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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 :** | **EE246** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **NETWORK THEORY** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | What is the relation between phase voltage and line voltage in the star connected load? | (1) |
| 2. | What are the conditions for the balanced 3 phase system? | (1) |
| 3. | Write the relation between k, M, L1 and L2. | (1) |
| 4. | List the application of tuned circuits. | (1) |
| 5. | The time constant for RL circuit is \_\_\_\_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 6. | Classify the different types of attenuators. | (1) |
| 7. | Write the condition of symmetry for h-parameters. | (1) |
| 8. | The difference between the half-power frequencies is called the \_\_\_\_\_\_\_\_\_\_\_\_\_ bandwidth / cutoff frequency. | (1) |
| 9. | Is the polynomial P(S) = S4+2S3+2S2+6S+10 a Hurwitz polynomial? | (1) |
| 10. | The impedance function at infinity is always greater than the impedance function at zero. (True / False). | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | In a balanced 3 phase system, power is measured by 2 wattmeters and the ratio of wattmeter reading is 2:1. Determine the power factor of the system. | (3) |
| 12 | What are the three important properties of an ideal transformer? | (3) |
| 13 | Find vo(t) in the circuit in Figure, assuming zero initial conditions. | (3) |
| 14 | Differentiate Bandpass, Bandstop filters. | (3) |
| 15 | What are the properties of Hurwitz polynomial? | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. |  | Derive the expressions for three phase reactive power and power factor using two watt meter method for star connected load. | (15) |
| (OR) | | | |
| 17. |  | A delta connected load has following impedances. ZRY=j10Ω, ZYB= 10∠0 Ω,  ZBR=-j10Ω. If the load is connected across a three phase 100V supply, obtain the line currents and total power consumed by the load. | (15) |
| 18. |  | Explain and derive the condition for maximum output voltage and maximum amplification of a single tuned circuit. | (15) |
| (OR) | | | |
| 19. |  | Find the loop currents and branch currents for the circuit shown below.  C:\Users\Admin\AppData\Local\Microsoft\Windows\INetCache\Content.Word\1.jpg | (15) |
| 20. |  | Derive the expressions of complete solutions of RLC series circuit when it is excited by a step voltage sources. | (15) |
| (OR) | | | |
| 21. |  | At t = 0, switch S1 in Figure is closed, and switch S2 is closed 4 s later. Find i(t) for t > 0. Calculate i for t = 2 s and t = 5 s. | (15) |
| 22. |  | Find the transmission parameters for the circuit in the figure using interconnection of two networks concept. | (15) |
| (OR) | | | |
| 23. | a. | Design a low pass filter (T) having a cutoff frequency of 2 kHz to operate with a terminated load resistance of 500 Ω. | (8) |
| b. | Design an m-derived low pass filter (only T section) having cut off frequency of 1 kHz, design impedance of 400 Ω, and the resonant frequency 1100 Hz. | (7) |
| 24. |  | Check the following polynomials for Hurwitz and give the reasons.  a. .  b. .  c. . | (15) |
| (OR) | | | |
| 25. |  | The driving point impedance of a one port reactive network is given by  Z(s) = . Obtain the first and second Foster networks. | (15) |

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