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



**End Semester Examination – Nov/Dec– 2019**

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| **Code :** | **18PH1003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ENGINEERING PHYSICS - SEMICONDUCTORS AND OPTICS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Course**  **Outcome** | **Marks** |
|  | **PART-A (10X1=10 MARKS)** | | |
| 1. | Mention an example for crystalline solid. | CO1 | 1 |
| 2. | Expand LED. | CO1 | 1 |
| 3. | The function of inverting terminal in an op-amp is \_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 4. | Mention any one difference between monolithic IC and hybrid IC. | CO1 | 1 |
| 5. | The universal gates are \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 6. | Illustrate the circuit symbol of JFET. | CO1 | 1 |
| 7. | Speed of light in vacuum is the same for all wavelengths. True/False | CO1 | 1 |
| 8. | \_\_\_\_\_\_\_\_\_ is used to transform unpolarized light to polarized light. | CO1 | 1 |
| 9. | Expand LASER. | CO1 | 1 |
| 10. | The two types of material based on which the optical fiber cables are classified are \_\_\_\_ and \_\_\_\_. | CO1 | 1 |

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| **PART B (6 X 3= 18 MARKS)** | |  |  |
| 11. | Briefly classify the two types of semiconductors. | CO2 | 3 |
| 12. | Mention the characteristics of an ideal op-amp. | CO2 | 3 |
| 13. | Show OR and NOT logic gates with truth table. | CO2 | 3 |
| 14. | State Huygens’s principle. | CO2 | 3 |
| 15. | Define population inversion. | CO2 | 3 |
| 16. | Draw and label the parts of an optical fiber cable. | CO2 | 3 |

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| **PART C (6 X 12= 72 MARKS)**  **(Answer any five Questions from Q.no 17 to 23. Q.No 24 is a Compulsory Question)** | | | |
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| 17. | Explain the working of a tunnel diode and discuss its application. | CO3 | 12 |
| 18. | Discuss in detail about the steps involved in the fabrication of monolithic IC. | CO4 | 12 |
| 19. | Illustrate the differences between the operation of JFET and MOSFET with necessary diagrams. | CO6 | 12 |
| 20. | Explain with a neat diagram the Fraunhofer’s diffraction at a single slit and obtain the intensity distribution curve. | CO3 | 12 |
| 21. | Demonstrate the construction and working of Nd-YAG laser with essential figures. | CO5 | 12 |
| 22. | How the p-n junction is formed? Investigate the action of p-n junction diode under forward and reverse bias. | CO3 | 12 |
| 23. | Construct the He-Ne laser and clarify the working of it using energy level diagram. | CO5 | 12 |
| **Compulsory:** | | |  |
| 24. | Differentiate optical fiber cable based on the mode of propagation of light. | CO2 | 12 |