COLLEGE OF COMPUTING AND INFORMATION SCIENCES

Mid-Term Assessment Spring 2021 Semester

Class Id	106227,228	Course Title	Basic Electronics
Program	BSCS	Campus / Shift	Main Campus / Morning
Date	13-03-2021	Total Marks	30
Duration	02 hours	Faculty Name	Usman Saeed Arab, Faisal Ahmed, Ali Babar
Student Id		Student Name	

Instructions:

- Filling out Student-ID and Student-Name on exam header is mandatory.
- Do not remove or change any part of exam header or question paper.
- Write down your answers in given space or at the end of exam paper with proper title "Answer for Question# _ _".
- Answers should be formatted correctly (font size, alignment and etc.)
- Handwritten text or image should be on A4 size page with clear visibility of contents.
- Only PDF format is accepted (Student are advised to install necessary software)
- In case of CHEATING, COPIED material or any unfair means would result in negative marking or ZERO.
- A mandatory recorded viva session will be conducted to ascertain the quality of answer scripts where deemed necessary.

- **Caution:** Duration to perform Mid-Term Assessment is **02 hours only**. Extra 01 hour is given to cater all kinds of odds in submission of Answer-sheet. **Therefore, if you failed to upload answer sheet on LMS (in PDF format) within 03 hours limit, you would be considered as ABSENT/FAILED.**

- **Write your Student ID on _TOP CENTER_ of each and every page which should be clearly visible on which you are doing your solution, any page on which you miss writing your Student ID is not going to be marked. {In case you need to make any correction in your SID because of any reason you are not allowed use another page in that case and write clearly your SID on top center}.**
- **All answers are to be _HAND WRITTEN_ if answers are written in text on word or other formatting software it won't be considered and marked.**
- **If for any reason your Student ID on any of your solution's Top Center page looks like edited, over written in that case your Midterm Exam will be awarded _ZERO SCORE_**
- **If for what so ever reason _ANY OF YOUR SOLUTION'S ANSWER DOESN'T MATCH YOUR SOLUTION WORKING_ in that case your whole solution will be considered bogus and in _ALL PARTS_ of that particular question you will be given _ZERO MARKS._**
- **All answers are to be given in sequence.**
- **This document contains total of 7 questions all of 10 points you are required to attempt all of them.**
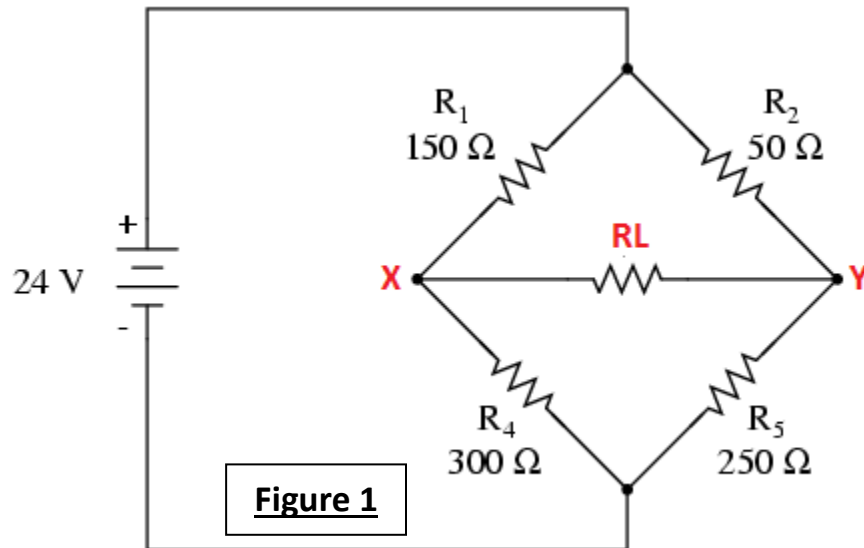
Question 1)

For circuit given in _**figure 1**_, find its Thevenin Equivalent Circuit and also answer the following questions.   [6 Points]

Note: Write not more than 3 to 4 lines

a. Explain the importance of Thevenin Theorem.   [2 Points]
b. Find the value of IL and VL for RL=100 Ω and 200Ω   [2 Points]
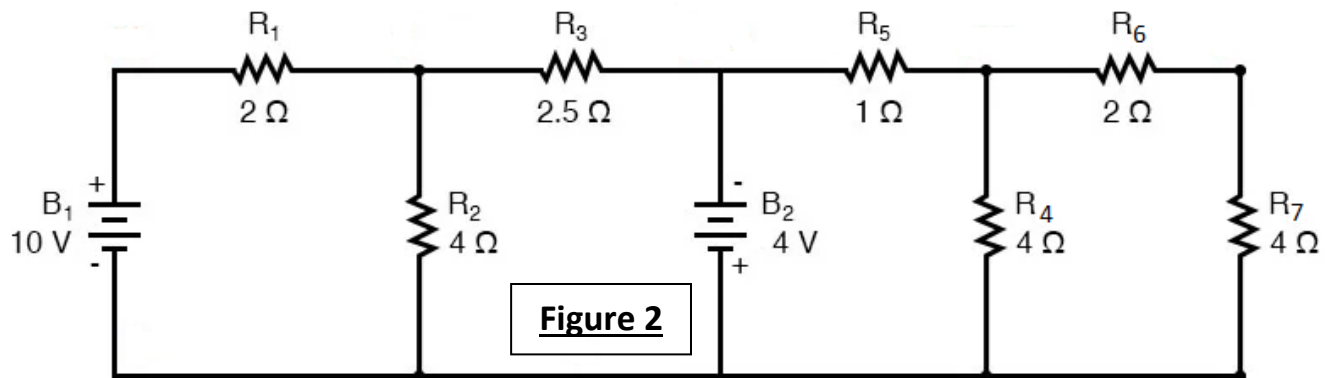

Figure 1

Paste your solution here you may take more space if required

Space For Solution of Question 1

Question # 2)

For circuit given in **_figure 2_**, use Node Voltage Analysis and find the voltage and current across R3 and R4. [10 Points]

Figure 2

Paste your solution here you may take more space if required

Space For Solution of Question 2

Question # 3)

For circuit given in **_figure 4_**, find Norton Equivalent Circuit for resistor RL connected across terminals A and B, also answer the following question. [7 Points]

Note: Write not more than 2 lines

a. Write a difference between Thevenin and Norton Theorem. [2 Points]
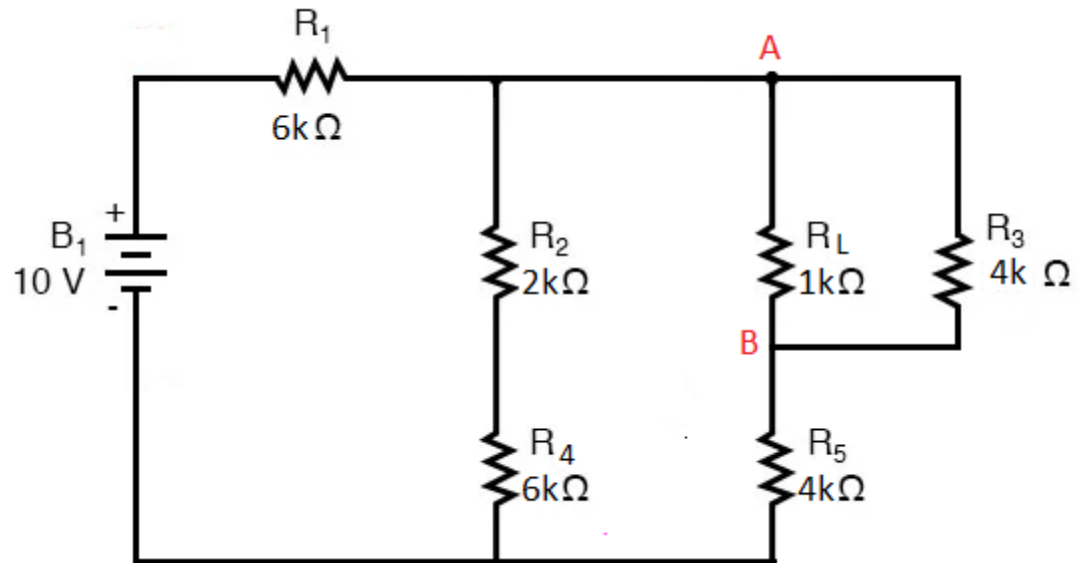b. Write a difference between current source and voltage source. [1 Point]

Figure 4

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Space For Solution of Question 3

Question # 4)

For circuit given in **_figure 5_**, find total capacitance and total charge.   [10 Points]

$C1 = 20pF$

$C2 = 30pF$

$5V$

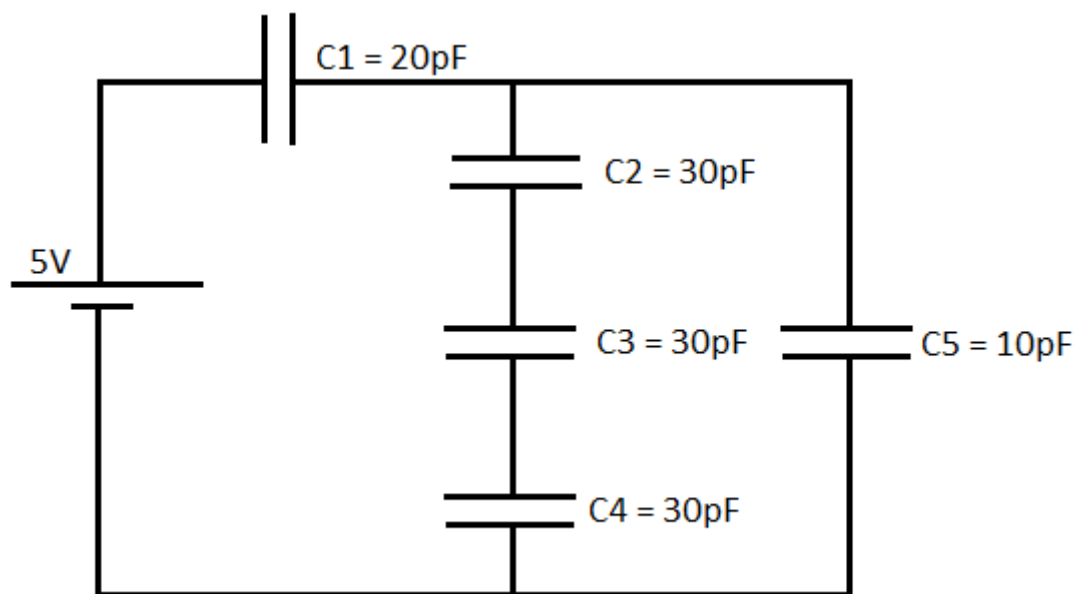$C3 = 30pF$ $C5 = 10pF$

$C4 = 30pF$

Figure 5

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Space For Solution of Question 4

Question # 5)

Solve the following.

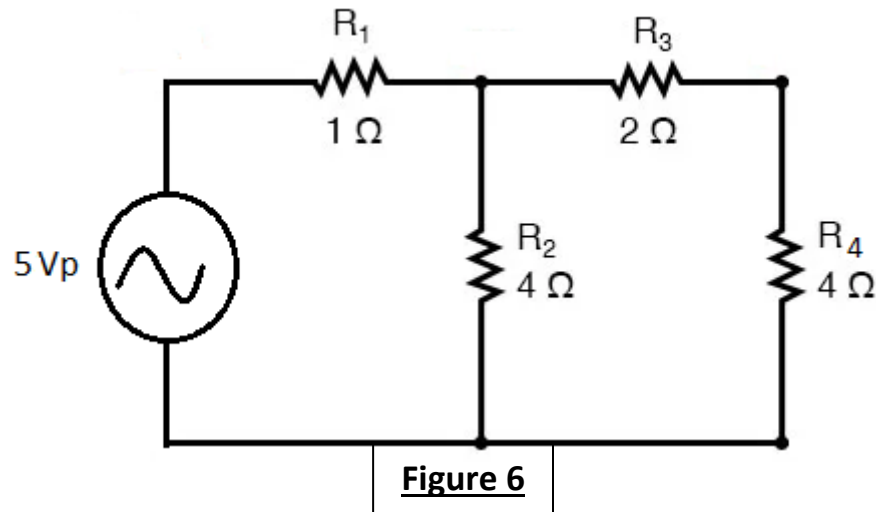1. Find the voltage for given value of $\ominus$, if sinusoidal wave has got amplitude of 340V.
[3 Points]

 a) $\ominus = 5\pi / 4$

 b) $\ominus = \pi / 4$

 c) $\ominus = 3\pi / 2$

2. For the circuit given in **_figure 6_**, find V_ rms and I_rms on R3.
[7 Points]

Figure 6

Paste your solution here you may take more space if required

Space For Solution of Question 5

Question # 6)

Answer any 4 of the following. (All carry equal marks)

Note: Your answer for each may not exceed more than 5 lines

1) In a certain circuit battery is draining out 5 times more quickly than expected for normal operation what could be the possible cause for this and how did you conclude it.
2) Why AC current is preferred over DC current for high power electrical circuits.
3) Initial current across a capacitor connected across a DC source is huge and initial voltage is zero, explain why this is so.
4) Explain the working of AC generator in your own words.
5) In a Wheatstone bridge circuit a student connects a motor in place of galvanometer and is trying to find unknown resistance using formula when he adjusts variable resistor and observes that motor is no more rotating. Do you agree with his technique or not explain with reasoning.
6) What does a negative value of loop current indicates in Mesh Analysis and Method of Branch Currents, and also comment on if there a way to avoid this negative sign appearing for loop current's value.

Paste your solution here you may take more space if required

Space For Solution of Question 6