



**REGENT EDUCATION AND RESEARCH FOUNDATION
GROUP OF INSTITUTIONS**

Paper Name: - Signal and Systems
Semester: 3rd . Paper Code: - EC-303
Branch- Electronics & Communication Engineering
1ST UNIT TEST Full Marks – 25 Time – 30 mins

Student Details:

Name : _____
Roll No: _____ Registration No: _____
Signature: _____ Invigilator's Signature: _____

Detail of the Marks (To be filled by Examiner:)

Q. No.	1a	1b	1c	1d	1e	2	3	4	5	6	7	Total	Signature
Marks:													

GROUP 1 Answer any five questions

(1 * 5 = 5)

Question No	Questions	Marks	BL	CO	PO
1.a	The digital system in $y[n]=x[n^2]$ is a)Linear and causal b)Linear and non-causal c)Non-linear and causal d)Non-linear and non-causal	1	1	1	2
1.b	If a signal is folded about the origin in time then its a) magnitude spectrum undergoes change in sign b) Phase spectrum undergoes change in sign c) magnitude remains unchanged d) both (b) and (c)	1	1	1	1
1.c	The odd and even components of signal $u(t)$ are a)Cost, sint b)Sint, -cost c)Cost, jsint d)Cost, -jsint	1	1	1	2
1.d	The system $y(t) = 2x(n+1) + x(1/n)$ is a) causal system b)non-causal system c)partly (a) and partly (b) d)none of these	1	1	1	2
1.e	A signal $x(t)=A\cos(\omega_0t + \theta)$ is a)An energy signal b)A power signal c)An energy as well as a power signal d)Neither an energy as well as a power signal	1	1	1	2
1.f	An example of a discrete set of information/system is a)the trajectory of the Sun b)data on a CD c)universe time scale d)movement of water through a pipe	1	1	1	1


Principal



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1.g	All causal systems must have the component of a) memory b) time invariance c) stability d) linearity	1	1	1	1
GROUP 2 Answer any four questions		(4 * 5 = 20)			
2	Determine the trigonometric form of the Fourier series of the signal shown in fig. <div style="text-align: center;"> </div>	5	5	2	2
3	What do you mean by Half wave symmetry? How it is related to quarter wave symmetry? Explain with example	5	1	2	1
4	Determine whether the following system is i) time-variant or time-invariant ii) linear or nonlinear $y(t) d^2y(t)/dt^2 + 3t dy(t)/dt + 4y(t-2) = 3x(t)$	5	5	1	2
5	Write the condition for BIBO stability.	5	1	3	1
6	Prove that energy of a power signal is infinite	5	2	1	2
7	A continuous time signal is shown in fig. Find the following versions of the signal. Comment on the result. <div style="text-align: center;"> </div> <p style="text-align: center;">a) $x(t-2)$ b) $x(-t)$ c) $x(-t+2)2$</p>	5	3	1	2



REGENT EDUCATION AND RESEARCH FOUNDATION GROUP OF INSTITUTIONS

Paper Name: - Electromagnetic waves
Semester: 5th Paper Code: - EC-501
Branch- Electronics & Communication Engineering
1ST UNIT TEST Full Marks - 25 Time - 30 mins

Student Details:

Name : _____
Roll No: _____ Registration No: _____
Signature: _____ Invigilator's Signature: _____

Detail of the Marks (To be filled by Examiner:)

Q. No.	1a	1b	1c	1d	1e	2	3	4	5	6	7	Total	Signature
Marks:													

GROUP 1 Answer any five questions

(1 * 5 = 5)

Question No	Questions	Marks	BL	CO	PO
1.a	Which of the following is zero ? a. grad div b. div curl c. curl curl d. none of these	1	2	2	2
1.b	The unit of Electric field intensity (H) is a) Volt b) Volt/m c) Coulomb/m d) Ampere/m	1	1	1	1
1.c	Ampere law state, $\nabla \times H$ is a) J b) $J+j\omega D$ c) $j\omega D$ d) 0	1	1	2	2
1.d	For a uniform plane wave in the x direction a) $E_x=0$ and $H_x=0$ b) $E_x=0$ c) $E_z=0$ d) $H_z=0$	1	2	1	1
1.e	Value of intrinsic impedance in free space a) 277 b) 377 c) 477 d) None of the above	1	1	2	2
1.f	Unit of Magnetic flux is a) Volt/m b) coulombs c) weber d) Amp/m	1	1	1	1
1.g	$\nabla \cdot B$ is equal to a) zero b) unity c) E d) J	1	1	1	1

GROUP 2 Answer any four questions

(4 * 5 = 20)

2	Prove $\nabla \cdot (\nabla \times H) = 0$	5	3	2	3
3	Derive Gauss Law for point charge.	5	2	2	2
4	Explain Faradays law and Prove $\nabla \times E = - dB/dt$	5	3	3	2



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5	Write the Maxwell equations in Integral Form.	5	2	2	2
6	Explain Difference between Conduction current and Displacement current	5	2	1	1
7	Prove Boundary condition $H_{t1} - H_{t2} = J$	5	3	2	2


Principal
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