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

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

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| **Code :** | **14PH1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **APPLIED PHYSICS** | **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. | Calculate the wavelength associated with an moving material particle like electron of 12.5eV energy. | CO1 | 4 |
| b. | Prove the existence of matter waves using Davisson and Germer experiment with necessary diagrams. | CO1 | 16 |
| (OR) | | | | |
| 2. | a. | What is a De-Broglie wave? Explain with an example. | CO1 | 4 |
| b. | State the fundamental assumptions made by Schrodinger and derive the Schrodinger time independent wave equation. | CO1 | 16 |
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| 3. | a. | Compare and contrast spontaneous and stimulated emission in laser. | CO1 | 4 |
| b. | Discuss different types of excitation mechanism in laser systems. Explain the working of He:Ne laser with lasing action in detail. | CO1 | 16 |
| (OR) | | | | |
| 4. | a. | Discuss the principle involved in recording a hologram. | CO1 | 4 |
| b. | Classify different types of lasers based on the active medium. Explain the working of Nd:YAG laser with its energy level diagram | CO1 | 16 |
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| 5. | a. | Calculate the numerical aperture of an optical fiber if the refractive indices for core and cladding are 2.2 and 1.95 respectively. | CO1 | 4 |
| b. | Briefly describe numerical aperture and acceptance angle in optical fibre. Derive the relation connecting these two paramters. | CO1 | 16 |
| (OR) | | | | |
| 6. | a. | Summarize different losses in optical fibre during transmission. | CO1 | 4 |
| b. | Classify optical fibre based on materials used and modes of transmission with diagram in detail. | CO1 | 16 |
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| 7. | a. | Define absorption co-efficient in acoustics. | CO1 | 4 |
| b. | State and explain any four factors affecting the acoustics of an auditorium. Discuss the remedies to overcome these problems. | CO1 | 16 |
| (OR) | | | | |
| 8. | a. | Differentiate magnetostriction and piezoelectric effect. | CO1 | 4 |
| b. | How ultrasonic waves are produced by magnetostriction oscillator. Discuss with a circuit diagram to find the frequency of these waves. | CO1 | 16 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | What is Meissner effect? How it is useful in superconductors. | CO1 | 4 |
| b. | Analyse the different properties of dia, para and ferro magnetic materials and tabulate with examples and applications. | CO1 | 16 |