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

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

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| **Code :** | **17EC2072** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRON DEVICES AND CIRCUITS** | **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. | Discuss about drift and diffusion currents in semiconductors. | CO1 | 12 |
| b. | Draw the energy band structure of conductors, insulators & semiconductors. | CO1 | 6 |
| c. | Differentiate between intrinsic and extrinsic semiconductor | CO1 | 2 |
| (OR) | | | |  |
| 2. | a. | Explain electron hole generation and recombination in semiconductors. | CO1 | 12 |
| b. | With neat diagram explain Hall effect. | CO1 | 6 |
| c. | Define conductivity. | CO1 | 2 |
|  |  |  |  |  |
| 3. | a. | Explain the operation of PN junction under forward bias condition. | CO1 | 12 |
| b. | Discuss in detail transition and diffusion capacitance of PN junction. | CO1 | 6 |
| c. | Give the diode current equation. | CO1 | 2 |
| (OR) | | | |  |
| 4. | a. | Explain the IO characteristics of a transistor in CE configuration. | CO3 | 12 |
| b. | Compare CE, CB, CC configurations of BJT. | CO3 | 6 |
| c. | Why BJT is called current controlled device? | CO1 | 2 |
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| 5. | a. | Explain the operation of Zener diode and how it is used as a voltage regulator. | CO1 | 12 |
| b. | Compare Schottky diode and conventional diode. | CO1 | 6 |
| c. | What is zener breakdown? | CO1 | 2 |
| (OR) | | | |  |
| 6. | a. | Explain the operation of tunnel diode and draw its equivalent circuit. | CO1 | 12 |
| b. | Explain the operation of Varactor diode. | CO1 | 6 |
| c. | State the principle of operation of an LED. | CO1 | 2 |
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| 7. | a. | Describe the working principle of full wave rectifier and derive the expressions for the ripple factor, efficiency, VDC , IRMS, ILmax & VRMS. | CO1 | 14 |
| b. | Compare the performance of half-wave and full-wave rectifier. | CO2 | 4 |
| c. | What are the advantages of Bridge rectifier? | CO2 | 2 |
| (OR) | | | |  |
| 8. | a. | Explain the operation of series voltage regulator. | CO2 | 12 |
| b. | Draw the circuit diagram of full wave rectifier with capacitor and inductor filters separately and explain their operations. | CO2 | 6 |
| c. | Define load regulation and line regulation. | CO2 | 2 |
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|  | | **Compulsory:** |  |  |
| 9. | a. | With neat circuit diagram explain the operation of RC phase shift oscillator and derive the expression for its frequency of oscillation. | CO2 | 14 |
| b. | State the advantages of class B push pull amplifier. | CO4 | 3 |
| c. | What is the necessary condition for sustained oscillation? | CO4 | 3 |