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Roll No.....

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6th Sem, Branch : Eletx. Engg.  
Subject : Microwave and Radar Engg.

Time : 3 Hrs.

M.M. : 100

### SECTION-A

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

- Q.1 Klystron operates on the principle of \_\_\_\_\_.  
a) Velocity Modulation  
b) Amplitude Modulation  
c) Pulse Modulation  
d) Frequency Modulation
- Q.2 The modes of propagation supported by a rectangular wave guide is  
a) TM, TEM, TE modes  
b) TM, TE  
c) TM, TEM  
d) TE, TEM
- Q.3 Radar is used for :  
a) Ground mapping only  
b) Airport surveillance only  
c) Weather forecast only  
d) all of above

- Q.4 Which frequency band is best suited for FM radio & TV broadcasting  
a) HF b) VHF  
c) UHF d) X Band
- Q.5 Which of the following exhibits negative resistance  
a) TWT b) Impatt-diode  
c) Gunn diode d) Reflex klystron
- Q.6 E layer is at a height of \_\_\_\_\_.  
a) 50-100 km b) 100-140 km  
c) 140-250 km d) 250-400 km
- Q.7 The term RADAR stands for  
a) Radio direction & reflection  
b) Radio detection & ranging  
c) Radio wave dispatching & receiving  
d) Random detection & Re-Radiator
- Q.8 At Microwave Frequencies, the size of antenna becomes  
a) Small b) Large  
c) Very small d) Very Large
- Q.9 A Hollow Rectangular waveguide acts as \_\_\_\_\_.  
a) High pass filter b) Low pass Filter  
c) Band Pass Filter d) Low Frequency radiator
- Q.10 With circular wave guides the type of attenuator used is \_\_\_\_\_.  
a) Rotary Type b) Flap Type  
c) Either A or B d) Neither A or B

### Section B

**Note:** Objective types Questions. All Questions are compulsory. (10x1=10)

- Q.11 Define microwave?
- Q.12 What is Klystron?
- Q.13 Frequency range of VHF Frequency band is \_\_\_\_\_?
- Q.14 Give two applications of microwaves.
- Q.15 Multicavity Klystron is used as \_\_\_\_\_.
- Q.16 D Layer is at height of \_\_\_\_\_?
- Q.17 \_\_\_\_\_ is used for measuring Microwave frequency?
- Q.18 Define Cut off wavelength?
- Q.19 PPI Stands for \_\_\_\_\_?
- Q.20 What is microwave bend.

### Section-C

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

- Q.21 Differentiate between TE and TM modes..
- Q.22 Write a short note on GUNN Diode.
- Q.23 Explain applications of Microwaves and its classification.
- Q.24 Differentiate Between Circulator & Isolator.
- Q.25 Draw frequency spectrum indicating all frequencies & wavelengths.
- Q.26 Explain Troposcatter Communication in brief.
- Q.27 Explain MTI radar.

- Q.28 Write applications of Circulate Waveguide.
- Q.29 Write any two applications of Magnetron. Why magnetron is called as cross field device?
- Q.30 Why TEM mode is not possible in a waveguide?
- Q.31 Draw block diagram of microwave communication link.
- Q.32 What is waveguide attenuator? What are different types of waveguide attenuators?
- Q.33 What are high frequency limitations of conventional tubes?
- Q.34 Write a short note on "Modes of waveguide".
- Q.35 Explain Radar display PPI.

### Section-D

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

- Q.36 Explain block diagram and operating principle of CW and FMCW radar.
- Q.37 Explain constructional features, characteristics and applications of Tees and Coaxial to wave guide adapter.
- Q.38 Explain the construction and principle of Reflex Klystron.