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205604

May, 2019

B. Tech. (ECE) - VI SEMESTER

MICROWAVE AND RADAR ENGINEERING

(EC-308-C)

Time : 3 Hours] [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1. (a) What are planar transmission lines? Also, give their applications. (1.5)

(b) Define the term characteristic impedance. (1.5)

(c) What do you understand by s-parameters and hybrid ring? (1.5)

(d) Compare TWT and BWO. (1.5)

(e) Define MASER. (1.5)

(f) Enlist salient features of parametric amplifiers. (1.5)

(g) What are the functions of microwave bridges? (1.5)

(h) Define the term matched load. (1.5)

(i) What is range ambiguity? (1.5)

(j) Enlists various applications of RADAR. (1.5)

PART–B

2. (a) Differentiate between rectangular waveguide and circular waveguide. (6)

(b) Compare waveguide with transmission lines. Also, explain the propagation of TE and TM modes. (9)

3. (a) What are Ferrite devices? Explain the construction and operation of isolator. (6)

(b) Define the terms directional coupler, Tees and attenuators. Also, discuss the working of cavity resonator. Also give its merits and demerits. (9)

4. Enlists various limitations of conventional tubes. Also, discuss the construction, operation and properties of Klystron amplifier. (15)

5. (a) Distinguish between IMPATT and TRAPATT diodes. (5)

(b) Enlists salient features of varactor diode. Also, describe the construction and operation of GUNN diode. Give its merits, demerits and applications. (10)

6. (a) Using suitable schematics, explain the concept of power measurement using calorimeter. (8)

(b) Define the term SWR. Also discuss the concept of measurement of impedance. (7)

7. Define the term PRF. Also, by using block diagram explain the working of RADAR. (15)
