**18PH102**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **December, 2021** | **Institution Elective** | | |
| **Seventh Semester** | **FIBER OPTICS COMMUNICATION** | | |
| **Time:** Three Hours | | **Maximum :** 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X10 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |

**1.** Answer all questions (1X10=10 Marks)

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| a. What is the principle of optical fiber. |  |
| b. Write the difference between splice and connector. |  |
| c. Mention the use of LAN. |  |
| d. Differentiate between step index and graded index fibers. |  |
| e. What is the rise time budget analysis. |  |
| f. A low loss fiber has average loss of 3 dB/km at 900 nm. Compute the length over which the power decreases by 50%. |  |
| g Why OTDR is also known as back scattering method. |  |
| h What is a WDM technique. |  |
| i Mention the names of different types of mechanical misalignments. |  |
| j. What is a material dispersion? |  |
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**UNIT – I**

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| 2.a | Define acceptance angle and critical angle. | 2M |
| 2.b | Explain attenuation caused by absorption, scattering losses and bending losses | 8M |

**(OR)**

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| 3.a | Explain material dispersion and wave guide dispersion. | 6M |
| 3.b | Write a short note on information capacity of optical fiber. | 4M |

**UNIT – II**

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| 4.a | Write about equilibrium numerical aperture. | 5M |
| 4.b | What is splicing? Explain the fusion splicing with a neat diagram. | 5M |

**(OR)**

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| 5.a | Derive the expression for power coupling calculation of step index fiber. | 8M |
| 5.b | Write a short note on power launched verses wavelength. | 2M |

**UNIT – III**

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| 6.a | Explain the operational principle and implementation of WDM with diagrams. | 8M |
| 6.b | Write a short note on 2x2 fiber coupler. | 2M |

**(OR)**

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| 7.a | Explain point to point link in optical fiber communication with a neat diagram. | 5M |
| 7.b | Explain how the total attenuation is estimated with Link power budget analysis. | 5M |

**UNIT – IV**

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| 8.a | Explain the cut back technique with a neat diagram. | 5M |
| 8.b | How Time domain inter modal dispersion measures the total dispersion of the system. | 5M |

**(OR)**

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| 9.a | Write about OTDR? Explain how OTDR create an trace. | 8M |
| 9.b | How we can find the fiber fault location with OTDR. | 2M |

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