A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 57403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Seventh Semester

Electronics and Communication Engineering

15UEC703-MICROWAVE ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. S parameters are expressed as a ratio of: CO1- R

   (a) Voltage and current (b) Impedance at different ports

   (c) Incident and the reflected voltage waves (d) None of the mentioned

2. Which of the following frequency bands fall under microwave frequency? CO1- R

   (a) UHF and SHF (b) SHF and EHF

   (c) UHF, SHF and EHF (d) VHF, LF ad MF

3. The electrodes of a Gunn diode are made of: CO2- R

   (a) Molybdenum (b) GaAs (c) Gold (d) Copper

4. When a reverse bias voltage exceeding the breakdown voltage is applied to an IMPATT diode, it results in CO2- R

   (a) Avalanche multiplication (b) Breakdown of depletion region

   (c) High reverse saturation (d) None of the mentioned

5. Microwave tubes are grouped into two categories depending on the type of CO3- R

   (a) Electron beam field interaction (b) Amplification method

   (c) Power gain achieved (d) Construction methods

6. Klystron operates on the principle of CO3- R

(a) Amplitude modulation (b) Frequency modulation

(c) Pulse modulation (d) Velocity modulation

7. GaAs MESFETs are versatile device because it finds application in CO4- R

(a) Low noise amplifiers (b) High gain amplifiers

(c) Mixers (d) All of the mentioned

8. For the capacitors used in MMIC, the insulating dielectric films are CO4- R

(a) Air (b) SiO (c) Titanium (d) GaAs

9. If the normalized load impedance of a transmission line is 2, then the reflection co-efficient is CO5- App

(a) 0.33334 (b) 1.33334 (c) 0 (d) 1

10. Slotted line is a transmission line configuration that allows the sampling of CO5- R

(a) Electric field amplitude of a standing wave on a terminated line

(b) Magnetic field amplitude of a standing wave on a terminated line

(c) Voltage used for excitation

(d) Current that is generated by the source

PART – B (5 x 2= 10Marks)

11. Why is s-matrix used in microwave analysis? CO1- R

12. Define GUNN effect. CO2- R

13. Give the performance Specification of Reflex klystron? CO3- R

14. What are dielectric losses? CO4- R

15. What is a VSWR meter? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) What are the properties of scattering matrix for a lossless junction? CO1- U (16)

Or

(b) With neat diagram derive the S-matrix for Circulators. CO1- U (16)

17.	(a)	Describe the Ridley-Watkins-Hilsum theory.	CO2- U	(16)
		Or		
	(b)	Describe the operating principle of TRAPATT diode.	CO2- U	(16)
18.	(a)	Explain the construction and working principle of 2-cavity klystron amplifier.	CO3- U	(16)
		Or		
	(b)	Explain the working principle of Travelling Wave Tube (TWT) amplifiers.	CO3- U	(16)
19.	(a)	Briefly explain about thin film formation.	CO4- U	(16)
		Or		
	(b)	Describe the hybrid IC fabrication.	CO4- U	(16)
20.	(a)	Explain the different methods to measure microwave frequency?	CO5- U	(16)
		Or		
	(b)	Explain about insertion loss measurement & attenuation measurement.	CO5- U	(16)

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