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

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

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| **Code :** | **14EC2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PULSE AND WAVE SHAPING 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. | Mention the basic single-section RC high-pass circuit and explain how this circuit respond to a step input. | CO1 | 15 |
| b. | A 10 kHz square wave applied to a high pass RC circuit produces the output with a tilt of 3.8%. Calculate the lower 3dB frequency of the circuit. Determine the value of the resistance if the circuit uses a capacitor of 0.47 microfarad. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Obtain the response of a low-pass filter for a square wave input using related mathematical expressions and sketch the related graphs clearly. | CO1 | 15 |
| b. | Prove that, for any periodic input waveform, the average level of the steady-state output signal from the high-pass RC circuit is always zero. | CO1 | 5 |
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| 3. | a. | Describe the working of the series clipper and parallel clipper with biasing. | CO1 | 15 |
| b. | Give the statement and mathematically prove clamping-circuit theorem. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Distinguish between clipper and clamper. Explain negative and positive clamper with proper circuit diagrams. | CO1 | 15 |
| b. | Identify the problem associated with uncompensated attenuator when it is connected in a circuit and explain how it can be overcomed. | CO1 | 5 |
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| 5. | a. | In a fixed-bias transistor binary circuit using NPN silicon transistors, Vcc=12V, -Vbb= -12V, Rc=2kΩ, R1=10kΩ, R2=47kΩ, hfe(min)=20. Assume Vce(sat)=0.1V, Vbe(sat)=0.7V. Calculate the steady state voltages and currents in the circuit. | CO2 | 15 |
| b. | Write short notes about the importance and functioning of Commutating Capacitors used in bistablemultivibrator. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Identify the circuit which can be used for amplitude comparison. Explain in detail with proper circuit diagram and waveform. | CO2 | 15 |
| b. | Differentiate symmetrical and unsymmetrical triggering method. | CO2 | 5 |
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| 7. |  | Explain the operation of collector coupled astablemultivibrator with neat circuit diagram and waveform. Derive the time period expression of transistor based collector coupled astablemultivibrator. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Explain neatly the circuit diagram used to generate exponential sweep waveform and derive the mathematical relationship between slope error, displacement error and the transmission error for an exponential waveform. | CO2 | 20 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Explain miller sweep circuit and obtain the expression for slope error. | CO3 | 15 |
| b. | Write short notes on blocking oscillator. | CO3 | 5 |