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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May– 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. | a. | Derive the expression for the output of a high pass RC circuit excited by ramp input. | CO1 | 15 |
| b. | Show that for any periodic input waveform, the average level of the steady state output waveform of the RC high pass circuit is always zero independent of the dc level of the input. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Identify a linear waveshaping circuit which generates triangular waveform when the time constant of the circuit(RC) is greater than time period of the input signal(T). With neat circuit diagram, explain the operation of that circuit and derive the ouput voltage expression. | CO1 | 15 |
| b. | Show that a low pass filter with a large time constant acts as an integrator. | CO1 | 5 |
| 3. | a. | Judge the effect of stray capacitance in the attenuator circuit. Arrive at the balanced bridge condition R1C1=R2C2 for perfect compensation by sketching the attenuator as a bridge. | CO1 | 15 |
|  | b. | With neat circuit diagram,illustrate the operation of series negative clipper with bias and draw the transfer characteristics. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Sketch and describe the operation of the following clamping circuits.  i)Negative Clamper  ii)Positive Clamper | CO1 | 15 |
|  | b. | For the given input, sketch the output of the following two level clipping circuit. | CO1 | 5 |
| 5. | a. | Explain the operation of monostable multivibrator with neat circuit diagram and necessary waveforms. | CO2 | 15 |
|  | b. | Compare and contrast the different types of multivibrator. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | The fixed bias bistable multivibrator circuit which uses npn silicon transistors. The component values of the circuit are Vcc= +5 V, -VBB = -5V, R1=3.9 KΩ, R2 =18 KΩ, RC =1 KΩ. Assume VCE(sat) =0.25V and VBE(sat) =0.87 V. Calculate the stable state currents and voltages in the circuit. | CO2 | 15 |
|  | b. | Write short notes on commutating capacitor. | CO2 | 5 |
| 7. | a. | Sketch neatly the circuit diagram of collector-coupled astablemultivibrator and explain its operation with necessary waveforms. | CO2 | 15 |
|  | b. | Determine the pulse repetitive frequency of a symmetrical collector-coupled astablemultivibrator using two npn Si transistor with R=21KΩ and C=69pF. | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Sketch 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 | 15 |
|  | b. | Point out some features of voltage time base signal. | CO2 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the operation of miller sweep circuit and obtain the expression for slope error. | CO2 | 15 |
|  | b. | Describe the operating principle of sampling gate and list its applications. | CO2 | 5 |

ALL THE BEST