******SRM INSTITUTE OF SCIENCE AND TECHNOLOGY**

**RAMAPURAM CAMPUS**

**FACULTY OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**CONTINUOUS LEARNING ASSESSMENT – I SET A**

**Sub Code/Name: 18ECO107T – Fiber Optics and Optoelectronics**

**Class/Sem/Course: III Yr / VI Sem / B. Tech -CSE (ALL DISCIPLINE) & IT Date :**

**Max Marks: 25 Duration: 60 mins**

**PART-A (5x1= 5)**

**ANSWER ALL THE QUESTIONS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q.No** | **Question** | **Marks** | **CO** | **BL** | **PI** |
| 1 | The expression for the refractive index is given by\_\_\_\_\_\_\_\_\_\_ a) n = v/c b) n = c/v c) n = cv d) n = 1/cv | 1 | 1 | 1 | 1.3.1 |
| 2 | The optoelectronic device used for the detection of the optical signal is \_\_\_\_\_\_\_\_\_\_\_\_  a) LED b) Photodiodes c) Zener diodes d) LASER | 1 | 1 | 1 | 1.4.1 |
| 3 | Numerical aperture in optical fiber is used to describe\_\_\_\_\_\_\_\_\_\_\_\_  a) Light-spreading ability b) Light-gathering ability  c) Light output from the external shield  d) Light leakage ability | 1 | 1 | 1 | 1.3.1 |
| 4 | The rays which pass through the core axis are called\_\_\_\_\_\_\_\_\_\_\_\_\_\_  a) meridional rays b) radial rays c) helical rays d) skew rays | 1 | 1 | 1 | 2.1.2 |
| 5 | When the incidence angle is\_\_\_\_\_the specified critical angle, the light rays bend along the intersection line of two different mediums of propagation.  a) more than b) less than c) equal to d) not related with | 1 | 1 | 1 | 1.3.1 |

**PART B (2x4= 8)**

**ANSWER ALLQUESTIONS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q.No** | **Question** | **Marks** | **CO** | **BL** | **PI** |
| 6. | a) Explain how attenuated and distorted signals are recovered in the transmission link.  b) Refractive index of the core is higher than the cladding. Justify the statement. | 2 | 1 | 2 | 1.4.1 |
| 2 | 1 | 2 | 1.4.1 |
| 7. | Differentiate between step index and Graded index fibres. | 4 | 1 | 2 | 1.4.1 |

**PART C (1x12= 12)**

**ANSWER ALLTHE QUESTIONS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Q.No** | **Question** | **Marks** | **CO** | **BL** | **PI** |
| 8. a | i)Derive the expression for Acceptance angle and Numerical Aperture  ii) A boy is in a pool and shines a flashlight toward the level of it at a 35 0angle to the vertical. Compute the angle does the flashlight beam leave the pool. | 8  4 | 1  1 | 3  3 | 1.2.1  1.2.1 |
| **OR** | | | | | |
| 8. b | i) Describe the methods adopted for the installation of fibre cables. Comment on the precautions to be taken during the installation.  ii) Comment on the advantages and Disadvantages of Fibre optic communications | 8  4 | 1  1 | 3  3 | 2.1.3  2.1.2 |

**Outcome Alignment Matrix:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **QUESTION**  **NUMBER** | **CO distribution** | | | | |
| **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| 1 | 1 |  |  |  |  |
| 2 | 1 |  |  |  |  |
| 3 | 1 |  |  |  |  |
| 4 | 1 |  |  |  |  |
| 5 | 1 |  |  |  |  |
| 6 | 4 |  |  |  |  |
| 7 | 4 |  |  |  |  |
| 8.a | 12 |  |  |  |  |
| 8.b | 12 |  |  |  |  |
| **Total** |  |  |  |  |  |
| **%** | **100** |  |  |  |  |

**Quality Matrix**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Question No.** | **BL Distribution** | | |
| **L1** | **L2** | **L3** |
| 1 | 1 |  |  |
| 2 | 1 |  |  |
| 3 | 1 |  |  |
| 4 | 1 |  |  |
| 5 | 1 |  |  |
| 6 |  | 4 |  |
| 7 |  | 4 |  |
| 8.a |  |  | 12 |
| 8.b |  |  | 12 |
| **%** | **14%** | **22%** | **64%** |

**Bloom’s level Distribution:**

Prepared by: Scrutinised by:

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Verified and approved by HOD/ECE