**LESSON PLAN**

|  |
| --- |
| **Name of the Faculty : Sh. Sanjay Tayal** |
| **Discipline : Electronics and Communication Engg.**  |
| **Semester : 5th** |
| **Subject : OPTICAL FIBER COMMUNICATION (121054)** |
| **Lesson Plan Duration : 15 week (July-Nov 2018)** |
| **Week** | **Theory** | **Practical** |
| **Lecture day** | **Topic (including assignment/ test)** | **Topic** |
| **1st** | **1** | Introduction about subject | Introduction about Practical |
| **2** | Introduction Historical perspective, basic communication systems |
| **3** | optical frequency range, Electromagnetic spectrum used and application of fibre optic communication |
| **2nd** | **4** | Advantages and disadvantages of optical communication | Introduction to various components and tools used in optical fiber communication |
| **5** | Principle of light penetration, reflection, critical angle. |
| **6** | Optical Fiber types: construction of multimode and monomode fibers |
| **3rd** | **7** | step index and graded index fibers | Setting up an optic fiber analog link |
| **8** | Differences between multimode and single mode, step index and graded index fibers |
| **9** | acceptance angle, Numerical aperture  |
| **4th** | **10** | types of optical fiber cables | Setting up an optic fiber digital link  |
| **11** | **1st Sessional Test** |
| **12** | Losses in optical fiber cable: Absorption Losses |
| **5th** | **13** | Scattering Losses | Measurement of various losses in optical fibers |
| **14** | Radiation losses, Coupling losses |
| **15** | Bending losses  |
| **6th** | **16** | Dispersion, modal dispersion  | To measure and calculate numerical aperture of optical fiber |
| **17** | Material dispersion, wave guide dispersion |
| **18** | total dispersion and bit rate |
| **7th** | **19** | Characteristics of light source used in optical communication | To observe characteristics of optical source & detector |
| **20** | principle of operation of LED, different type of LED structures used (contd.) |
| **21** | different type of LED structures used |
| **8th** | **22** | LED driving circuitry | To observe and measure the splice or connector loss  |
| **23** | Injection Laser diode, principle of operation |
| **24** | different injection laser diodes (contd.) |
|  |  | **LESSON PLAN** **5th ECE OPTICAL FIBER COMMUNICATION (121054)** |  |
| **9th** | **25** | different injection laser diodes | To Connectorise a fiber with connector at both ends |
| **26** | comparison of LED and ILD, non semiconductor laser |
| **27** | Characteristics of photo detectors used in optical communication |
| **10th** | **28** | PIN diode | A visit to nearby Telephone Exchange |
| **29** | avalanche photo diode (APD) |
| **30** | 2nd Sessional Test |
| **11th** | **31** | Fiber alignment and joint losses | Revision |
| **32** | splicing, types of splices (contd.) |
| **33** | types of splices |
| **12th** | **34** | types of connectors used | Revision |
| **35** | Couplers, three and four port coupler, star coupler |
| **36** | fiber optic switch |
| **13th** | **37** | Optical Fiber System: Optical transmitter circuit | Revision |
| **38** | optical receiver circuit |
| **39** | optical power budgeting |
| **14th** | **40** | optical rise time budgeting  | Revision |
| **41** | multiplexing methods used |
| **42** | Modulation methods used |
| **15th** | **43** | Introduction to SDH, SONET | Revision |
| **44** | Revision |
| **45** | 3rd Sessional Test |
|  |  |  |  |