No. of Printed Pages : 4 181061/171061
Roll No. .....

**6th Sem / Eltx.**
**Subject:- Microwave and Radar Engineering**

Time : 3Hrs. M.M. : 100

## SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 Microwave tubes work on the principle of_____ modulation. (CO1)

a) Amplitude b) Frequency
c) Phase d) Velocity

Q.2 1 GHz = _____ KHz. (CO1)

a) $10^0$ b) $10^3$
c) $10^6$ d) $10^9$

Q.3 Frequency range of L band is_____ GHz. (CO1)

a) 1-2 b) 2-4
c) 4-8 d) 8-12

Q.4 A Magic TEE has_____ number of ports. (CO7)

a) 2 b) 3
c) 4 d) 5

Q.5 _____ is cross field device. (CO1)

a) Klystron b) Magnetron
c) T.W.T d) GUNN diode



Q.6 The number of semiconductor layers in IMPATT diode is _____ (CO1)

a) 4 b) 3
c) 2 d) 1

Q.7 The commonly used mode for transmission is _____. (CO3)

a) Si b) Ge
c) GaAs d) AI

Q.8 Directional couplers are used for _____ power measurement. (CO5)

a) Unidirectional b) Bidirectional
c) Omnidirectional

Q.9 For a frequency of 6 GHz, the wavelength will be_____ (CO1)

a) 10 meters b) 1 meter
c) 10 c.m d) 5 c.m

Q.10 Duplexer is used in_____ Radars. (CO8)

a) Pulse b) CW
c) FMCW

## SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

Q.11 What is full form of T.W.T? (CO1)

Q.12 What is frequency range of VHF? (CO1)

Q.13 Define blind speed. (CO8)

Q.14 Define radiation pattern. (CO6)

Q.15 Bunching is drawn on _____ diagram. (CO1)

Q.16 Draw a Twist. (CO3)

Q.17 Define repeater. (CO10)

Q.18 Write any two applications of IMPATT diodes. (CO1)

Q.19 Define cut off wave length. (CO3)

Q.20 Define directivity. (CO5)

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain in brief the advantages of waveguides over coaxial cables. (CO3)

Q.22 Show how E-Plane TEE works? (CO7)

Q.23 Write all microwave bands with their frequency ranges. (CO1)

Q.24 Explain in brief the working of attenuators. (CO3)

Q.25 Write the basic principle & working of GUNN diode. (CO1)

Q.26 Explain microwave communication link in brief. (CO10)

Q.27 With the help of diagram, explain Horn antenna. (CO6)

Q.28 Explain basic principle of A-Scope. (CO9)



Q.29 Explain in brief the significance of RADAR range equation. (CO8)

Q.30 With the help of diagram, explain FMCW Radar. (CO8)

Q.31 Show how transit time effect is used in microwave tubes. (CO1)

Q.32 Define the term "Dominant MODE", Draw field configuration of $TE_{10}$ MODE. (CO3)

Q.33 Explain the concept of maximum unambiguous range in Radars. (CO8)

Q.34 Show how troposcatter propagation takes place? (CO10)

Q.35 Draw & explain slotted section. (CO4)

## SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Explain in detail the bunching process in Two cavity klystron. (CO1)

Q.37 i) Define Faraday's rotation law, how it is used in isolators? (6)(CO3)

ii) Write any two applications of microwaves. (4)(CO1)

Q.38 Explain in detail all the terms related to Directional coupler. Write its applications. (CO5)

(**Note:** Course outcome/CO is for office use only)