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Code No. : 16402 O

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (ECE) III Year II Semester Old Examinations, May-2019

Antennas & Wave Propagations

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Differentiate the terms Gain and Directivity of an antenna
2. List the important aspects of Radiation pattern of an antenna.
3. Calculate the radiation resistance of $\lambda/15$ length dipole antenna.
4. What are the Applications of loop antenna?
5. What is the principle of pattern multiplication?
6. List the disadvantages of binomial arrays?
7. Compute the input resistance of folded dipole antenna with 4 turns?
8. What is the role of distance criterion between transmitting and receiving in antennas far field measurements?
9. Draw the E-Plane and H plane radiation patterns of vertical dipole antenna
10. What is the effect of the curvature of the earth in space wave propagation?

Part-B (5 × 10=50 Marks)

11. a) Derive the expressions of radiation fields of Hertzian dipole antenna [5]
b) Find the directivity and efficiency of an antenna if its radiation resistance is 80Ω , and loss resistance is 10Ω . The power gain is 10 dB and antenna operates at a frequency 100MHz. [5]
12. a) Derive the far-field equations of a Halfwave dipole antenna? [5]
b) Describe how loop antenna is used as direction finder [5]
13. a) Obtain the pattern of a two-element Broad side array with spacing $d=\lambda/2$ [4]
b) An array contains 10 isotropic radiators with an inter element spacing of 0.5λ . It is required to produce broadside beam. Compute the following [6]
i) Null-to-Null beam width
ii) Half-power beam width in degrees.
14. a) Draw the structures of E Plane, H Plane and pyramidal Horn antennas. [5]
b) Explain the working principle of Paraboloidal Antenna. [5]
15. a) What are the ionospheric abnormal effects in skywave propagation? Describe them. [7]
b) What are the parameters that control the range of ground wave propagation? Briefly Explain [3]
16. a) Explain the terms [4]
i) Beam solid angle ii) Bandwidth iii) Radian iv) Steradian
b) Explain the working principle on Helical antenna [6]
17. Write the short notes on any two of the following:
a) Lens Antenna [5]
b) Advantages and Disadvantages of a Microstrip antenna. [5]
c) Tropospheric scattering. [5]

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