the frequency of sound at which the wavelength of sound wave becomes equal to the mean free path in oxygen at 0^oC and 1 atm pressure. Given that the diameter of oxygen molecule is 3×10^{-8}cm.

4. Find the pressure at which water would boil at 150^0C if the change in specific volume when 1 gm of water is converted into steam is 1676 cc. Given J = 4.2×10^7 erg/cal., 1 atm = 10^6 dyne/cm^2 and latent heat of vaporization of steam = 540 cal.

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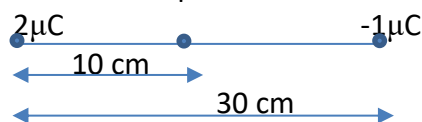
CIA – 30 Marks, Semester – III (2023-27)
**Mid Term Exam 2024**

Subject : MJC - 4 (Physics Assignment)   **Total : 10 Marks**

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4 x 2.5 = 10

1. Find the net potential at P for the given system of charges

   2µC   -1µC

   ← 10 cm →

   ← 30 cm →

2. Find the electric flux for the magnetic field 2.5×10^{-3} Tesla through a region of $10m^2$ perpendicularly.

3. Find the magnetic force of interaction per unit length for given system of two long straight wires carrying currents in opposite direction.

   2A   4A

   20 cm
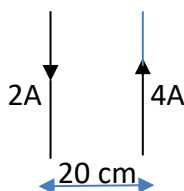
4. If a charge of 2C is thrown perpendicularly in the magnetic field of 20 Tesla with speed of 20m/sec then find the force experienced by the charge.