Code No: P18ECT11

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL – 2023
ANTENNA AND WAVE PROPAGATION
(ECE Branch)

Time: 3 hours Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

Q.No.		Questions	Marks	CO	KL
1.	a)	Give any two comparisons of monopole antennas and dipole antennas.	[2M]	1	2
	b)	Define Broadside, end fire and scanned array antennas?	[2M]	2	1
	c)	Classify the polarization based on Axial Ratio?	[2M]	3	3
	d)	What are the applications of reflector antennas?	[2M]	4	2
	e)	What are the Ionospheric Abnormalities?	[2M]	5	2

PART-B

Answer One Question from each UNIT (5X10=50M)

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.	a)	Define directivity and Explain the different techniques to estimate directivity?	[5M]	1	2
	b)	The maximum radiation intensity of a 90% efficiency antenna is 200 mW/unit solid angle. Find the directivity and gain (dimensionless and in dB) when the (i) input power is 125.66 mW (ii) input power is 125.66 MW	[5M]	1	3
		OR			
3.	a)	With the help of neat diagrams explain the principle of radiation mechanism in antennas.	[5M]	1	2
	b)	Derive the power radiated and radiation resistance of a Quarter wave monopole.	[5M]	1	2
		UNIT-II			
4.	a)	What are the advantages and disadvantages of binomial array?	[5M]	2	3
	b)	What is a Broadside array? Derive the properties of broadside array.	[5M]	2	3
		OR			
5.	a)	What are the conditions to increase the directivity of end fire array?	[5M]	2	3
	b)	Derive the expression for resultant radiation pattern of two element array.	[5M]	2	2
		UNIT-III			
6.	a)	Explain the design parameters of rectangular patch antenna.	[5M]	3	2
	b)	List out the advantages, limitations and characteristics of microstrip antenna.	[5M]	3	1
		OR			
7.	a)	Explain the working principle of a helical antenna in normal mode.	[5M]	3	2

	b)	Give the construction details and radiation pattern of travelling wave antenna.	[5M]	3	1
		UNIT-IV			
8.	a)	What is aperture blocking and how to avoid it with cassegrain feed mechanism?	[5M]	4	3
	b)	Explain the working principle of a Pyramidal horn antenna?	[5M]	4	2
		OR			
9.		With reference to paraboloids, explain the following: i) F/D ratio ii) Spill over and aperture efficiency iii) Front to back ratio iv) Types of feeds. v) Aperture Blocking	[10M]	4	2
		UNIT-V			
10.	a)	Discuss the salient features of sky wave propagation. Bring out the various problems associated with this mode of propagation. How are these problems over come?	[5M]	5	2
	b)	List and explain the characteristics parameters of ionospheric propagation.	[5M]	5	1
		OR			
11.	a)	Define Critical Frequency, MUF & Skip Distance Calculations for flat and spherical earth cases,	[5M]	5	2
	b)	Derive the LOS distance in space wave propagation.	[5M]	5	2

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