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



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

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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. | Prove the wave nature of electrons using Davisson-Germer experiment. | CO1 | 14 |
| b. | What are matter waves? Mention any three of their properties. | CO1 | 3 |
| c. | Determine the De-Broglie wavelength of an electron accelerated by a potential difference of 500 V. | CO1 | 3 |
| (OR) | | | | |
| 2. | a. | Apply the schrodinger wave equation to a particle in one dimensional box. | CO1 | 14 |
| b. | State and explain Heisenberg uncertainty principle. | CO1 | 3 |
| c. | Write a short notes on scanning electron microscope. | CO1 | 3 |
| 3. | a. | Explain the construction and working of CO2 laser with relevant diagrams. | CO1 | 14 |
|  | b. | State the basic requirements to be satisfied for laser action | CO1 | 3 |
|  | c. | Explain the process of spontaneous emission. | CO1 | 3 |
| (OR) | | | | |
| 4. | a. | Describe the recording and reconstruction of process in hologram with the help of suitable diagram. | CO1 | 14 |
|  | b. | Discuss the applications of laser. | CO1 | 3 |
|  | c. | For semiconductor laser the bandgap energy is 1.28 x 10-19J. Calculate the wavelength of the light emitted from it. | CO1 | 3 |
| 5. | a. | Describe the classification of optical fibers based on number of modes and refractive index profile with necessary diagrams. | CO1 | 14 |
|  | b. | Define total internal reflection. | CO1 | 3 |
|  | c. | Find the numerical aperture of an optical fibre having core refractive index of 1.5 and cladding refractive index of 1.48. | CO1 | 3 |
| (OR) | | | | |
| 6. | a. | Write an essay about the working of optical fibre communication | CO1 | 14 |
|  | b. | Distinguish glass and plastic optical fibre. | CO1 | 3 |
|  | c. | List any four application of optical fibre. | CO1 | 3 |
| 7. | a. | Explain the various factors affecting the acoustics of a building and their remedy. | CO1 | 14 |
|  | b. | Calculate the reverberation time of a hall with volume 2000 m3 and total absorption of 100 m2 sabine. | CO1 | 3 |
|  | c. | What is meant by loudness? | CO1 | 3 |
| (OR) | | | | |
| 8. | a. | Define Magnetostriction effect. Explain the production of ultrasonic waves using Magnetostriction oscillator method with neat sketch. | CO1 | 14 |
|  | b. | What is acoustical grating? | CO1 | 3 |
|  | c. | Write about the application of ultrasonic waves. | CO1 | 3 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Distinguish the properties of dia, para and ferro magnetic materials. | CO1 | 14 |
|  | b. | Write a short note on hard magnetic materials. | CO1 | 3 |
|  | c. | What are superconductors? Write any two properties of superconductors. | CO1 | 3 |