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



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

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| **Code :** | **18EC2001(For Media Students only)** | 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. | Mention the operating voltage of Germanium based pn junction diode. | CO1 | 1 |
| 2. | Sketch the forward bias characteristics graph for pn diode. | CO1 | 1 |
| 3. | If β is 250, calculate current gain α for a given transistor. | CO1 | 1 |
| 4. | Define input impedance for a CE configured transistor | CO1 | 1 |
| 5. | Draw the circuit symbol for N channel depletion mode MOSFET | CO2 | 1 |
| 6. | State the significance of pinch off voltage in JFET. | CO2 | 1 |
| 7. | List out the applications of laser diode. | CO4 | 1 |
| 8. | Why is schottky diode also known as hot diode? | CO4 | 1 |
| 9. | Expand SCR | CO5 | 1 |
| 10. | State the working principle of solar cell | CO6 | 1 |

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|  | **PART B (6 X 3= 18 MARKS)** | | |
| 11. | Derive the current equation for a forward biased pn junction diode. | CO1 | 3 |
| 12. | Analyze the switching behaviour of a transistor with the help of neat circuit diagram and a suitable real world application. | CO2 | 3 |
| 13. | Brief on transfer and drain characteristics of JFET with neat graph sketches. | CO2 | 3 |
| 14. | Write a short note on MOS capacitor. | CO3 | 3 |
| 15. | Interpret and explain the application of DIAC-TRIAC combination in controlling high voltage Audio appliances with neat circuit diagram. | CO5 | 3 |
| 16. | Brief on advantages and disadvantages of photo transistor in comparison with photo diode. | CO4 | 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. | a. | With neat diagram explain the concept of Hall effect and derive the expression for Hall voltage. | CO1 | 12 |
| 18. | a. | Sketch and elaborate on various operating regions of a transistor and with a neat labeled circuit diagram describe the application of a transistor as an amplifier for audio signals. | CO2 | 12 |
| 19. | a. | Explain in detail with neat circuit diagram the working of MOSFET as an amplifier in audio mixer circuits. Derive the gain expression for the same. | CO3 | 12 |
| 20. | a. | Differentiate between diode and Schottky barrier diode by means of the I-V characteristics curves. Explain in detail on working principles and applications of schottky barrier diode in logic gates and clamped transistors circuits. | CO2 | 12 |
| 21. | a. | What is meant by tunnel diode? Briefly explain the working principle and derive the expressions for current component, peak current and peak voltage. List out the advantages and disadvantages for the same. | CO4 | 12 |
| 22. | a. | Describe the conditions required for a transistor to act like a switch.A house owner faces a critical problem every day morning related to water tank overflow in the absence of an alert system. Design a simple circuit with 3 indicators (Full-Half-Empty) as an overflow alert system for the house owner using transistor-switch concept. | CO3 | 12 |
| 23. | a. | Write short notes on the following  (i) Energy band diagram  (ii) Temperature dependency  (iii) Avalanche breakdown | CO2 | 12 |
|  | **Compulsory:** | | | |
| 24. | a. | Expand SCR and state its working principle.Assuming the SCR to be as a studio light dimmer,Explain briefly on the following with neat circuit diagrams  (i) SCR operation for light dimmer  (ii) SCR forward and reverse characteristics  (iii) SCR 180 degrees phase controlled circuit. | CO6 | 12 |