

APPENDIX – V

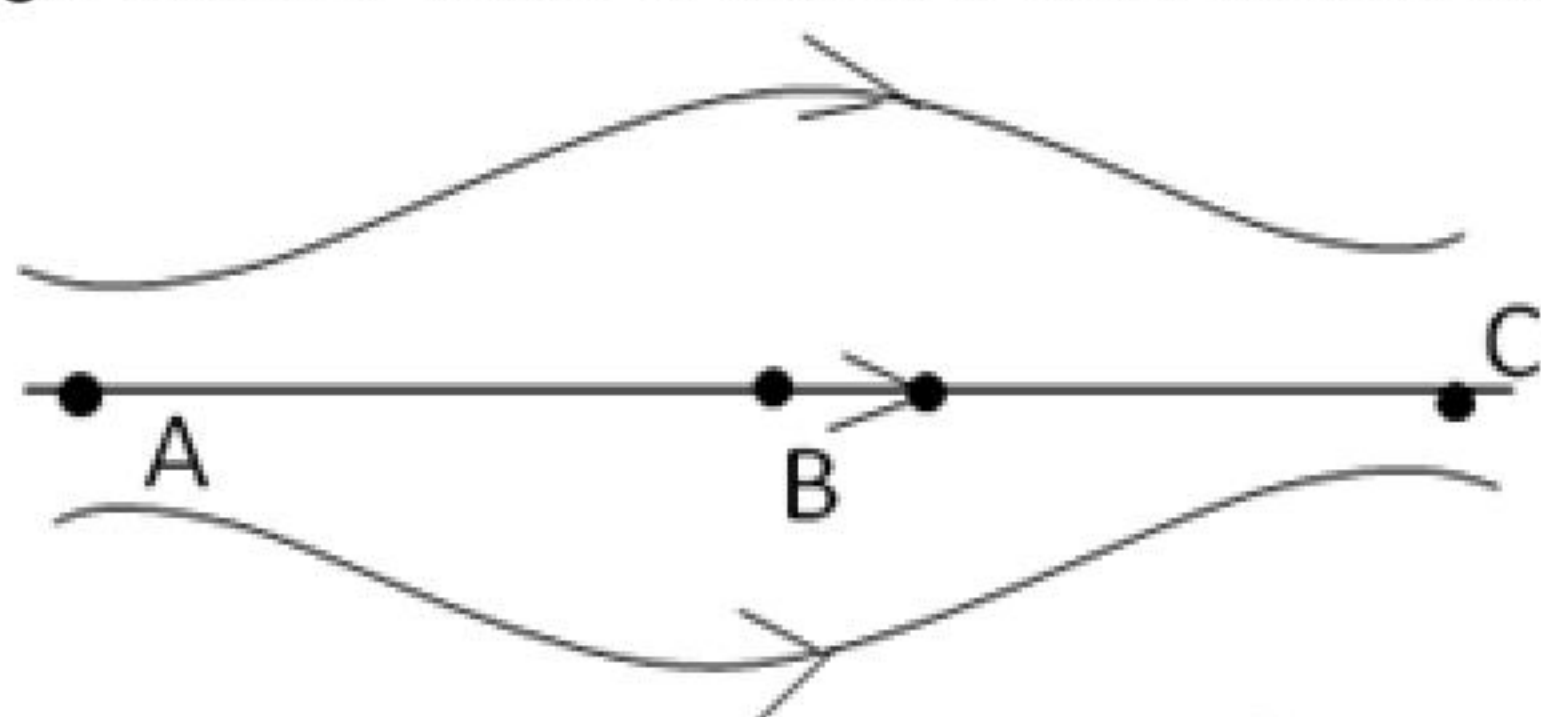
SAMPLE QUESTIONS

PHYSICS

1. If a force $F = (2x + 3x^2)\hat{i}$ N acts along x-axis on an object and moves it from $x = 2\text{m}$ to $x = 4\text{m}$, the work done is
 A) 24 J B) 68 J C) 86 J D) 142 J

2. A vessel contains 1 mol of O_2 and 2 mol of He. What is the value of ' C_p/C_v ' of the mixture?
 A) 17/11 B) 71/45 C) 38/15 D) 46/15

3. Figure shows some of the electric field lines corresponding to an electric field. The figure suggests that



- A) $E_A > E_B > E_C$ B) $E_A = E_B = E_C$ C) $E_A = E_C > E_B$ D) $E_A = E_C < E_B$

4. A carbon resistor has color code as, Red, Black, Blue and Gold. The resistance and tolerance values are
 A) $20\text{ M}\Omega \pm 5\%$ B) $20\text{ M}\Omega \pm 10\%$ C) $20\text{ k}\Omega \pm 5\%$ D) $20\text{ k}\Omega \pm 10\%$

5. A small circular flexible loop of wire of radius r carries a current I . It is placed in a uniform magnetic field B . The tension in the loop will be doubled if
 A) I is doubled B) B is halved C) r is doubled D) Both B and I are doubled

6. What is the self-inductance of a coil when a change of current from 0 to 2 A in 0.05 s induces an *emf* of 40 V in it?
 A) 1 H B) 2 H C) 3 H D) 4 H

7. A light has the wavelength $6000\text{ \AA}$ in air and $4500\text{ \AA}$ in water. Then the speed of light in water will be
 A) $5.0 \times 10^{14}\text{ m/s}$ B) $2.25 \times 10^8\text{ m/s}$ C) $4.0 \times 10^8\text{ m/s}$ D) $1.0 \times 10^8\text{ m/s}$

8. In which of the following transitions in hydrogen atom will the wavelength be minimum?
 A) $n = 5$ to $n = 4$ B) $n = 4$ to $n = 3$ C) $n = 3$ to $n = 2$ D) $n = 2$ to $n = 1$

9. One gram of Radium, with atomic weight 226, emits 4×10^{10} particles per second. The half-life of Radium is
 A) $4.6 \times 10^{10}\text{ s}$ B) $4.6 \times 10^9\text{ s}$ C) $4.6 \times 10^{12}\text{ s}$ D) $4.6 \times 10^{14}\text{ s}$

10. The minimum number of NAND gates required to implement $A + \overline{AB} + \overline{ABC}$ is
 A) 3 B) 2 C) 6 D) zero