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 :** | **14EE2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRIC CIRCUITS AND NETWORKS** | **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. | Find the total current flow in the circuit and give their equivalent resistance for the circuit given below. (all values are in ohms) | CO1 | 15 |
| b. | From the circuit given below, find the current I and voltage drop across 30Ω.  (all resistance are in ohms) | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Derive Star to Delta transformation with its diagram | CO1 | 5 |
| b. | Find the total current I flowing into the circuit using delta-star or star-delta transformation (all resistance are in ohms) | CO1 | 15 |
| 3. | a. | Verify the reciprocity theorem across the terminals for the network shown. VS=20V , R1=2Ω , R2=2Ω , R3=3Ω , R4=2Ω & R5=2Ω. | CO3 | 12 |
|  | b. | Derive Maximum Power Transfer theorem and obtain the maximum power delivered to the load and prove RL=RS | CO3 | 8 |
| (OR) | | | | |
| 4. | a. | Find the node voltages for the given circuit | CO1 | 15 |
|  | b. | How to solve the supermesh analysis and explain with suitable example and steps. | CO1 | 5 |
| 5. | a. | A three phase balanced delta load connected to load (4+j8)Ω is connected across a 400V, three phase balanced supply. Determine the phase currents and line currents and voltage drop across the impedances. Also calculate the power drawn by the load. | CO3 | 15 |
|  | b. | Two coupled coils of L1 = 0.9H and L2 = 0.4H have a coupling co-efficient K = 0.8. Find the Mutual inductance M. | CO3 | 5 |
| (OR) | | | | |
| 6. | a. | What is the bandwidth of the circuit?  http://www.indiabix.com/_files/images/basic-electronics/complete/mcq9_1013_1.gif | CO2 | 10 |
|  | b. | What is the range between f1 and f2 of an RLC circuit that resonates at 150 kHz and has a Q of 30? | CO2 | 10 |
| 7. |  | Using S-domain analysis for the circuit having Vs=3/s+1, R1=12 ohm, L=8s, C=3/s , R2=10ohm. Find VTin terms of time domain. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Derive the current expression for R-C series circuit when sinusoidal excitations are appliedthrough a switch at t = 0. Find (i) the equation for the current and time constant (ii) also calculate the voltage drops and power across each components. | CO2 | 14 |
|  | b. | Plot the poles and zeros for the given network function  N(s)=(s+2)(s+3)/s(s+4) also justify whether the network is stable are not | CO2 | 6 |
|  | | **Compulsory:** |  |  |
| 9. |  | Determine the short circuit admittance parameters of the network given below.  C:\Users\ALFRED KIRUBARAJ\Desktop\ECA_CBCS\p_2\3_4.png | CO3 | 20 |

ALL THE BEST