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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

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

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **EE245** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **Electric Circuits** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | Calculate the voltage across the terminals A and B for the network given below.  voltage source | (1) |
| 2. | Calculate the value of ‘i’ for the network given below.  current source in series | (1) |
| 3. | A sinusoidal voltage v=100 sin 314t is applied to a RLC circuit. Calculate the maximum supply voltage. | (1) |
| 4. | The value of form factor of sinusoidal waveform is …………….. | (1) |
| 5. | Mesh analysis can be used for planner and non-planner circuits. Say True or False | (1) |
| 6. | Define Mesh. | (1) |
| 7. | Thevenin’s theorem is applicable for non-linear circuits also. Say True or False | (1) |
| 8. | What is the condition for maximum power transfer between source and load in a dc circuit? | (1) |
| 9. | Which resonating circuit is also called as tuned circuit? | (1) |
| 10. | In a series resonance circuit, the half power frequencies are 117KHz and 192KHz respectively. Calculate the bandwidth of the circuit. | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | For the network given in figure, the star equivalent values are P=Q=R=2Ω. Calculate the Delta equivalent values A, B and C.  star delta transformation | (3) |
| 12 | A 50Hz sinusoidal voltage v=311 sin ωt is applied to a RL circuit. If the magnitude of resistance is 5Ω and inductance 0.02H, Calculate impedance magnitude of the circuit. | (3) |
| 13 | What is super mesh? What are the properties of super mesh? | (3) |
| 14 | Define Norton’s Theorem. Draw the Norton’s equivalent circuit. | (3) |
| 15 | What are the properties of resonance of RLC parallel circuit? | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | Determine the current flowing through all the branches of the circuit given below.  7-7 | (15) |
| (OR) | | | |
| 17. | a. | Find the equivalent resistance, Rab for the following resistor combination circuit. | (15) |
| 18. | a. | Obtain the expression for the average value and rms value of alternating sinusoidal wave  *v*=Vm sin ωt | (15) |
| (OR) | | | |
| 19. | a. | A series RLC circuit has R=10Ω, L=100mH, C=1000μF. A 100V, 50Hz supply is applied across the circuit. Find the input current and voltage across each elements. | (15) |
| 20. | a. | Use mesh analysis to find the currents *I*1,  *I*2, and *I*3 in the circuit. | (15) |
| (OR) | | | |
| 21. | a. | Determine the current flowing through 2 ohm resistance using nodal method. | (15) |
| 22. | a. | Find the current in the 2 Ω resistor of the circuit shown in Figure using the principle of  superposition.  superposition7 | (15) |
| (OR) | | | |
| 23. | a. | Find the value of load resistance RL in the circuit given in Figure which leads to the production of maximum power in RL using Thevenin’s theorem. Also find the value of this maximum power. | (15) |
| 24. | a. | Determine the value of R for resonance in the circuit shown in figure. | (15) |
| (OR) | | | |
| 25. | a. | Obtain the expression for the frequency of resonance, Q-factor and Bandwidth of Series RLC circuit. | (15) |

ALL THE BEST