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Question Paper Code : 71744

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Seventh Semester

Electronics and Communication Engineering

EC 6701 — RF AND MICROWAVE ENGINEERING

(Regulations 2013)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the frequency range for following IEEE microwave bands?
   (a) L band
   (b) S band
   (c) C band
   (d) X band

2. Give the relation between S and ABCD parameters.

3. Define transducer power gain.

4. What are waveguide bends? What are the two types of bends?

5. List the applications of magic - Tee.

6. Write the S matrix for 4 port circulator.

7. Write the classification of microwave tubes and explain the difference between them.

8. What are slow wave structures? Give examples.

9. Compare TWT anti Klystron.

10. Define guide wavelength.

PART B — (5 × 16 = 80 marks)

11. (a) Derive the overall network parameters for cascade connection of two port network. Discuss about short circuit, open circuit, h and ABCD low Frequency parameters.

Or

(b) (i) State and prove the properties of S-matrix.

(ii) Explain the symmetry property in a reciprocal network.

12. (a) Explain in detail about microstrip line matching network with neat diagram.

Or

(b) Discuss about the design of T-section and Pi section matching network.

13. (a) With neat diagram discuss the characteristics of series Tee and shunt Tee and derive the S matrix.

Or

(b) Discuss the principle of operation of any two non reciprocal devices and derive the S parameters.

14. (a) With neat diagram explain the operation of two cavity klystron amplifier and derive the equations for velocity modulation process.

Or

(b) (i) Give the comparison between Gunn, IMPATT, TRAPATT and Baritt.

(ii) Explain the operation of travelling wave tube and write its characteristics.

15. (a) Discuss the impedance, wavelength and frequency measurement using slotted line method.

Or

(b) Write short notes on power sensors used for microwave power measurement.

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