S.Y.M.Sc.(Physics) Fourth Semester Old

MSC241013 - Lasers, Fiber Optics & Applications Elective-II

P. Pages : 1 **GUG/W/18/2431**

Time : Three Hours * 1 9 0 1 * Max. Marks : 80

---

1. Either

a) Describe in details about the three Level laser system. **8**

b) Explain NdYAG laser system with necessary diagram. **8**

OR

e) Explain mode locking and pulse shortening in Laser operation. **8**

f) Discuss semiconductor Laser and its application. **8**

2. Either

a) Discuss Raman Scattering and its use in pollution studies. **8**

b) How the laser system are superior over light source. **8**

OR

e) What is fluorescence? Explain its uses. **8**

f) Explain high resolution spectroscopy with suitable example. **8**

3. Either

a) What is mean by optical fiber? Explain its advantages. **8**

b) Discuss pulse dispersion in step index fiber. **8**

OR

e) Write notes on Loss mechanism. **8**

f) Derive an expression for numerical aperture and explain coherence bundle. **8**

4. Either

a) Give model analysis of parabolic index fiber. **8**

b) Discuss fractional modes power in the core of optical fiber. **8**

OR

e) Explain multimode fibers with optimum profiles. **8**

f) Write notes on Petermann-2 spot size. **8**

5. Write notes on following.

a) Ruby laser and its application. **4**

b) Application of Ultra high resolution spectroscopy. **4**

c) Attenuation in optical fiber. **4**

d) Graded index fiber. **4**

****