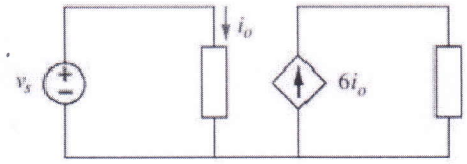
Enrolment Number: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.TECH MID SEM EXAMINATION
3RD SEMESTER
ACY-2022-23 (ODD SEM)

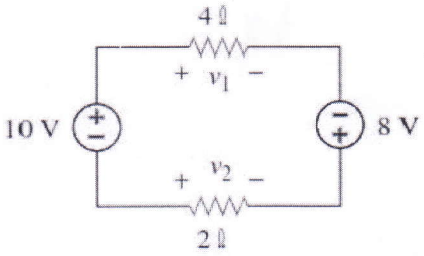
Subject Name: Electrical Circuit Analysis (203106205) **Branch: Electrical Engineering**
Date: 05/08/2022 **Time: 02:30 PM-04:00 PM** **Total Marks: 40**

Sr. No.		Marks
Q.1	(A)	05

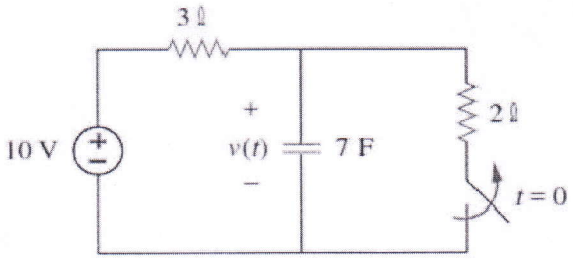
1. Find current flowing in a dielectric material due to a charge of 60 C after 12 s.
2. The dependent source in fig. is _____.



3. Find V_2 in the circuit of figure.

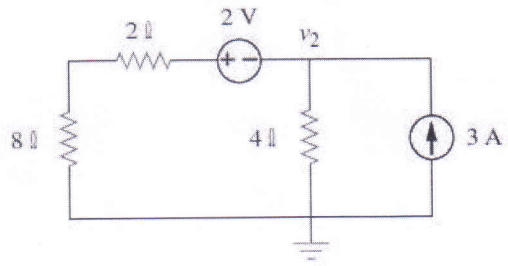


4. In the circuit of figure, find the voltage drop across 2 Ω just before t = 0.



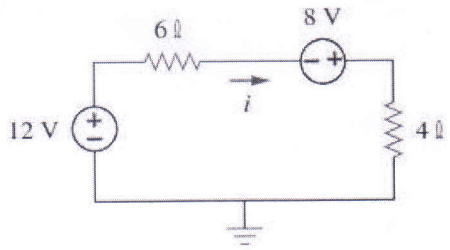
5. Obtain time constant for an series R-C circuit with R = 2 Ω and C = 10 μF.

(B) Calculate power delivered by 3 A_{in} the below circuit using nodal analysis. 05

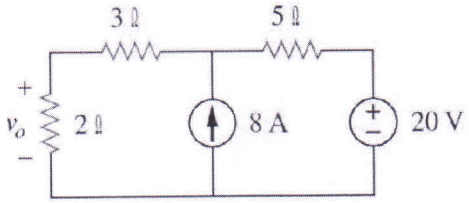


Q.2 Attempt any four(Short Questions) 12

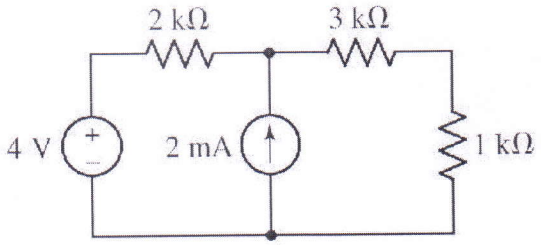
(1) Evaluate voltage drop across 6 Ω resistor in the below circuit.



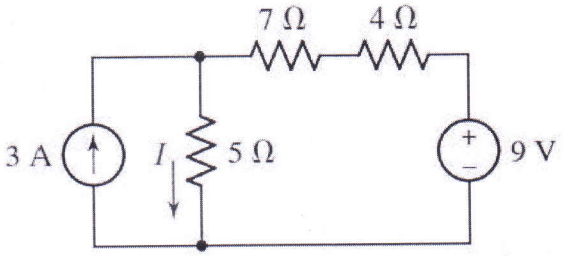
(2) Using the superposition theorem, find V_0 in the circuit in figure.



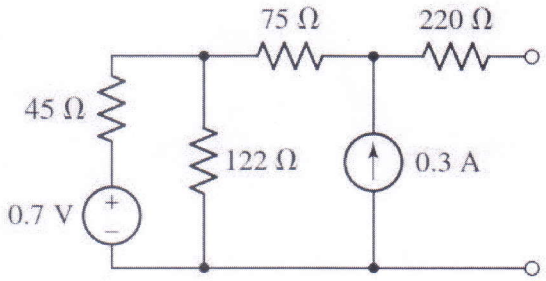
(3) Find thevenin's equivalent circuits for given network faced by the 3 kΩ resistor.



(4) Determine the current 'I' in the circuit of figure by performing source transformations

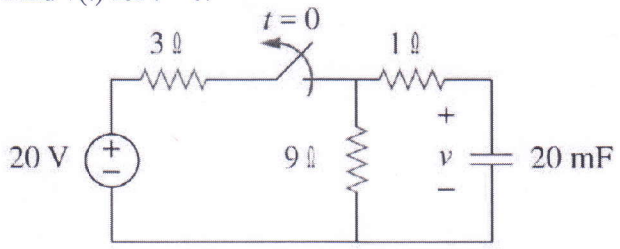


(5) Employ Norton's theorem to obtain a simple two-component equivalent of the circuit shown in figure.

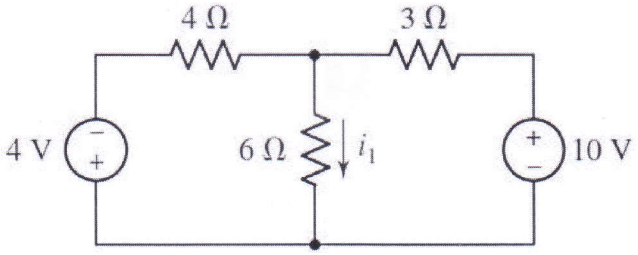


Q.3 Attempt any two 08

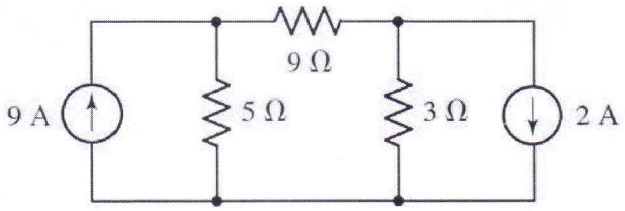
(1) The switch in the circuit in figure has been closed for a long time, and it is opened at t = 0. Find v(t) for t = 0.



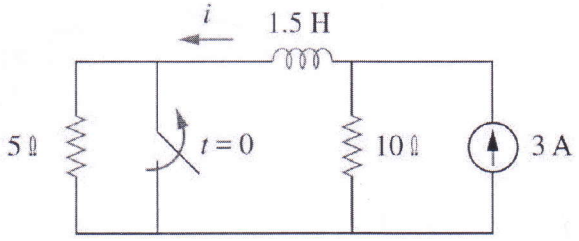
(2) Verify Tellegen's theorem in below circuit.



(3) With reference to the circuit of figure calculates the power absorbed by the 9 Ω resistor.

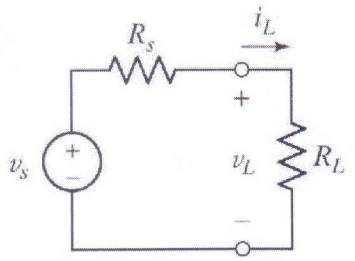


Q.4 (A) The switch in figure has been closed for a long time. It opens at t = 0. Find i(t) for t>0. 05



(B) Derive the condition for maximum power transfer from source to load in given 05

circuit



OR

(B) For the circuit in figure, find 05

(a) $i(0^+)$ and $v(0^+)$

(b) $i(\infty)$ and $v(\infty)$

(c) $\frac{di(0^+)}{dt}$ and $\frac{dv(0^+)}{dt}$