VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Reg. No.:
Name:

Continuous Assessment Test - I – November - 2022

Programme	:	B.Tech(EEE/ECE/ECM/Civil)	Semester	:	Fall 2022-23
Course	:	BEEE102L/IEEE102L - Basic Electrical & Electronics Enggineering	Slot	:	E1+TE1
Faculty	:	Sasipriya P (CH2022231700037)	Faculty	:	Inayathullaah M A (CH2022231700039)
Faculty	:	Meera P S (CH2022231700041)	Faculty	:	Mohd Aneesh (CH2022231700047)
Faculty	:	Chendur R (CH2022231700049)	Faculty	:	Mohd Imran (CH2022231700051)
Faculty	:	Srimathi R (CH2022231700187 / CH2022231700743)	Class Nbr	:	Rani S (CH2022231701005)
Time	:	$1\frac{1}{2}$ hours	Max. Marks	:	50

Answer all the Questions

1. Find v_x in the circuit shown in Fig. 1. (5)

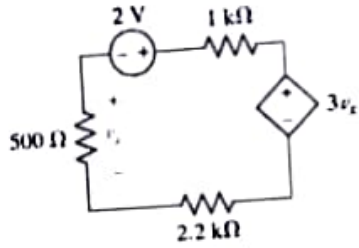

Fig. 1

2. Find the current i through the 4Ω resistance in the circuit shown in Fig. 2 using nodal analysis. (5)

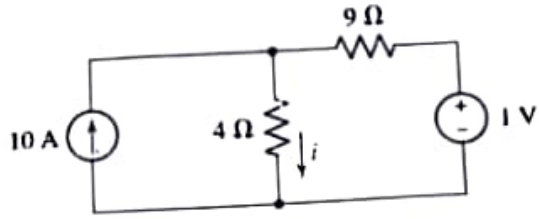

Fig. 2

3. Find the equivalent resistance and the current supplied by the voltage source in the circuit shown in Fig. 3. (5)

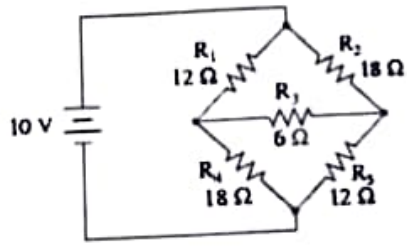

Fig. 3

Using superposition theorem, find the voltage v in the circuit shown in Fig. 4. (5)

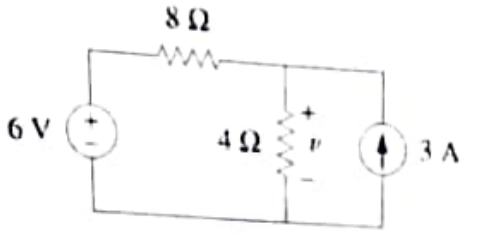

Fig. 4

5. Find the Thevenin Equivalent across the terminal $a-b$ for the circuit shown in Fig. 5. What value of load resistor connected across terminals $a-b$ will absorb maximum power from the circuit? Calculate the maximum power absorbed by the load resistor? (10)

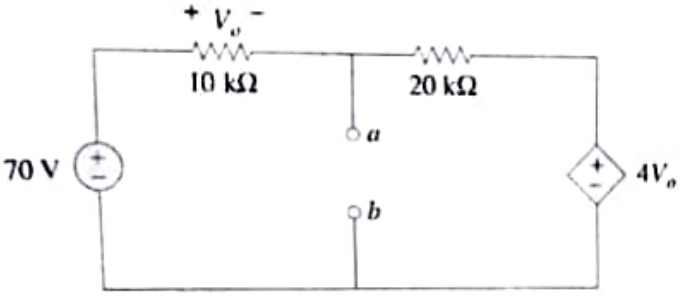

Fig. 5

6. Compute the current $i(t)$, apparent power (VA) supplied by the source and power factor of the source for the circuit shown in Fig. 6. $v_s(t) = 10\sin(100\pi t + 45)V$. (Take $1\cos(100\pi t) = 1\angle 0$ as reference) (10)

Load 1 : P = 100kW, power factor = 0.6 (Leading)
Load 2 : Q = 100kVAR, power factor = 0.8 (Lagging)

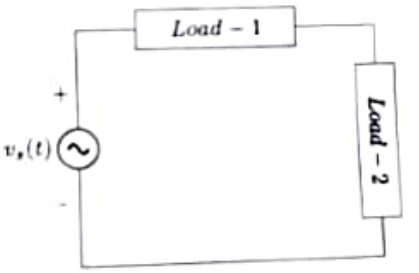

Fig. 6

7. In the series RC circuit excited by the alternating voltage source $v(t) = 10\cos(100t)$ with $R = 10\Omega$ and $C = 0.002F$ compute the following . (10)

(a) RMS value of the voltage $v(t)$
(b) Impedance of the circuit
(c) the steady state current ($i(t)$) supplied by the source
(d) Compute the power supplied (with Units) by the source ($S = P + jQ$).
(e) RMS value of the voltage, if $v(t) = 10\cos(100t + 30)$

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