Enrollment No: ____

Exam Seat No:_____

C.U.SHAH UNIVERSITY Summer Examination-2017

Subject Name : Electricity and Magnetism

	Subject	Code: 4	SC03PHC2	Branch: B.Sc.(All)			
	Semeste	er : 3	Date : 03/04/2017	Time : 10:30 To 1:30	Marks : 70		
	Instructi (1) (2) (3) (4)	ons: Use of Pro Instructior Draw neat Assume su	ogrammable calculator & ns written on main answe t diagrams and figures (i uitable data if needed.	z any other electronic instrun er book are strictly to be obey f necessary) at right places.	nent is prohibited yed.		
Q-1	1 Attempt the following questions:						
	a)	Define r	nagnetic moment.				
	b)	What is	absolute permittivity?				
	c)	What is	an electric dipole?				
	d)	Define (Capacity of a conductor				
	e)	Define t	he term hysteresis				
	f)	What do	you mean by mutual-in	ductance of a coil?			
	g)	Define I	Retentivity.				
	h)	What do	you mean by potential	gradient?			
	i)	Differen	tiate between electric ar	d magnetic flux?			
	j)	What is	Curie Temperature in fe	rromagnetics?			
	k)	What is	magnetic susceptibility?	Write its unit.			
	l)	What do	mean by permeability of	of a medium?			
	m)	Give exp	pression for potential en	ergy of a capacitor			
	n)	A curren	nt carrying solenoid rese	mbles to which shape of the	natural magnet?		
Atte	mpt any	four ques	tions from Q-2 to Q-8				

Q-2 Attempt all questions (14) Give the mathematical proof for Gauss' law in electricity with necessary figure. a) 7 Explain classifications of magnetic materials. 7 b) Attempt all questions Q-3 (14) Explain on magnetic field due to a solenoid 7 a) Deduce the expression for potential of an electric dipole with suitable figure. 7 b) **O-4 Attempt all questions** (14) Explain electric field around charged straight conductor (wire). a) 7 Discuss Hall effect in detail derive formula of Hall electric field (EH), Hall 7 b) voltage (V_H), Hall coefficient (R_H) and Hall mobility (μ_H). Attempt all questions (14) Q-5



(14)

	a)	Explain potential gradient and electric field.	
	b)	Explain in detail Ferro magnetic materials	7
Q-6		Attempt all questions	(14)
	a)	Derive Gauss Law in differential form	7
	b)	What is meant by magnetic hysteresis? Draw hysteresis loop of B-H curve for ferromagnetic materials and explain its each segment.	7
Q-7		Attempt all questions	(14)
	a)	Establish the relation: $\mu_r = 1 + \chi_m$	7
	b)	Write short notes on (i) self-inductance and (ii) mutual inductance.	7
Q-8		Attempt all questions	(14)
	a)	Deduce the expression for energy loss due to hysteresis.	7
	b)	Derive a general expression for capacity of a parallel plate condenser	7

