**18EC703**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2022** | **Electronics & Communications Engineering** | | |
| **Seventh Semester** | **FIBER OPTIC COMMUNICATIONS** | | |
| **Time:** Three Hours | | **Maximum:** 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X10 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |
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| 1. | a) | Define Acceptance angle | CO1 |  |
|  | b) | Modes in graded index fiber | CO1 |  |
|  | c) | What are skew rays? | CO1 |  |
|  | d) | List optical fiber connectors | CO2 |  |
|  | e) | List types of bending losses | CO2 |  |
|  | f) | Define spontaneous emission. | CO3 |  |
|  | g) | Define responsivity | CO3 |  |
|  | h) | Define Quantum limit | CO3 |  |
|  | i) | What is the use of AGC | CO4 |  |
|  | j) | What is OTDR | CO4 |  |
| **Unit -I** | | | | |
| 2. | a) | Compare general communication system and optical communication system | CO1 | 5M |
|  | b) | Write details about different fiber materials used in optical communication? | CO1 | 5M |
| **(OR)** | | | | |
| 3. | a) | Write about the historical development of optical fiber communication | CO1 | 5M |
|  | b) | A silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine: (a) the critical angle at the core–cladding interface; (b) the NA for the fiber; (c) the acceptance angle in air for the fiber. | CO1 | 5M |
| **Unit -II** | | | | |
| 4. | a) | Explain about fiber Linear scattering loss | CO2 | 5M |
|  | b) | Write different Optical couplers | CO2 | 5M |
| **(OR)** | | | | |
| 5. | a) | Explain about Inter model dispersion | CO2 | 5M |
|  | b) | Describe, with the aid of suitable diagrams, three common techniques used for splicing of optical fibers. | CO2 | 5M |
| **Unit -III** | | | | |
| 6. | a) | Explain internal and external quantum efficiency | CO3 | 5M |
|  | b) | Explain briefly about various LED structures. | CO3 | 5M |
| **(OR)** | | | | |
| 7. | a) | Compare DFB and DBR laser | CO3 | 5M |
|  | b) | Explain the working principle of avalanche photodiode with a neat diagram | CO3 | 5M |
| **Unit -IV** | | | | |
| 8. | a) | Find Illustrating wavelength division multiplexing (WDM) with figure | CO4 | 5M |
|  | b) | Explain types of LED drive circuits | CO4 | 5M |
| **(OR)** | | | | |
| 9. | a) | Explain the backscatter measurement method for attenuation loss. | CO4 | 5M |
|  | b) | Explain optical receiver and its configuration with a neat sketch | CO4 | 5M |

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