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



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

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| **Code :** | **18EC2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRONIC DEVICES** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
| **PART – A (10X1 = 10 MARKS)** | | | |
| 1. | Define intrinsic semiconductor and state the reason for non suitability for constructing electronic devices. | CO1 | 1 |
| 2. | Relate the effect of temperature on semiconductor conductivity. | CO2 | 1 |
| 3. | List the applications of PN diode. | CO2 | 1 |
| 4. | Find the relationship between level of doping and depletion width. | CO2 | 1 |
| 5. | Find the value of β, if a transistor has a α of 0.97. | CO3 | 1 |
| 6. | Define early effect. How can it account for the CB configuration? | CO3 | 1 |
| 7. | Which device is called as voltage controlled device? | CO4 | 1 |
| 8. | Define channel length modulation. | CO5 | 1 |
| 9. | Define latching current. | CO6 | 1 |
| 10. | Name the materials used to construct LED. | CO6 | 1 |

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| **PART – B (6 X 3 = 18 MARKS)** | | | |
| 11. | Show the energy band diagram of conductor, semiconductor and insulator. | CO1 | 3 |
| 12. | Distinguish between transition and diffusion capacitance. | CO2 | 3 |
| 13. | Show the Ebers –Moll transistor circuit model. | CO3 | 3 |
| 14. | Compare JFET with MOSFET. | CO4 | 3 |
| 15. | List the applications of LASER diode. | CO5 | 3 |
| 16. | Outline the concepts of solar cell. | CO6 | 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)** | | | | |
| 17. |  | Summarize the continuity equation for holes in the body of a semiconductor as function of time and distance. | CO1 | 12 |
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| 18. | a. | Explain the construction and working principle of pn diode and plot the  V-I characteristics. | CO2 | 8 |
| b. | List the properties of semiconductor. | CO2 | 4 |
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| 19. | a. | The transistor has IE=10mA and α=0.96. Find the value of IB and IC. | CO3 | 4 |
| b. | Discuss the input and output characteristics of CE configuration. | CO3 | 8 |
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| 20. |  | Explain in detail about the working of MOS Capacitor with its energy band diagrams. | CO4 | 12 |
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| 21. | a. | Explain the construction, operation and volt ampere characteristics of tunnel diode. | CO4 | 8 |
| b. | Explain the principle behind the Schottky barrier diode with a neat sketch. | CO5 | 4 |
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| 22. |  | Explain the construction, working principle of JFET and infer the relationship between the applied voltage and current generated in the circuit. | CO5 | 12 |
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| 23. |  | Discuss the constructional features of different types of power MOSFET. | CO6 | 12 |
|  |  | **Compulsory:** |  | |
| 24. | a. | Explain in detail the construction, equivalent circuit, working and characteristics of SCR. | CO6 | 8 |
| b. | Demonstrate the working principle of photo transistor. | CO6 | 4 |