

Roll No.

--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (Electronics Engineering) (2012 to 2017) / (EE) (Sem.-6)

MICROWAVE AND RADAR ENGINEERING

Subject Code : BTEEE-603B

M.Code : 72843

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Answer briefly :**

1. Write down the properties of scattering matrix.
2. What are the advantages of cross field amplifiers?
3. Write down the characteristics of PIN diode.
4. What do you understand with skin effect?
5. Define modes of microwave bipolar transistors.
6. Compare horizontal and vertical scanning techniques.
7. What do you understand with range ambiguities?
8. Draw block diagram of MTI radar with proper notations.
9. What are the applications of ferrite devices?
10. Define SWR and matched termination.

SECTION-B

11. Explain the principle of operation, characteristics and applications of Klystron. Also discuss velocity modulation in detail.
12. What is the role of S parameters in microwave devices? How tunnelling effect take place in tunnel diode?
13. With the help of suitable diagram discuss the working of magnetron. Also explain the role of slow wave structure in TWT.
14. Discuss different methods of power measurement. Also discuss the working of IMPATT.
15. Explain bunching process. Discuss working of circulator also obtained its S matrix.

SECTION-C

16. What do you understand by lobe switching? Calculate the maximum range of Radar for the specifications:

Peak power transmitted by the radar = 250KW;

Gain of transmitting antenna = 4000;

Effective aperture of the receiving Antenna = 4m^2 ;

Radar cross section of the target = 25m^2 ;

Power of minimum detectable signal = 10^{-12}W .

17. Derive RADAR range equation and explain the factors that affect maximum range of RADAR.
18. Write short notes on :
 - a. Cavity resonator
 - b. Microwave bridge

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.