Total No. of Questions : 8] *[Total No. of Printed Pages : 4*

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EE/EX-3003-CBGS

B.E. 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.

1. a) Consider the R-C parallel circuit shown in fig. 1 excited by a d.c. current source of 10A. Determine the voltage across the capacitor. Assume the initial voltage across the capacitor as 2V.

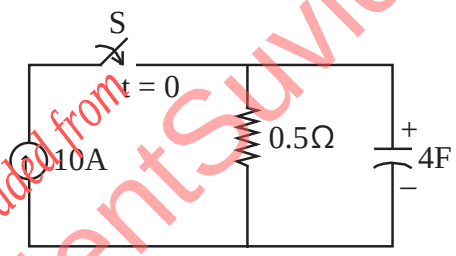

Fig.1

b) At $t = 0$, S is closed in the circuit of fig.2 find $v_c(t)$ and $i_c(t)$. All initial conditions are zero.

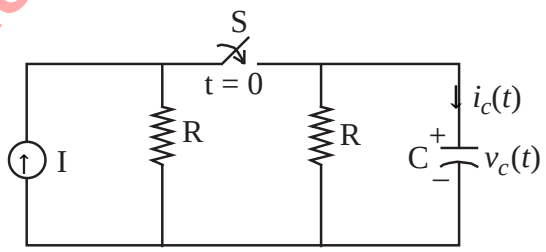

Fig.2

2. a) Find $i(t)$ for $t > 0$ in the circuit shown in fig. 3 switch S is opened at $t = 0$.

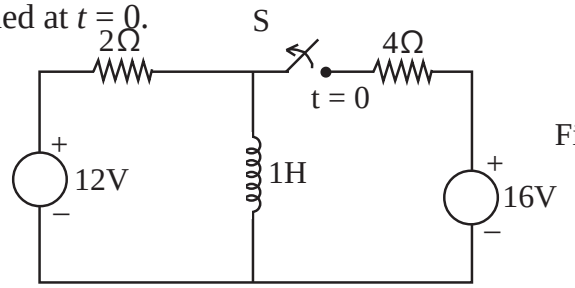

Fig. 3

b) In the circuit shown in fig. 4, the switch S is closed at $t = 0$ connecting a source e^{t} to the RC circuit. At $t = 0$ it is observed that the capacitor voltage has the value $v_c(0) = 0.5\text{V}$. Determine $v_2(t)$.

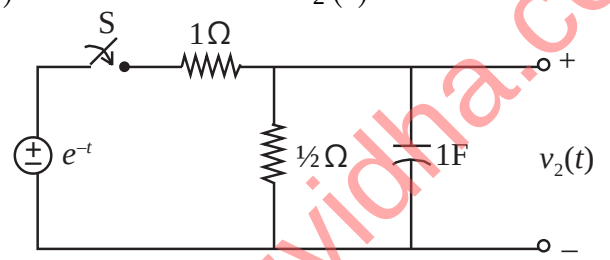

Fig. 4

3. a) Verify reciprocity theorem for the circuit shown in fig.5.

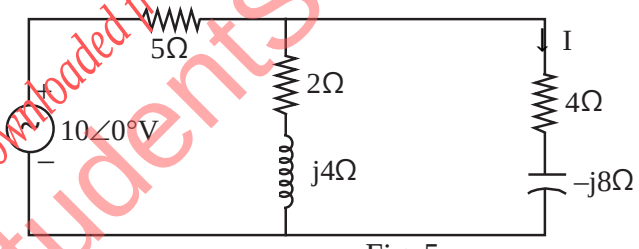

Fig. 5

b) Find the Thevenin equivalent circuit at terminal AB of the circuit given in fig. 6.

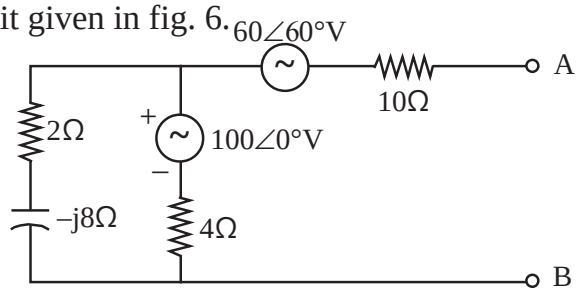

Fig. 6

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4. Calculate the current in the 6Ω resistor of the circuit of fig.7 by (6)
   i) Thevenin theorem ii) Superposition theorem

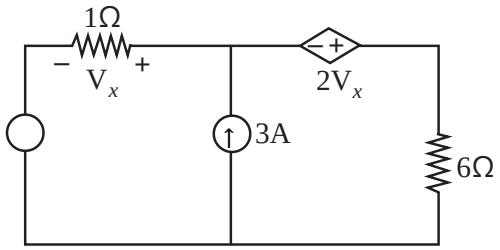


Fig. 7

5. a) Determine the value of R_L to be connected across AB in fig. 8 for maximum power transfer. Also calculate the maximum power absorbed by the R_L

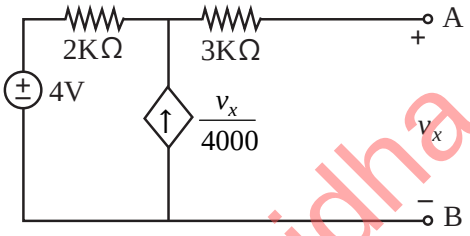


Fig. 8

   b) If $v(t)$ is a pulse as shown is applied to the circuit of Fig.9, determine the current $i(t)$

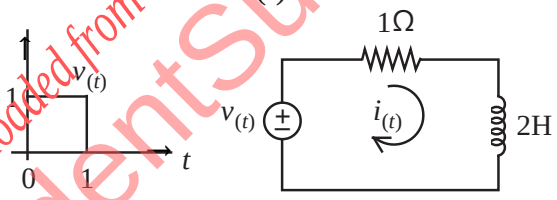
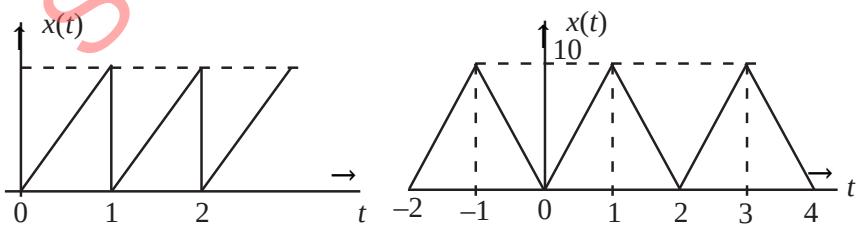


Fig. 9

6. Find the trigonometric Fourier series for the waveform shown in fig. 10(a) and fig. 10(b).



(a) (b)

Fig. 10

7. a) Obtain the z-parameters of the network shown in Fig. 11

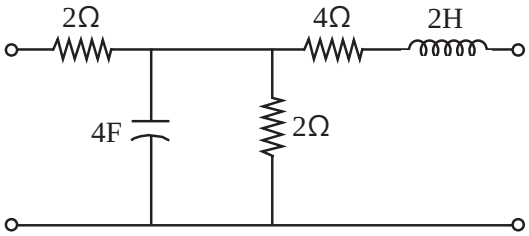


Fig. 11

b) Determine the z-parameters of the network shown in Fig. 12.

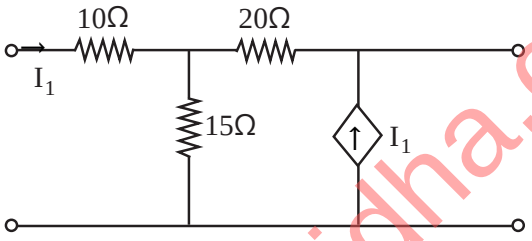


Fig. 12

8. Write short notes on any two of the following:
   a) Parallel resonance.
   b) Initial and final value theorem.
   c) Hybrid parameters.

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