C20-EC–404

7442

BOARD DIPLOMA EXAMINATION, (C-20)

NOVEMBER/DECEMBER—2022

DECE – FOURTH SEMESTER EXAMINATION

MICROWAVE AND SATELLITE COMMUNICATION SYSTEMS

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. List any three applications of ground wave propagation.

2. Define virtual height in skywave propagation.

3. Write the expression for electric field at a distant in ground wave propagation and state its parameters.

4. Define isotropic radiator and draw its radiation pattern.

5. Classify antennas based on radiation pattern.

6. State the advantages of horn antenna.

7. Define the term cutoff frequency and cutoff wavelength of a wave guide.

8. Mention the use of waveguides and classify them.

9. List the various displays used in Radar.

10. List any three advantages of satellite communication over terrestrial radio communication.

PART—B

8×5=40

Instructions : (1) Answer either *(a)* **or** *(b)* from each question.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criteria for valuation are the content but not the length of the answer.

11. *(a)* Explain space wave propagation and state the factors affecting the space wave propagation.

(OR)

(b) Explain different layers of ionospheric propagation.

12. *(a)* Explain about folded dipole antenna and mention its applications.

(OR)

(b) Explain about end fire array and broadside array.

13. *(a)* Explain about hybrid or magic tee and mention its applications.

(OR)

(b) Explain the working of Travelling wave tube with suitable diagrams.

14. *(a)* Derive the free space radar range equation.

(OR)

(b) Explain the working of Pulsed Radar with a block diagram.

15. *(a)* Explain the working of Earth station with a block diagram.

(OR)

(b) Explain the application of satellite in GPS (Global Positioning System)

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. What is the impact on trajectory of electrons in the interaction space of a magnetron under the influence of RF voltage to produce self-consistent mode of oscillations?

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