Code No: **R201213** **R20** **SET - 1**

I B. Tech II Semester Supplementary Examinations, Jan/Feb-2024

NETWORK ANALYSIS

(Common to ECE, EIE, ECT)

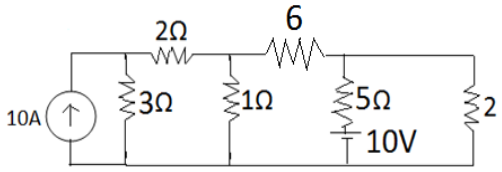
Time: 3 hours Max. Marks: 70

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

~~~~~~

UNIT - I

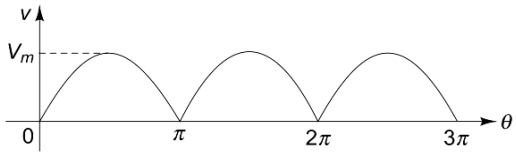
1 a) Determine the voltage across various elements of the circuit shown below by node analysis. [7M]



b) A resistance R in series with a capacitor C is connected to 50 Hz, 240V, AC Supply. (i) Find the value of C so that R absorbs 300W at 100V. (b) Find the maximum charge and the maximum stored energy in C. [7M]

(OR)

2 a) Find the average value and rms value of the waveform shown in below Figure. [7M]



b) Define Tie Set and also discuss how to obtain Tie Set Matrix with a suitable example. [7M]

UNIT-II

3 a) Discuss the Transient Response of R-C series network with DC excitation. [7M]

b) Find the inverse Laplace Transform of $X(s) = \frac{2s+4}{s^2+4s+3}$. [7M]

(OR)

4 a) Explain about the Transient Response of R-L parallel network with DC excitation. [7M]

b) Describe and analyze the Transient Response of R-L-C parallel network with AC excitation. [7M]

UNIT-III

5 a) State the Dot Convention and also explain why it is necessary in magnetic circuits. [7M]

b) Two coils having 30 and 600 turns are wound side by side on a closed iron circuit of 100 cm^2 cross section and mean length 150 cm. Find the self-inductance of the two coils and mutual inductance if relative permeability of iron is 2000. Assume no magnetic leakage. [7M]

(OR)

6 a) Briefly discuss about the steady state analysis of a series R-L circuit with AC Supply. [7M]

b) With an example explain coupled circuits. [7M]

|''|''|||''|'''|||'|
~~~~~~

Code No: **R201213** **R20** **SET - 1**

UNIT-IV

7 a) Define Resonance and also discuss about circuit parameters versus frequency for series R L C circuit. [7M]

b) A series R-L-C circuit consists of R=15Ω, L=0.02Ω, & C=0.03μF. Calculate the frequency at resonance. If a 15V of frequency equal to the frequency of resonance is applied to the circuit, calculate the values of V_C and V_L across C and L respectively. Find the frequencies at which these voltages V_C and V_L are maximum. [7M]

(OR)

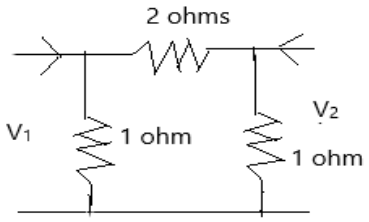
8 a) State and discuss about Maximum Power Transfer Theorem. [7M]

b) Verify Tellegen's Theorem with a suitable example. [7M]

UNIT-V

9 a) Derive and discuss the relationships between Y and Z parameters. [7M]

b) Find the ABCD parameters of the following network: [7M]



(OR)

10 a) Discuss how to obtain H parameters with a suitable example. [7M]

b) Write short notes on relationship between parameter sets. [7M]

*****