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Sardar Patel University

Vallabh Vidyanagar - 388120 BSc [Semester- IV]

Subject Physics Course Code No: US04CPHY01

Subject/Course Title: Electromagnetic Theory and Spectroscopy

Q-1 Multiple Choice Questions: [Attempt all] 10 (i) In the formula of Coulomb's law, constant ϵ_0 is called	Thu	rsday, Date 7-04-2016		Time: 10.30 am to 1.30 pm		
(i) In the formula of Coulomb's law, constant ϵ_0 is called	0.1	Multiple Chaire Overtime (Av.		Total Marks-70		
(a) Permitivity of free space (c) Coulomb's Constant (d) None of these (ii) The divergence of E related with (a) Stoke's law (b) Coulomb's law (c) Gauss's law (d) Ampere's law (iii)	Q-T	Multiple Choice Questions: [Atten	ipt all]	10		
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(a) Moseley's law (b) Duane-Hunt law	(x)	law describe by equation $K_{max} = eV = hv_{max} = \frac{hc}{2}$.				

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Q-2	A	answer any TEN questions in short.	20		
(i) (ii)	V r	Write any two comments on electric potential. What is the potential at distance r from the centre of a spherical shell of radius R $(r > R)$, which carries a uniform surface charge (q) . Set the			
(iii) (iv) (v) (vi) (viii) (ix) (x) (xi) (xii)	reference point at infinity. Derive Poisson's equation. Prove that magnetic forces do no work. State Biot-Savart law. Write and explain: the continuity equation. Explain luminescence method for the production of light for spectroscopic purposes.				
Q-3		Explain the following terms of electrostatics: (a) Electric Field (b) Field Lines (c) Electric Flux and (d) Gauss's law.	10		
Q-3		OR Obtain formula for the energy of a point charge distribution.	10		
Q-4	(a) (b)	Explain the following terms of magnetostatic: (a) magnetic field (b) magnetic forces and (c) current. Explain: ($\nabla \times \mathbf{B}$).	6 4		
		OR			
Q-4	(a) (b)	Write a note on: The magnetic vector potential. Compare: Magnetostatics and Electrostatics (Any four points).	6 4		
Q-5	(a) (b)	Describe: (a) L-S coupling and (b) j-j coupling. Describe: Line spectra.	6 4		
OR					
Q-5	(a) (b)	Compare: (a) Zeeman effect and (b) Stark effect.	6 4		
Q-6	(a) (b)	Francisco and deviced to the second second	6 4		
Q-6	(a) (b)	Chaha Manal J. J. D. J.	6 4		
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