

Roll No.

Total No. of Questions : 09]

[Total No. of Pages : 02

Paper ID [EC302]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 6th)

MICROWAVE & RADAR ENGG. (EC - 302)

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

(10 × 2 = 20)

Q1)

- a) List the limitations of vacuum tubes.
- b) What is Gyrotator?
- c) What is the need of slow wave structure in TWT?
- d) What is matched termination?
- e) What are the applications of BWO?
- f) An IMPATT diode has a pulsed operating voltage of 100V and a pulsed operating current of 0.9A. The efficiency is about 10%. Calculate (i) the output power and (ii) duty cycle, if the pulse width is 0.01ns and the frequency is 16GHz.
- g) What is multiple-time-around echoes.
- h) What is Radomes?
- i) How One can distinguish a stationary targets and a moving targets?
- j) Mention advantages & disadvantages of phased array radar?

Section - B

(4 x 5 = 20)

- Q2) How does magnetron work as an oscillator? Discuss.
- Q3) Discuss the applications of PIN diode.
- Q4) Derive the equation given below for directional coupler & then give its S-matrix $p^2 + q^2 = 1$.
- Q5) Draw the block diagram for measurement of doppler direction using synchronous motor. And discuss how it indicates the direction of the target.
- Q6) Discuss the radar frequencies & its applications.

Section - C

(2 x 10 = 20)

- Q7) Discuss the methods for measurement of SWR.
- Q8) What is angle tracking system, discuss its various techniques.
- Q9) Write short note on :
- (a) Isolator & Circulator.
 - (b) TRAPATT diode.