# V – SEM/ETC/2011 (W) (NEW)

**FULL MARKS : 80** **[ THEORY - 2 ]** **TIME : 3 HOURS**

**1)** Answer ALL Questions: **[ANSWER ANY FIVE INCLUDING QNS NO 1 & 2 ]** [2 x10]

**a)** Define the gain of an antenna.

**b)** Name two antennas which are used for microwave communication.

**c)** What is polarization?

**d)** What is waveguide and name the various types of waveguide.

**e)** Define standing wave ratio (SWR).

**f)** What is a stub?

**g)** Whether magnetron is an oscillator OR an amplifier and suggest your answer.

**h)** What is LASER and where it is used?

**i)** What is an Isolator and where it is used?

**j)** What are the factors affects the directional pattern of an antenna?

**2)** Answer any **FIVE** Question: [6 x 5]

**a)** Explain the different types of losses in transmission line.

**b)** Explain different modes of propagation of electromagnetic waves.

**c)** What is the function of a directional coupler?

**d)** Discuss the principle of operation of two cavity klystron amplifier with a neat circuit diagram.

**e)** Explain the operation of dish antenna with parabolic reflector.

**f)** Explain the measurement of microwave power by bolometer.

**g)** Explain the basic principle of (i) LASER (ii) IMPACT diode

**3)** Derive the equation for primary and secondary constant of transmission line. [10]

**4)** Explain the principle of operation of magnetron with neat diagram. Discuss its applications. [10]

**5)** Explain the operation of rectangular waveguide and write its advantages and disadvantages. [10]

**6)** Explain the effects of environment on propagation of waves, particularly reflections, refraction, interference and diffraction. [10]

**7)** Write short notes on any TWO: [5 x 2]

**(i)** TWT

**(ii)** Varactor diode

**(iii)** Gunn effect

**(iv)** MASER