

M.Sc. S.Y. (Electronics) (New CBCS Pattern) Semester - IV
PSELT403.1 - DSE Paper-III : Microwave & Optical Communication

P. Pages : 1

Time : Three Hours



GUG/S/23/11370

Max. Marks : 80

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

Either :-

1. a) Write a note on reflex klystron oscillator with suitable diagram. **8**
b) Explain the mode TE_{10} in rectangular waveguide. **8**

OR

- c) Discuss the propagation of EM waves through waveguide. **8**
d) Write suitable schematic diagram, explain the working of backward wave oscillator. **8**

Either :-

2. a) Explain the following terms. **8**
i) Directional coupler. ii) Circulators.
b) Explain measurement technique of phase shift and frequency at microwave region. **8**

OR

- c) What is scattering matrix of a microwave junction? Derive the scattering matrix of H plane Tee junction. **8**
d) Explain method measurement VSWR at microwave frequency. **8**

Either :-

3. a) Write a note on. **8**
i) Step index ii) Graded index.
b) What is dispersion? Explain material dispersion. **8**

OR

- c) Explain that optical fiber act as wave guide. **8**
d) State various optical detectors and explain any two of them. **8**

Either :-

4. a) Explain structure of optical fiber cable. **8**
b) Explain following term related to optical fiber cable: **8**
i) Fiber joints ii) Coupler and connectors.

OR

- c) Discuss the dispersion measurement in optical fiber. **8**
d) Describe the technique refractive index profile measurement. **8**

5. a) Explain the operation of GaAs oscillators. **4**
b) What is cavity resonator? Explain. **4**
c) Explain concept of ray model in fiber optics. **4**
d) Explain working of an optical receiver. **4**
