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

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

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| **Code :** | **16EC2004** | **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. | Explain the operation of PN junction diode with necessary diagrams. | CO1 | 15 |
| b. | List any five applications of PN junction diode. | CO1 | 5 |
| (OR) | | | | |
| 2. |  | Elaborate the operation of Zener diode with VI characteristics and justify that it can be used as voltage regulator. | CO1 | 20 |
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| 3. | a. | Discuss the characteristics of common emitter configuration of BJT. | CO1 | 15 |
| b. | The collector leakage current in a transistor is 300 µA in common emitter arrangement. If now the transistor is connected in common base arrangement, what will be the leakage current? Given that β=120. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Explain the principle and working of n-channel JFET. | CO1 | 15 |
| b. | Compare JFET and BJT. | CO1 | 5 |
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| 5. | a. | Derive the stability factor of fixed biasing BJT amplifier. | CO2 | 15 |
| b. | Point out the necessity of transistor biasing.  Identify a biasing configuration of BJT which provides good stability. Why? | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Explain the single ended input differential amplifier with neat circuit diagram. | CO2 | 15 |
| b. | A differential amplifier has a differential voltage gain of 200 and a common mode gain of 0.2. Calculate Common Mode Rejection Ratio (CMRR) and express it in dB. | CO2 | 5 |
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| 7. | a. | Summarize the operation of single tuned amplifier with neat circuit diagram and frequency response curve. | CO2 | 15 |
| b. | A tuned amplifier has parallel LC circuit. One branch of this parallel circuit has a capacitor of 100 pF and the other branch has an inductance of 1mH plus a resistance of 25Ω.  Find   1. the resonance frequency. 2. Q of the tank circuit. | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Show that the efficiency of series fed class A amplifier is 25%. | CO2 | 15 |
| b. | For a Class B amplifier with VCC=25 V driving an 8Ω load,  Determine the following:   1. Maximum input power. 2. Maximum output power. 3. Maximum circuit efficiency. | CO2 | 5 |
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|  | | **Compulsory**: |  |  |
| 9. |  | Derive the frequency of oscillation in RC phase shift oscillator. | CO3 | 20 |