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**Question Paper Code: 57403**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Seventh Semester

Electronics and Communication Engineering

15UEC703-MICROWAVE ENGINEERING

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. The frequency range corresponding to microwaves CO1-R  
(a) 30 to 300GHz (b) 1 to 100GHz  
(c) 0.3 to 3GHz (d) 300 to 30000GHz
2. Which of the following bands that comes under Microwave Band CO1-R  
(a) C (b) D (c) E (d) None of the above
3. Most of the power measuring microwave devices measure CO2-R  
(a) Average power (b) Peak power  
(c) Instantaneous power (d) None of these
4. Which of the following is the biggest advantage of the TRAPATT CO2- R  
diode over IMPATT diode  
(a) Low Noise (b) High efficiency  
(c) Ability to operate at high frequencies (d) Lesser sensitivity to harmonics
5. Reflex klystron is a CO3-R  
(a) Amplifier (b) Oscillator (c) Attenuator (d) Filter
6. In multicavity klystron additional cavities are inserted between buncher CO3-R  
& catcher cavities to achieve  
(a) Higher Gain (b) Higher Efficiency (c) Higher Frequency (d) Higher Bandwidth

7. For the capacitors used in MMICs, the insulating dielectric films used are: CO4-R
- (a) Air (b) SiO (c) Titanium (d) GaAs
8. The metalized substrate is coated with \_\_\_\_\_ covered with the mast and exposed to light source CO4-R
- (a) photo resist (b) GaAs (c) germanium liquid (d) None of the mentioned
9. In  $\pi$  mode operation of magnetron, the spokes due to phase focusing effect rotate at an angular velocity corresponding to \_\_\_\_\_ CO5-U
- (a) One pole / cycle (b) Two poles / cycle  
(c) Four poles / cycle (d) Six poles / cycle
10. The reflection coefficient on a line is 0.2 angle of  $45^\circ$ . The SWR is CO5-R
- (a) 0.8 (b) 1.1 (c) 1.2 (d) 1.5

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. What is discontinuity in a waveguide? Explain different types of windows and their equivalent circuits.. CO1-U (8)
12. Draw the band diagram of GaAs and explain the Gunn effect, where by negative resistances and therefore oscillations are obtained under certain conditions from bulk gallium arsenide CO2-U (8)
13. Explain about velocity modulation and bunching in a Reflex klystron amplifier, with neat circuit diagrams and relevant equations. CO3-U (8)
14. Explain the different types of materials used in MMIC and list their characteristics CO4-U (8)
15. Describe in detail with block diagram about the measurement of VSWR through return loss measurement CO5-U (8)