CRM08	Rev 1.10	EC	30/11/20

CONTINUOUS INTERNAL EVALUATION- 2

Dept:EC   Sem / Div:V   Sub:Electromagnetic Waves   S Code:18EC55
Date:03/12/2020   Time: Max Marks: 50   Elective:N
               9:30-11:00 am

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

Q N	Questions	Marks	RBT	COs
	PART A			
1 a	State and explain Uniqueness theorem.	8	L2	CO2
b	Find V at (1,2,3) for the field of, i)Two co-axial conducting cylinders V=40 V at ρ=2m , V=20 V at ρ=4m ii)Two concentric conducting spheres V=60 V at r=2m , V=30 V at r=5m	8	L3	CO2
c	Derive the expression for capacitance of coaxial cable using Laplace's equation.	9	L3	CO2
	OR			
2 a	Derive the expression for the magnetic field intensity due to finite long conductor using Biot Savart law.	8	L3	CO3
b	Evaluate both the sides of Stoke's theorem for the field $H=6xy\ a_x - 3y^2\ a_y$ A/m and the rectangular path around the region, 1<x<4, -2<y<2, z=0. Let the direction of **ds** be a_z	8	L3	CO3
c	State and explain Ampere's Circuital law and also derive the Ampere's law in differential form.	9	L2	CO3
	PART B			
3 a	Derive Poisson's and Laplace's equation and express Laplace equation in all the coordinate systems.	8	L2	CO2
b	If $B=0.05xa_y$ T in a material for which χ=2.5 find I) μ_r ii) μ iii) **H** iv) **M** v)**J** vi) J_b	9	L3	CO3
c	Derive expression for the force between 2 differential current element.	8	L2	CO3
	OR			
4 a	State and explain Lorentz's Force equation.	8	L2	CO3
b	Derive the magnetic boundary conditions between two dielectrics.	9	L3	CO3
c	The point charge Q=18nC has a velocity of 5x 10^6 m/s in the direction a_v=0.60a_x+0.75a_y+0.30a_z .calculate the magnitude of the force exerted on the charge by the field. a) B=-3a_x+4a_y+6a_z mT b)E=-2a_x+3a_y+4a_z KV/m c) B and E acting together	8	L3	CO3

Prepared by:Vinay P

HOD