Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **14EC2022** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MICROWAVE AND OPTICAL COMMUNICATION** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Recite the operation of directional coupler and derive its scattering matrix. | CO1 | 15 |
| b. | Recall waveguide bend. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Derive the S matrix for H plane tee. | CO1 | 15 |
| b. | Demonstrate on choke flanges. | CO1 | 5 |
|  |  |  |  |  |
| 3. |  | Recall the operation of two cavity klystron with functional diagram and applegate diagram. | CO3 | 20 |
| (OR) | | | | |
| 4. |  | Paraphrase the operation of high gain amplifier used in satellite communication. | CO3 | 20 |
|  |  |  |  |  |
| 5. |  | Summarize the procedure for measuring frequency, wavelength and impedance. | CO3 | 20 |
| (OR) | | | | |
| 6. |  | Elucidate the operating principle of READ diode with neat physical structure diagram and waveforms. | CO3 | 20 |
|  |  |  |  |  |
| 7. | a. | Enumerate the fundamental elements of optical fiber communication. | CO2 | 15 |
|  | b. | Identify two types of rays that can propagate through optical fiber. | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Describe the classification of optical fiber cables based on modes of transmission and refractive index profile with neat diagrams. | CO2 | 15 |
|  | b. | Calculate the numerical aperture and acceptance angle for an optical fiber of which the refractive index of core is 1.48 and refractive index of cladding is 1.46. | CO2 | 5 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9 | a. | Explain Surface Emitting LED and Edge Emitting LED. | CO2 | 15 |
|  | b. | What are the three basic processes in laser? | CO2 | 5 |

ALL THE BEST