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Question Paper Code: 1067077

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV/ DEC 2024
Seventh Semester
Electronics and Communication Engineering
EC8701 - ANTENNAS AND MICROWAVE ENGINEERING
(Regulation 2017)

Time: Three Hours Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. List out the microwave frequency bands in electromagnetic Spectrum.

2. Justify the importance of Friis equation in communication.

3. Under which condition, the radiation pattern of loop antenna is same as the Hertzian dipole antenna?

4. Develop the main idea of frequency independent antenna?

5. Write about pattern multiplication and its advantages.

6. Identify the different types of antenna arrays.

7. Categorize the applications of magic-Tee.

8. Examine the factors reducing the efficiency of IMPATT diode.

9. Illustrate the stability requirements in RF amplifier design.

10. Summarize the major components used in the mixer design.

PART – B (5 x 16 = 80 Marks)

11. (a) List the antenna parameters and explain any four parameters in detail. (16)

(OR)

(b) Mention the different types of impedance matching techniques available in the microwave frequency range applications, explain in detail. (16)

12. (a) Summarize the principle of parabolic reflector antenna with the neat diagram and explain the types of feed used. (16)

(OR)

(b) With necessary sketches, explain in detail the radiation mechanism of a microstrip patch antenna. (16)

13. (a) Analyze the radiation mechanisms of broad side antenna array and end fire antenna array with neat sketches. (16)

(OR)

(b) Discover the principle of Smart antennas and explain how it is used in beam forming. (16)

14. (a) Explain the working principle of Gunn diode as a transferred electron device with two valley model, also draw the structure, equivalent circuit and V-I characteristics of Gunn diode. (16)

(OR)

(b) Interpret the principle of operation of reflex klystron oscillator with necessary diagrams. (16)

15. (a) Discuss about impedance matching using discrete component and formulate the conditions for impedance matching. (16)

(OR)

(b) Generalize the procedure for designing microwave amplifier power design with the neat diagram of general amplifier system. (16)

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