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

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**End Semester Examination – Nov/Dec – 2018**

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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. | What are Tee junctions? Explain the working of E plane Tee with its S matrix. | CO1 | 8 |
| b. | Explain the construction and working of a Directional Coupler. Derive its Scattering matrix. | CO1 | 8 |
| c. | Write notes on matched terminations, corners, bends and twists. | CO1 | 4 |
| (OR) | | | |  |
| 2. | a. | Describe the working of a Magic Tee. Derive its S matrix. | CO1 | 8 |
| b. | Explain the construction and operation of a Circulator. Obtain its S matrix. | CO1 | 8 |
| c. | What is an Isolator? Give its S matrix. | CO1 | 4 |
|  |  |  |  |  |
| 3. | a. | What is velocity modulation? | CO2 | 4 |
| b. | Briefly explain the construction and working principle of a Two cavity Klystron amplifier. | CO2 | 16 |
| (OR) | | | |  |
| 4. | a. | Differentiate Linear beam tubes and cross field tubes. | CO2 | 6 |
| b. | Explain the construction and operation of a TWT amplifier. | CO2 | 12 |
| c. | List few applications of Magnetron oscillator. | CO2 | 2 |
|  |  |  |  |  |
| 5. | a. | What is Gunn effect? | CO2 | 4 |
| b. | Explain the operation of a Gunn diode. | CO2 | 16 |
| (OR) | | | |  |
| 6. | a. | What are avalanche transit time devices? Write notes on IMPATT diode. | CO2 | 8 |
| b. | What are parametric amplifiers? | CO2 | 4 |
| c. | With neat diagram, explain the high power measurement with the calorimetric method. | CO2 | 8 |
|  |  |  |  |  |
| 7. | a. | With a neat block diagram explain the optical fiber communication link. | CO3 | 10 |
| b. | List the advantages of optical communication. | CO3 | 4 |
| c. | Compare step index and graded index fibers. | CO3 | 6 |
| (OR) | | | |  |
| 8. | a. | Compare single mode and multimode fibers. | CO3 | 6 |
| b. | What are skew rays? | CO3 | 2 |
| c. | Discuss attenuation in optical fibers. | CO3 | 12 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the construction and working of an Edge emitting LED. | CO3 | 8 |
| b. | Compare LED and LASER diodes. | CO3 | 4 |
| c. | Explain the construction and operating principle of PIN photodiode. | CO3 | 8 |