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Sardar Patel University

B.Sc. (semester-V)(NC)CBCS Examination Dec. – 2020

30-12-2020, Wednesday

02:00 pm to 04:00 pm **Electronics & Communication**

US05CELC05: Antenna and its application

	and the standard feel	marks		Maximum Marks: 7	' 0	
Note: F Q-1	igure to the right indicates full Choose the correct Answer.	murks.			[10]	
	The number of pattern radiation pattern required to specify the characteristics are					
1.		tion pattern require	c) 5	d) 6		
	a) 3 b) 4 C/3 What is the nature of radiation pattern for an isotropic antenna?					
2.		pherical	c) hyperbolic	d) none		
3.	A dipole antenna is also called as					
	a) Hertzian antenna b) V	agi antenna	c) lens antenna	d) patch antenna		
4.	In antenna design, the ratio of received power available at the terminal of an antenna to the					
	power per unit area in incident wave is called as					
•	a) efficiency of b) A	Apeture of antenna	c) directivity	d) none		
	antenna					
5.	Antenna aperture is same as	s				
٥.	a) area b)	width	c) both a and b	d) none		
6.	The ratio of radiation intensity in a given direction form to the radiation intensity averaged					
o.	over all direction is called as					
	a) Apeture of antenna b		c) efficiency of	d) none		
	-7· · ·		antenna			
7.	Linear array is the system of spaced element.					
••		equally	c) zero	d) none		
8.	Pitch angle for helical anter	nna is defined by	<u></u>			
O.	$a) + an^{-1}S/\pi C$ b)	tan ⁻¹ S/πL	c) tan ⁻¹ S/πD	d) tan ⁻¹ D/πC		
9.	The members of the antenna family which are made of wires of certain value in terms of					
٥.	operating wavelength are o					
	-	yagi antenna	c) lens antenna	d) patch antenna		
10.	Slotted antenna is used for					
<u>.</u>		VHF	c) Both a and b	d) none		

Q-2	Do as Directed.	(08		
1.	The intrinsic impedance of free space is symbolized by			
2.	In the end-fire array, the radiation is along			
3.	Directivity and resolution are			
4.	The noise voltage for resistance R is given by			
5.	Antenna are omni-directional devices.(True/False)			
6.	All the antenna measurement are accurate.(True/False)			
7.	The frequency range of operation of helical antenna is around 3KHz to 30KHz.(True/False)			
8.	A Helical antenna produces radiation which is circular polarized.(True/False)			
Q-3	Answer in short.(Any ten)	[20]		
1.	Explain induction field with the help of Biot-Savart law.			
2.	State Helmholtz theórem.			
3.	Define: Effective area and effective height of antenna.			
4.	Explain field pattern and power pattern in antenna.			
5.	Draw the diagram for Hertzian dipole.			
6.	Explain antenna aperture.			
7.	Explain slot impedance.			
8.	Explain dipole and monopole of antennas.			
9.	Why signal to noise ratio is required?			
10.	Give the expression for radiated power. Also find power radiated for $r=1$ cm, $l_{eff}=0.7$ amp. At 5GHz.			
11	Explain reflector antenna.			
12.	Explain patch antenna.			
Q-4	Answer the following questions.(Any Four)	(32)		
1.	Obtain the near field due to sinusoidal current distribution.			
2.	Obtain the far field due to sinusoidal current distribution.			
3.	Explain effective area of antenna in detail.			
4.	Explain beam area of antenna with necessary equations.			
5.	Write a note on: Broadside array.			
6.	Write a note on: End –fire array.			
7.	With necessary diagram explain slot antennas in detail.			
8.	Draw and explain End –fire antenna in detail.			
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