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C20-EC–404

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BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—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) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. List any three limitations of ground wave propagation.
2. Define maximum usable frequency in ionospheric propagation.
3. Write the expression for electric field at a distance in ground wave propagation and state its parameters.
4. Define directive gain and front to back ratio of an antenna.
5. Classify antennas based on frequency range.
6. State the need for antenna arrays.
7. Define the term cutoff frequency and cutoff wavelength of a wave guide.
8. Define TE mode and TM mode.
9. Mention any three applications of radar.
10. State the use of satellite for communication.

* PART—B 8×5=40

Instructions : (1) Answer either *(a)* or *(b)* from *each* questions from part-B.

(2) Each question carries eight marks.

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

11. *(a)* Explain different layers of ionospheric propagation.

(OR)

(b) Explain space wave propagation and state the factors affecting it.

12. *(a)* Explain about end fire array and broadside array.

(OR)

(b) Explain the working of dish antenna with suitable diagrams.

13. *(a)* Explain the construction and working of Reflex Klystron.

(OR)

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

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

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(OR)

(b) Explain CW radar with a suitable block diagram.

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

(OR)

(b) Explain the application of satellite in Direct to Home (DTH) TV.

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* PART—C 10×1=10

Instructions : (1) Answer the following questions.

(2) The question carries ten marks.

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

16. What will happen when E-plane tee and H-plane tee are combined? Explain about the resultant.

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