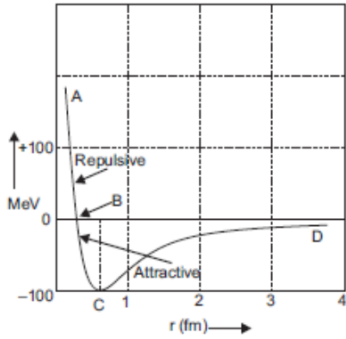


SET A

24.	<p>Three elements of earth's magnetic field At the poles</p> <p style="text-align: center;">OR</p> <p>(a) definition – angle of dip (b) poles equator</p>	<p>1 ½ ½</p> <p>1 ½ ½</p>
25.	<p>Fringe width $\beta = \lambda D/d$ $= 5 \times 10^{-4} \text{ m}$</p>	<p>1 1</p>
	SECTION D	
26.	<p>Definition – self inductance</p> <p>Derivation – energy stored in an inductor</p>	<p>1 2</p>
27.	<p>(a) drift velocity is halved (with reason) (b) drift velocity is halved (with reason) (c) remains unchanged (with reason)</p> <p style="text-align: center;">OR</p> <p>relation between electric current and drift velocity-fig and derivation</p>	<p>1 1 1</p> <p>½ + 2 ½</p>
28.	<p>(i) metal Q</p> <p>(ii) $E = h\nu_0 = 6.63 \times 10^{-34} \times 6 \times 10^{14} = 3.97 \times 10^{-19} \text{ J}$</p> <p>(iii) no change</p>	<p>1 1 1</p>
29	<p>At the distance of nearest approach</p> <p>PE = KE</p> $\frac{k(ze)(2e)}{r_0} = 4.5 \text{ MeV} = 4.5 \times 10^6 \times 1.6 \times 10^{-19} \text{ J}$ $r_0 = \frac{k(ze)(2e)}{4.5 \times 1.6 \times 10^{-13}}$ $= \frac{9 \times 10^9 \times (80) \times 2 \times (1.6 \times 10^{-19})^2}{4.5 \times 1.6 \times 10^{-13}} = 51.2 \times 10^{-15} \text{ m.}$	<p>½ ½ 2</p>

30.	 <p>Marking regions</p>	<p>2</p> <p>1</p>
31.	<p>(a) Gauss's law statement</p> <p>(b) the expression for electric field due to an infinitely long straight thin charged wire with diagram</p> <p>Graph showing the variation of E with r</p> <p style="text-align: center;">OR</p> <p>(a) Definition electric dipole moment . SI unit.</p> <p>(b) Diagrammatic representation of the position of dipole in stable and unstable equilibrium</p> <p>(c) writing the expression for the torque acting on the dipole and potential energy of dipole in both the cases</p>	<p>1</p> <p>2+1</p> <p>1</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>2</p> <p>2</p>
32.	<p>coherent sources of light -definition</p> <p>two conditions for sustained interference pattern.</p> <p>expression for the width of interference fringes(YDS) with diagram</p> <p>OR</p> <p>Lens maker formula derivation...</p> <p>Fig –</p> <p>Derivation</p>	<p>1</p> <p>1</p> <p>3</p> <p>1 $\frac{1}{2}$</p> <p>3 $\frac{1}{2}$</p>

33.	<p>a) Faraday's law of electromagnetic induction- statement and mathematical expression</p> <p>(b)Deducing an expression for the emf induced in the rod with figure</p> <p>(c) expression for current induced in it.</p> <p style="text-align: center;">Or</p> <p>working of a step up transformer, with diagram.</p> <p>expression for the secondary to primary voltage in terms of the number of turns in the two coil.</p> <p>any two sources of energy loss in a transformer</p>	<p>2</p> <p>2</p> <p>1</p> <p>1 ½</p> <p>2 ½</p> <p>1</p>
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