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**Question Paper Code: 36403**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Electronics and Communication Engineering

01UEC603 - ANTENNA AND WAVE PROPAGATION

(Regulation 2013)

Duration: 1:15hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

- Effective aperture is always ----- than Physical aperture.  
(a) higher                      (b)  $\Theta$                       (c) Elliptical                      (d) Circular
- Consider a lossless antenna with a directive gain of +6 dB. If 1 mW of power is fed to it, the load power radiated by the antenna will be  
(a) 4mW                      (b) 1mW                      (c) 7mW                      (d) 1/4mW
- A dipole antenna of  $\lambda/8$  length has an equivalent total loss resistance of  $1.5\Omega$ . The efficiency of the antenna is  
(a) 0.89159%                      (b) 8.9159%                      (c) 89.159%                      (d) 891.59%
- The array that does not produce side lobes excepting principal lobe is  
(a) Broad side array                      (b) End fire array  
(c) Yagi-Uda array                      (d) Binomial array
- Corrugations in conical horn antenna is provided to improve  
(a) Directivity                      (b) Impedance matching  
(c) Beam symmetry                      (d) Bandwidth
- The relation between slot and dipole impedances is  
(a)  $Z_s Z_d = Z_i^2/4$                       (b)  $Z_s Z_d = Z_i^2/2$   
(c)  $Z_s Z_d = Z_d^2/4$                       (d)  $Z_s Z_d = Z_d^2/2$

7. A 13 element Yagi-uda antenna array produces a maximum gain of \_\_\_\_\_ dB (approx.).  
(a) 5 (b) 9 (c) 14 (d) 3
8. For a Hertz dipole antenna, the Half Power Beam Width (HPBW) in the E-Plane is  
(a)  $360^\circ$  (b)  $180^\circ$  (c)  $90^\circ$  (d)  $45^\circ$
9. A pulse of a given frequency transmitted upward is received back after a period of 5ms. The virtual height of the reflecting layer is  
(a)  $h=CT/2$  (b)  $h=2CT$  (c)  $h=T/2C$  (d)  $h=C/2T$
10. \_\_\_\_\_ is not a type of fading.  
(a) Polarization (b) Skip (c) Interference (d) None of these

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. What are Hertzian dipoles? Derive the electric and magnetic field of Hertzian dipoles. (8)
12. Draw radiation pattern for a half Wavelength dipole and explain in detail. (8)
13. Discuss about the type of Horn antenna and find the directivity and power gain. (8)
14. Describe the construction and basic principle of operation of a helical antenna under (i) normal mode of operation and (ii) Axial mode of operation. Write its application. (8)
15. Discuss on the following  
(i) Skip Distance (8)