

M.Sc. - I (Electronics) (NEP Pattern) Semester-II  
**PSCELT202 - Paper-II : Microwave and Optical Communication**

P. Pages : 2

Time : Three Hours



**GUG/S/25/15370**

Max. Marks : 80

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- Notes : 1. All questions are compulsory and carry equal marks.  
2. Draw the neat and labeled diagrams wherever necessary.

**Either:**

1. a) Show that for cylindrical magnetron the critical magnetic induction ( $B_c$ ) depends on  $e$  and  $m$  of electron and also on d.c voltage  $V_o$  between anode and cathode. 8
- b) What is klystron? Explain the working principal of two cavity klystron What is the difference between klystron and magnetron? 8

**OR**

- c) Explain how does TWT works. 8
- d) What is wave guide? Explain in short different types of wave guide. Explain TE and TM mode in wave guides. 8

**Either:**

2. a) What is scattering matrix in wave guide? Explain the principle of elastic type of scattering. 8
- b) Explain in short microwave measurements of VSWR. 8

**OR**

- c) Explain attenuator and directional coupler? 8
- d) Explain H-plane tees junction in wave guide with properties. 8

**Either:**

3. a) Explain the principle used in fiber optic communication. Define core and cladding. 8
- b) Explain single mode and multi mode optical fibre. 8

**OR**

- c) Differentiate between step-index and graded-index fiber. 8
- d) What is dispersion in optical fibre? Explain material dispersion and waveguide dispersion. 8

**Either:**

4. a) What is connectors? Explain Lucent and Standard connectors used in optical fibre? 8
- b) Explain the fibre attenuation measurement in optical fibre. 8

**OR**

- c) Explain how refractive index profile measure in optical fibre. 8
- d) What is splicing in optical fibre? Explain fusion in mechanical splicing. 8
5. Attempt the following.
- a) Explain the working principle of magnetron. 4
- b) Explain how dielectric constant measure in microwave. 4
- c) What are the applications of optical fibre? 4
- d) What is transmission and receiver in optical fibre? 4

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