BE/ In Sem - 35

		Derivation:	(4)
	b)	Scalar magnetic potential:	(2)
		Vector magnetic potential:	(2)
		OR	
Q.6	a)	Derivation:	(3)
		Equations of $\nabla \times H$ in all coordinate systems:	(3)
	b)	i) $\mathbf{H}_{(0,0,0)} = 25\ \mathbf{a}_x$ mA/m	(2)
		ii) $\mathbf{H}_{(1.5,-3)} = -25\ \mathbf{a}_x$ mA/m	(2)

2/2

BE/In Sem-35

BE (Electrical) - 2012 Pattern

Elective –II: 403144: ELECTROMAGNETIC FIELDS (In Sem.)

Time: 1 hour **Max. Marks: 30**

SOLUTION

Examiners Please note: In case the final answer is wrong, marks should be given if correct formulae is applied.

Q.1 a) Statement: (2)

Diagram: (1)

Proof: (3)

b) i) $\nabla \cdot \mathbf{D} = -10.00$ (2)

ii) $\nabla \cdot \mathbf{D} = 1.29$ (2)

OR

Q.2 a) Charge distributions: (2)

Diagram: (1)

Derivation: (3)

b) i) The potential at A: $V_A = 3.929$ V (2)

ii) The potential at B: $V_B = 2.696$ V (2)

Q.3 a) $C = (A\varepsilon)/d$ (1)

$C = 3.54$ pF (2)

Energy $= (1/2)CV^2$ (1)

Energy $= 0.06372$ nJ (2)

b) Continuity of current: (1)

Derivation: (3)

OR

Q.4 a) Derivation of Poisson's equation: (2)

Derivation of Laplace equation: (2)

Physical significance: (2)

b) Using $I = \int \mathbf{J} \cdot d\mathbf{S}$ (1)

$I = 754$ A (3)

Q.5 a) Diagram: (2)