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 – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EC2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PULSE AND WAVESHAPING 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. | With neat circuit diagram and waveforms, explain the response of high pass RC filter to ramp input and step input. | CO1 | 15 |
| b. | Justify that High Pass RC circuit acts as an Differentiator. Derive the necessary conditions for the same. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | With neat circuit diagram and waveforms, explain the response of high pass filter to square wave input and find out the percentage of tilt. | CO1 | 15 |
| b. | For a high pass RC circuit, it is desired to pass a 2ms ramp signal with 0.5 transmission error. Determine the highest possible value of the lower 3-dB frequency. | CO1 | 5 |
| 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 by sketching the attenuator as a bridge. | CO1 | 8 |
| b. | Sketch and describe the operation of the series and parallel positive clipping circuits with bias. | CO1 | 12 |
| (OR) | | | | |
| 4. | a. | With an example, explain the working of positive and negative clamper. | CO1 | 15 |
| b. | A sinusoidal waveform of 10v peak-to-peak is applied to the circuit shown below. Sketch the output waveform. (Consider T=10ms, Ref voltage, V=3v) | CO3 | 5 |
| 5. | a. | Differentiate multivibrator and oscillator. List different types of multivibrator and provide a comparison between them. | CO2 | 6 |
| b. | Discuss the operation of Schmitt trigger with neat circuit diagram and explain how it is used as a sine to square wave converter. | CO2 | 14 |
| (OR) | | | | |
| 6. | a. | Identify the multivibrator that can be used as a memory element in digital circuits. With neat diagrams, explain its operation and characteristics. | CO2 | 13 |
| b. | Write short notes on different triggering methods of Bistable Multivibrator. | CO2 | 7 |
| 7. | a. | Compute the voltage levels for a collector coupled monostable multivibrator whose components and supply voltage levels are given as follows.VCC=6v, -VBB= -1.5v, collector resistance Rc =1KΩ, timing resistance R=10KΩ, R1=10KΩ, R2=20KΩ. Here silicon transistors are used with hFE =30, VCE(sat)=0.3v, VBE(sat) =0.7v. | CO3 | 6 |
|  | b. | Describe the exponential sweep circuit with neat circuit diagram and derive the mathematical relationship between slope error, displacement error and the transmission error for an exponential waveform. | CO2 | 14 |
| (OR) | | | | |
| 8. | a. | Explain the operation of free running multivibrator with neat circuit diagram and waveforms. | CO2 | 14 |
| b. | Derive the time period expression of transistor based collector coupled astable multivibrator. | CO2 | 6 |
|  | | **Compulsory:** |  |  |
| 9. | a. | With neat diagrams, explain Miller sweep circuit and obtain the expressions for slope error. | CO2 | 15 |
| b. | Write short notes on sampling gate and list some of its applications. | CO2 | 5 |

ALL THE BEST