CONTINUOUS INTERNAL EVALUATION- 3

Dept:EC	Sem / Div:V	Sub:Electromagnetic Waves	S Code:18EC55
Date:15/01/2021	Time: 9:30-11:00 am	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

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QN		Questions	Marks	RBT	COs
		PART A			
1	a	List Maxwell's equations for time varying field in integral and point form.	8	L2	CO4
	b	Given E= EmSin(ωt-βz) a_y in free space. find D,B and H. Sketch E and H at t=0.	8	L3	CO4
	c	What is Uniform plane Wave ? Derive the expression of uniform plane wave traveling in free space.	9	L3	CO4
		OR			
2	a	For the given medium ε =4x 10^{-9} F/m and σ =0 . Find 'K' so that following pair of fields satisfy Maxwell's equation. **E**=(20y-kt) a_x v/m and **H**=(y+2x10^6 t)a_z A/m	8	L3	CO4
	b	State and explain Faraday's law in point and integral form.	8	L2	CO4
	c	Show that in a capacitor the conduction current density equal to displacement current density for applied voltage V(t)=V_o Cos wt	9	L2	CO4
		PART B			
3	a	Derive general wave equation in Electric and Magnetic fields.	10	L3	CO4
	b	Find the amplitude of displacement current density in the free space within large power distribution transformer where $\vec{H} = \cos(377t + 1.2566 \times 10^{-6} z)\, \hat{a}_y$ A/m.	8	L3	CO4
	c	Briefly explain Skin depth and Skin effect.	7	L2	CO4
		OR			
4	a	State and explain Poynting theorem.	10	L2	CO4
	b	A plane wave in non magnetic medium (loss less) has **E**=50sin(10^8t+2z) a_y V/m find, I) The direction of wave propagation ii) λ , f and ϵ iii) **H**	8	L3	CO4
	c	Derive Maxwell's equation to correct Ampere's Circuital law.	7	L3	CO4

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HOD