Total No. of Questions : 8] *[Total No. of Printed Pages : 6*

Roll No .....

EE-305-CBGS

B.Tech., III Semester

Examination, December 2020

Choice Based Grading System (CBGS)

Network Analysis

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

iii) In case of any doubt or dispute the English version question should be treated as final.

1. a) Obtain the value of voltage across 6Ω resistor using nodal method for circuit given below Fig. 1(a). 7

Fig. 1(a).

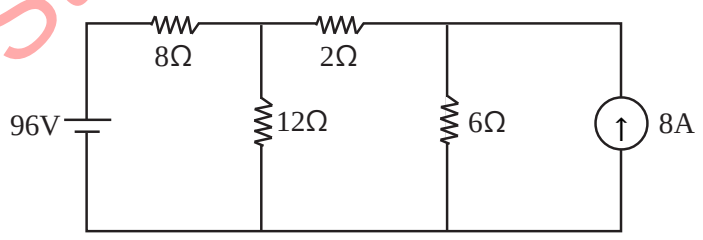

Fig. 1(a)

b) A coil of resistance 40Ω and inductance of 0.75H forms part of a series circuit for which the resonant frequency is 55Hz. If the supply voltage is 250V, 50 Hz, find : 7

i) Line current

ii) Power factor

iii) Voltage across coil

55Hz O

250

i)

ii)

iii)

2. a) Make the tie set schedule and write down the corresponding current and voltage equation for the graph shown Fig. 2(a). 7

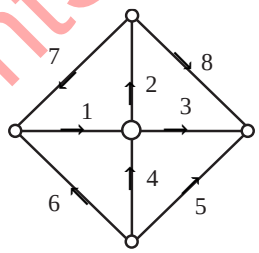

Fig. 2(a)

b) What is resonance? Explain parallel resonance condition in detail with circuit and equations. 7

3. a) For the circuit shown in Fig. 3(a), find $V(O^+)$ and $\frac{dv}{dt}(O^+)$ when switch is opened at $t = 0$. 7

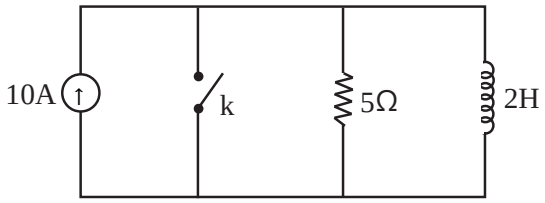

Fig. 3(a)

b) At position *a*, circuit in the fig. 3(b) shown below reached to steady state, then switch is moved to position *b* at $t = 0$. Draw the circuit at $t = O^-$. Find $i(O^+)$ and $V_c(O^-)$ and $V_c(O^+)$. 7

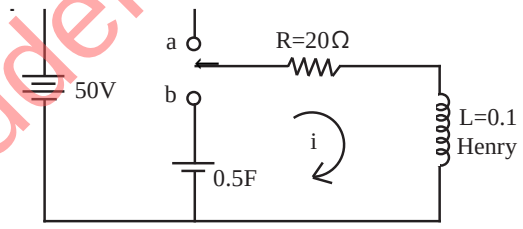

Fig.3 (b)

4. a) State and explain maximum power transfer theorem both for AC and DC circuits. 7

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b) Obtain the current in the (3 + j4) Ω impedance by the superposition theorem to the network below: 7

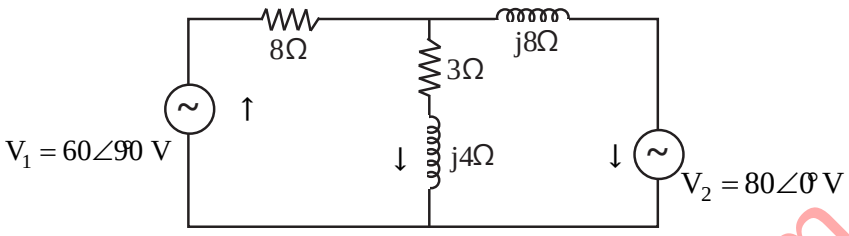

Fig. 4(b)

5. a) Explain gate and sinusoidal functions. 7

b) State and derive initial value and final value theorem. 7

6. a) For the given circuit in fig. 6(a), steady store is reached with switch position at a. Now at t = 0, switch is moved to position b. Find current i(t) using Laplace transforms. 7

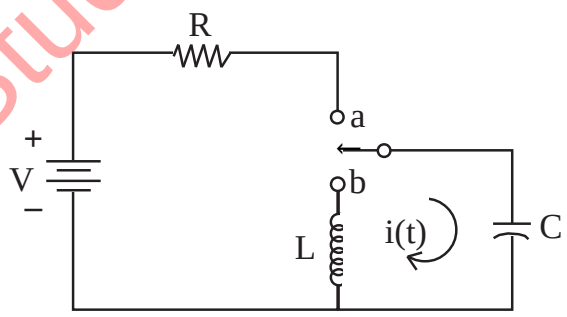

Fig. 6(a)

Contd...

b) Find F(s) for the given circuit in Fig. 6(b). 7

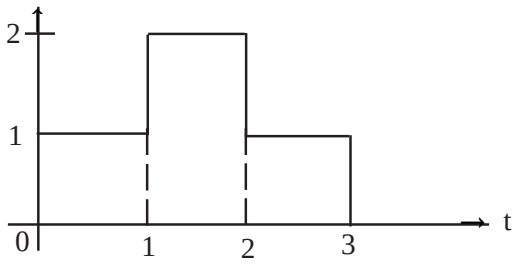

Fig.6 (b)

7. a) Find the trigonometric Fourier series for the waveform shown in Fig. 7(a). 7

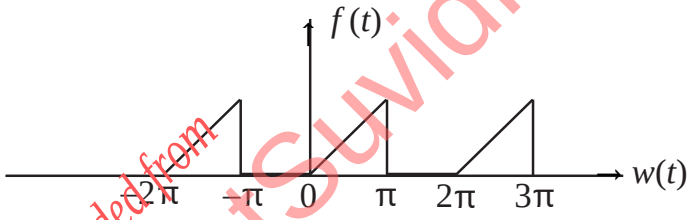

Fig. 7 (a)

b) Determine Z parameters for the networks shown in fig. 7(b). 7

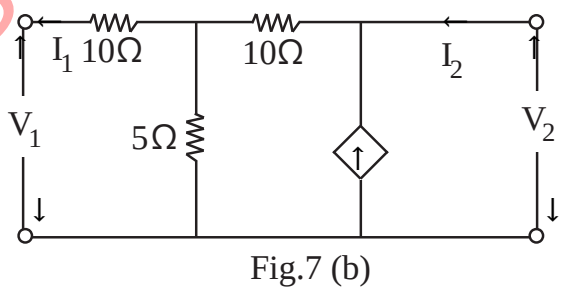

Fig.7 (b)

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8. a) Explain ABCD parameters in detail. Also explain conditions for reciprocity and symmetry. 6

b) Obtain the voltage ratio transfer function $\frac{V_2(s)}{V_1(s)}$ for figure 8 (b). 8

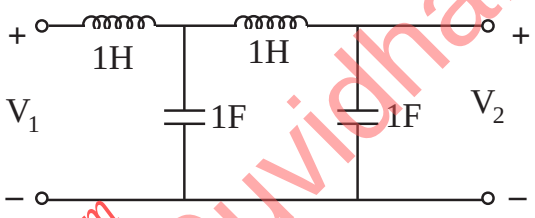

Fig.8 (b)

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