United International University **(UIU)**

Dept. of Computer Science & Engineering **(CSE)**

Final Exam: Trimester: Summer 2023

Course Code: EEE 2113**; Course Title:** Electrical Circuits
Total Marks: 40**; Duration:** 2 hours

Any examinee found adopting unfair means would be expelled from the trimester/ program as per UIU disciplinary rules.

Question 1: Answer all the questions. (10 Marks)

[8+2]

For the above circuit shown in **Figure 1**, determine I_o using Superposition and the power dissipated in 15Ω resistance.

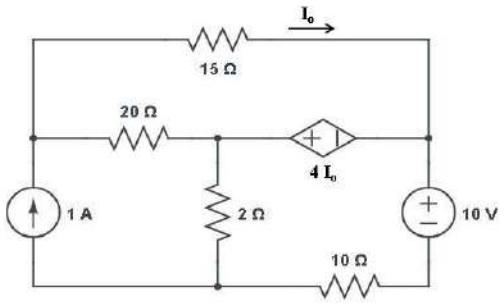

Figure 1.

Question 2: Answer all the questions. (10 Marks)

For the circuit shown in **Figure 2**, determine the following questions: [5+3+2]

i) For the circuit shown below, find the thevenin equivalent circuit at the **A-B** terminal.

ii) For any resistance connected right to **A-B** terminal, what will be the maximum power delivered to the resistance?

iii) If 10Ω resistance is connected between **A-B**, then would maximum power be achieved? If not then what should you do?

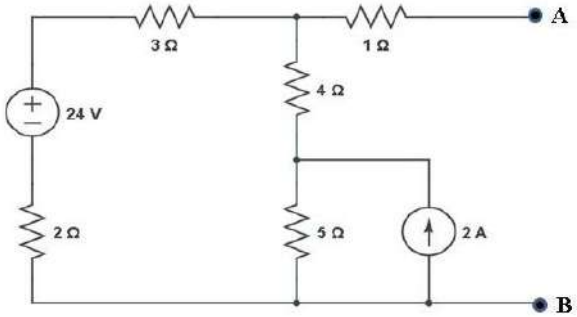

Figure 2.

Question 3: Answer all the questions (10 Marks)

For the circuit shown in **Figure 3**, $V_s(t) = 15 \cos(100t + 30^\circ)$. Now, determine the following questions: [6+4]

(a) Find equivalent impedance at terminals a − b.

(b) Find $I_1(t)$, $V_c(t)$, $V_d(t)$ and $V_{cd}(t)$.

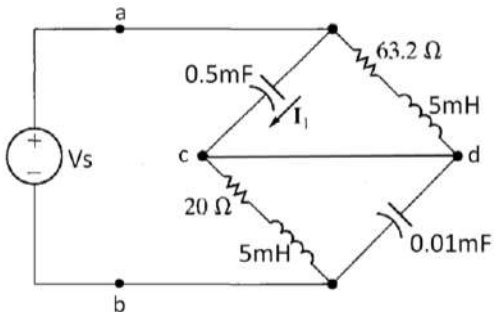

Figure 3.

Question 4: Answer all the questions. (10 Marks)

For the waveform shown in **Figure 4a**, determine the rms value of the current, i_{rms}. Also, [5+5] determine the power absorbed by 5Ω resistance for the circuit shown in **Figure 4b**.

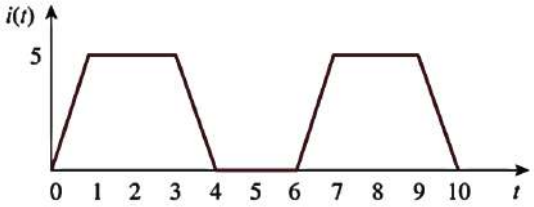

Figure 4a.

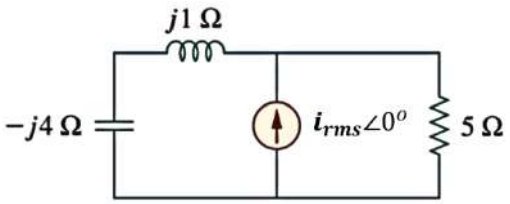

Figure 4b.