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## Exam Seat No:\_\_\_\_\_ C.U.SHAH UNIVERSITY **Summer Examination-2016**

## **Subject Name: Electromagnetics**

	Subject	Code: 4TE05EMS1	Branch: B.Tech(EC)			
	Semester Instructio	r: 5 Date:25/04/2016	Time: 02:30 To 05:30	Marks :70		
	<ol> <li>Use of Programmable calculator &amp; any other electronic instrument is prohibited.</li> <li>Instructions written on main answer book are strictly to be obeyed.</li> <li>Draw neat diagrams and figures (if necessary) at right places.</li> <li>Assume suitable data if needed.</li> </ol>					
Q-1	Attempt the following questions:					
	a)	Define Scalar and Vector.				
	<b>b</b> )	Define Unit Vector.				
	<b>c</b> )	State different types of co-ordinate systems.				
	<b>d</b> )	Define Del Operator.				
	e)	Write Maxwell's First equation.				
	I)	State Gauss law.				
	g) b)	State Foredox's low	interence.			
	11) i)	What is skin affact?				
	1) i)	Explain Wave Polarization				
	J) k)	State Povting theorem	I			
	l)	What is retarded potential	)			
	m)	Explain Mutual inductance				
	n)	Explain wave power				
Attempt any four questions from Q-2 to Q-8						
Q-2		Attempt all questions				
-	<b>(a)</b>	Explain Divergence theo	rem.			
	<b>(b</b> )	Three vertices of a triar	gle are located at A(6,-1,	2),B(-2,3,-4) and C(-3,1,5)		
		Find: (a) $R_{AB}$ (b) $R_{AC}$ (c)	The angle $\theta_{BAC}$ at a vertex A	Ą		
0-3		Attempt all questions				
τ-	(a)		$\cos \Phi a_r +$	$a_{\Phi} \frac{\sin \Phi}{\cos 2}$		
		Given Point P (r=0.8, $\theta$ =	30, $\Phi$ =45) and E= $\frac{r^2}{r^2}$	$\Psi \sin \theta$		
		Find(a) E at P (b) find ma	agnitude of E at P (c) Find	a unit vector in the direction		
		of E at P.				
	<b>(b</b> )	Explain Coulomb's law w	vith necessary diagram and	equations.		

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Q-4	(a) (b)	Attempt all questions Explain electric field intensity due to surface charge in brief. A 2µC point charge is located at A (4,3,5) in free space.Find $E_{\varsigma}$ , $E_{\Phi}$ , $E_Z$ at P(8,12,2).	(14)
Q-5	(a) (b)	Attempt all questions What is electric flux density? Explain. Given the electric flux density D= $0.3r^2 a_r nC/m^2$ in free space.Find (a)E at point P(r=2, $\theta$ =25, $\Phi$ =90) (b)Find total charge within the sphere r = 3	(14)
Q-6	(a)	Attempt all questions Explain Line integral.	(14)
	<b>(b</b> )	Explain Biot- Savart's law.	
Q-7	(a) (b)	Attempt all questions Explain Stoke's theorem for magnetic field. Explain Metallic conductor and their properties.	(14)
Q-8	(a) (b)	Attempt all questions Explain parallel plate capacitor & Coaxial capacitor. Explain Wave Propagation in dielectric.	(14)



