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



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

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| **Code :** | **14EC2006** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRONIC 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. | For a full wave rectifier, voltage between center tap and secondary terminal is 20V. Load resistance is 500Ω and diode forward resistance is 20Ω. Find  i) DC current(Idc)  ii) DC output voltage(Vdc)  iii) RMS Current(Irms)  iv) Efficiency(η)  v) Ripple factor(Γ) | CO1 | 15 |
| b. | Calculate the value of capacitance in a capacitor filter connected to a FWR operating at a aircraft power frequency of 800 HZ, if the ripple factor is 5% for a load of 500Ω. | CO1 | 5 |
| **(OR)** | | | | |
| 2. | a. | Explain the operation of transistorized series voltage regulator with neat circuit diagram and derive the output voltage expression. | CO1 | 15 |
| b. | Discuss the short circuit protection mechanism in voltage regulator circuit. | CO1 | 5 |
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| 3. | a. | Consider a BJT amplifier which is operating in the voltage divider bias configuration; determine the dc bias voltage IB , IC and VCE. Given VCC = 22V, R1 = 40kΩ, R2 = 3.8kΩ, RC = 10kΩ,RE = 1.5kΩ, CE = 60μf, Cin = 40μF, β = 140. | CO2 | 15 |
| b. | Derive the expression for collector current IC for the collector –base biased BJT with neat circuit diagram. | CO1 | 5 |
| **(OR)** | | | | |
| 4. | a. | Derive the expression for base current IB, collector current IC and the collector emitter voltage VCE for a fixed bias BJT network. Also define the procedure to fix the Q point using dc load line analysis. | CO1 | 15 |
| b. | Determine the following for the fixed bias FET configuration.  i) VGSQ ii) IDSQ. Given VDD=8V, RD=1kΩ, RG=1MΩ, VGG= **-**2V, IDSS=10mA and VP= **-**4V. | CO2 | 5 |
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| 5. | a. | Discuss the operation and frequency response of RC coupled amplifier with neat circuit diagram. | CO1 | 15 |
| b. | Write the functions of the following capacitors in Single stage amplifier.  i) Bypass Capacitor  ii) Coupling Capacitor  iii) Blocking Capacitor. | CO1 | 5 |
| **(OR)** | | | | |
| 6. | a. | Prove that the maximum efficiency of class B amplifier is 78.5%. | CO2 | 15 |
| b. | Write short notes on class D power amplifier. | CO2 | 5 |
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| 7. | a. | Draw the block diagram of Voltage Shunt feedback amplifier  and derive  its gain, input impedance and output impedance.https://ssl.gstatic.com/ui/v1/icons/mail/images/cleardot.gif | CO3 | 15 |
| b. | Point out the features of negative feedback amplifier. | CO3 | 5 |
| **(OR)** | | | | |
| 8. | a. | Find the expression of gain, input impedance and output impedance in current series feedback amplifier. | CO3 | 15 |
| b. | List out the significance of negative feedback amplifier. | CO3 | 5 |
|  | | **Compulsory**: |  |  |
| 9. |  | Derive the frequency of oscillation for RC phase shift oscillator. | CO3 | 20 |