D.Y.PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
KASABA BAWADA KOLHAPUR-416006
(An Autonomous Institute)
S. Y. B. Tech/ B.Arch

Q. Paper Code:
Set-: I

END SEMESTER EXAMINATION, JULY. – 2021-22

Course Name: Electromagnetic waves & radiating system, Course Code: 201ETL214

Day and Date: Wednesday ,22/06/2022
Time: --9.30 a.m- to -1.15 p.m

Seat No:

Max. 100

Marks- 100

Instructions:

  i.   *All questions are compulsory.*

  ii. *Figure to the right indicate full marks.*

  iii. *Assume suitable data wherever necessary.*

BT	CO's	Q. No.			Marks
		Q.1	**Attempt the following**		**40**
1	**1**	**a**	i)	Define vector and unit vector with equation.	**4**
2	**1**		ii)	Explain Cartesian coordinate system with differential length, differential surface area and differential volume	**6**
1	**1**	**b**	i)	Define the term Divergence ,gradient and curl	**3**
2	**2**		ii)	State and explain coulomb's law	
2	**1**		iii)	Explain transformation of vectors from Cartesian to cylindrical coordinate system	**3** **4**
4	**2**	**c**	*i)*	Derive the expression for magnetic field intensity due to infinite line charge.	**5**
5	**2**		*ii)*	Determine the electric field intensity produced at a point (0,0,4m) by the system of charges comprising of a) Q1=0.5 micro coulomb at (0,0,2m) b) Q2=-0.6 micro coulomb at (3,0,0m) c) Q3=0.35 micro coulomb at (0,4,0m)	**5**
3	**2**	**d**	*i)*	Using Biot- Savart's law find the vector magnetic field intensity in Cartesian coordinate system at P2(1.5,2,3) caused by a current filament of 24 A in	**5**

			az direction on the z-axis and extending from	
			a) z=0 to z=6	
			b) z=6 to z=∞	5
2	2		*ii)* Explain Boundary conditions for electric field	
		Q.2	**Attempt (any one options are allowed for sub questions)**	**20**
4	3	a	Compare field theory and circuit theory	**6**
4	3	b	Derive the Maxwell's equation for time varying field	**7**
2	3	c	Explain Inconsistency of Ampere's law	**7**
		Q.3	**Attempt (any four questions)**	**20**
4	3	a	Derive an Expression for electromagnetic wave equation for electric field and magnetic field for lossless media	5
4	3	b	In free space $E(z,t) = 10^3 \sin(wt - \beta z) a_y$ v/m .obtain $H(z,t)$.	5
2	3	c	Explain polarization of wave along with types of polarizatinon.	5
2	3	d	Explain wave equation in lossless medium using Helmholtz equation	5
4	3	e	A plane EM wave travelling in z direction in an unbounded lossless dielectric medium with $\mu r=1, \varepsilon r=3$ find a) Velocity of wave b) The intrinsic impedance of the medium c) The peak value of magnetic field intensity H.	5
		Q.4	**Attempt(any one options are allowed for sub questions of a, b, c…….)**	**20**
1	4	a	What are field zones?	4
2	4	b	Write note on Radio communication link.	4
2	4	c	Explain basic antenna parameters.	6
2	4	d	Discuss the linear ,elliptical ,circular polarization of antenna .	6