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



**End Semester Examination – Nov/Dec– 2017**

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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. |  | Elaborate the output response of a high-pass RC circuit for a square wave input by considering different time constant. Also, calculate the percentage of tilt for a symmetrical square wave. | | CO1 | 20 |
| (OR) | | | | | |
| 2. | a. | A step input of 10V when applied to the low pass RC circuit produces the output with a rise time of 200microsec. Calculate the cutoff frequency of the circuit. | | CO1 | 4 |
| b. | With a neat sketch, explain the low pass RC network response to ramp input. | | CO1 | 16 |
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| 3. | a. | Indicate the problem associated with uncompensated attenuator when it is connected in a circuit.Arrive at the balanced bridge condition R1C1=R2C2 for perfect compensation. | | CO1 | 8 |
|  | b. | Sketch and describe the operation of the following clamping circuits.   1. Negative Clamper 2. Positive Clamper | | CO1 | 12 |
| (OR) | | | | | |
| 4. | a. | Sketch the output waveform of the biased limiting circuit shown below for the given square wave input. | | CO1 | 5 |
|  | b. | Sketch and describe the operation of the following clipping circuits.   1. Positive clipper with bias 2. Negative clipper with bias | | CO1 | 15 |
|  |  |  | |  |  |
| 5. |  | Discuss the operation of Schmitt Trigger with neat circuit diagram and explain how it is used as a sine to square waveconverter. Also, mention it’s applications. | | CO2 | 20 |
| (OR) | | | | | |
| 6. | a. | Calculate the stable state currents and voltages for the fixed bias bistable multivibrator circuit which uses npn silicon transistors. The component values of the circuit are Vcc=+5V, -VBB=-5V, R1=6.8kΩ, R2 =47kΩ, RC =1.2kΩ. Assume VCE(sat) =0.2V and VBE(sat) =0.7V. | | CO2 | 15 |
|  | b. | Find the pulse repetitive frequency of a symmetrical collector coupled astable multivibrator using two npn Si transistor with R=12k and C=130pF. | | CO2 | 5 |
|  |  |  | |  |  |
| 7. | a. | Differentiate between different types of Multivibrator. | | CO2 | 5 |
|  | b. | Sketch neatly the circuit diagram of collector-coupled astable multivibrator and explain its operation with necessary waveforms. | | CO2 | 15 |
| (OR) | | | | | |
| 8. | a. | Draw neatly the circuit diagram used to generate exponential sweep  waveform and derive the mathematical relationship between slopeerror, displacement error and the transmission error for an exponential waveform. | CO2 | | 15 |
|  | b. | List some features of voltage time base signal. | CO2 | | 5 |
|  | |  |  | |  |
|  | | **Compulsory**: |  | |  |
| 9. | a. | Illustrate miller sweep circuit and obtain the expression for slope  error. | CO2 | | 15 |
|  | b. | List the applications of blocking oscillator and sampling gates. | CO2 | | 5 |

ALL THE BEST