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Total No. of Questions : 09] [Total No. of Pages : 02

B.Tech. (Sem. - 6th)

MICROWAVE AND RADAR ENGINEERING

SUBJECT CODE : EC - 302

Paper ID : [A0317]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.
3) Attempt any **Two** questions from Section - C.

Section - A

Q1) *(10 × 2 = 20)*

a) What is cut off frequency of a waveguide?

b) Which is the most desirable property of a cavity resonator?

c) Write a cause of noise in microwave tubes.

d) Can a waveguide have more than one cut-off frequency.

e) Define Faraday rotation.

f) Why is GaAs superior to Silicon as a microwave semiconductor material?

g) Name a RADAR which can simultaneously follow multiple targets.

h) How do insertion loss different from attenuation?

i) What is Doppler effect in RADAR?

j) Write three military related applications of RADARs.

Section - B

(4 × 5 = 20)

Q2) What is problems with conventional tubes at microwave frequencies?

Q3) Describe with schematic and applegate diagram generation of microwaves by two cavity klystron.

Q4) Describe different modes of operation for Gunn diodes.

Q5) What is the basic principle on which a circulator works. Also discuss it's applications.

Q6) What is a Directional coupler? Describe working of two hole directional coupler.

Section - C

(2 × 10 = 20)

Q7) (a) How SWR is measured using a slotted line technique?

(b) Describe a method to measure unknown microwave frequency.

Q8) (a) Derive the basic radar range equation and discuss the parameters on which maximum range depends.

(b) Explain with a block diagram CW Radar and also discuss it's limitations.

Q9) (a) Describe lobe switching technique for angle tracking system.

(b) Discuss in detail Doppler tracking system.