ECE113: Basic Electronics Re-Mid Semester Exam-2023

Date: **25/05/2023**   Duration: **1Hours**   Total Points: **40 Points**

Q1: In Fig.-1, Find the equivalent current across 2 Ω resistor.   **[1 Points]**
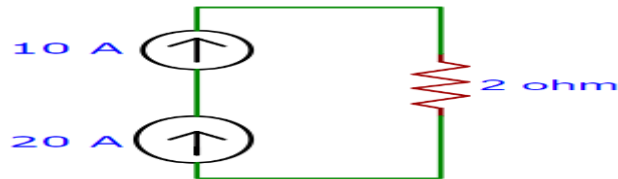

Figure 1

Q2: Define following terms with graphs- (a) Ideal & Practical Voltage Source (b) Ideal & Practical Current Source   **[3 Points]**

Q3: In Fig.-2, if V_1= 5V & V_2= 3V, then what is the input impedance of the CRO.   **[2 Points]**
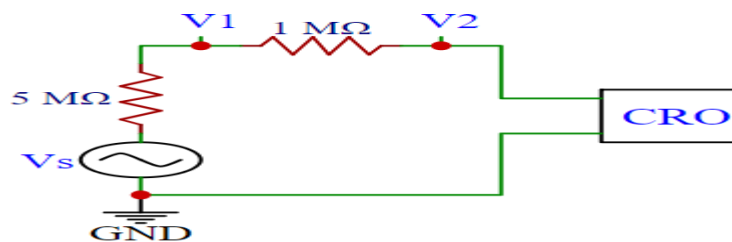

Figure 2

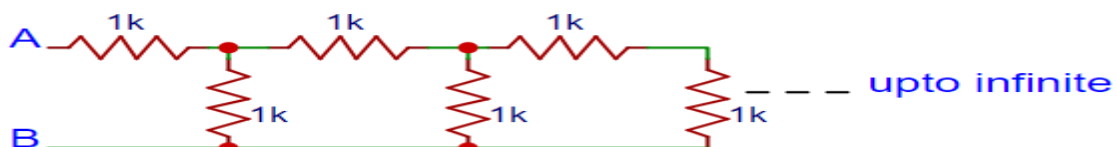**Q4:** In Fig.-3, find the equivalent resistance between points A & B.   **[3 Points]**

Figure 3

Q5: A practical voltage source of 3V with internal resistance of 2 Ω is connected to nonlinear resistor. The characteristic of nonlinear resistor is given by $V_{NL}= I_{NL}^2$. Find power dissipation of nonlinear resistor.   **[3 Points]**

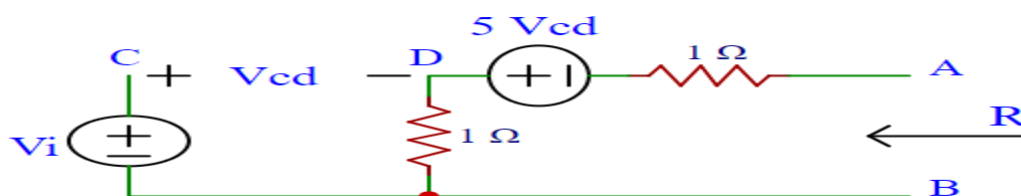**Q6:** In Fig.-4, find the equivalent resistance 'R' across the terminal A&B.   **[7 Points]**

Figure 4

Q7: In Fig.-5, when switch S_1 is closed, the ideal ammeter M_1 reads 5 A. What will the ideal voltmeter M_2 read when S_1 is kept open? (The value of E is not specified). **[7 Points]**
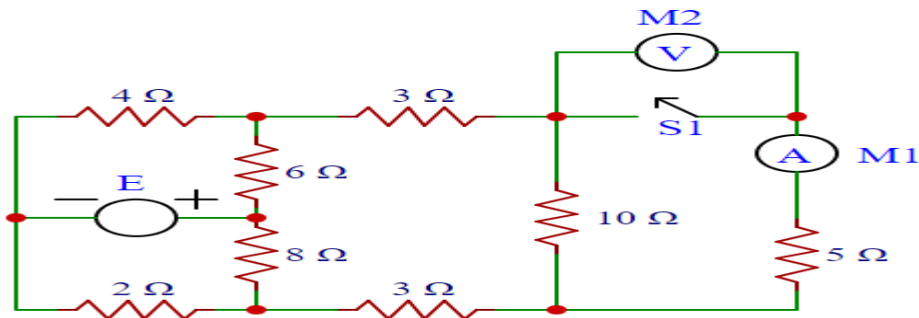

Figure 5

Q8: In Fig.-6, the switch S is open for a long time and it is closed at time t=0 sec. What will be the current response i(t) for time $t \geq 0^+$ sec. **[7 Points]**
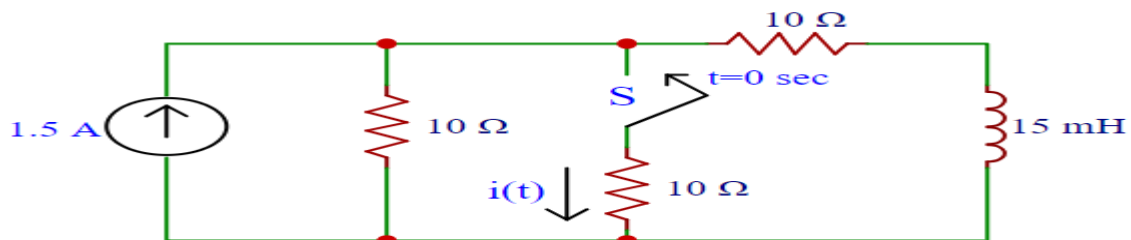

Figure 6

Q9: In Fig.-7, the switch has been in position-1 for long time and abruptly changes to position-2 at time t= 0 sec. Find out the response of the capacitor voltage $V_C(t)$ for time t > 0 sec. **[7 Points]**
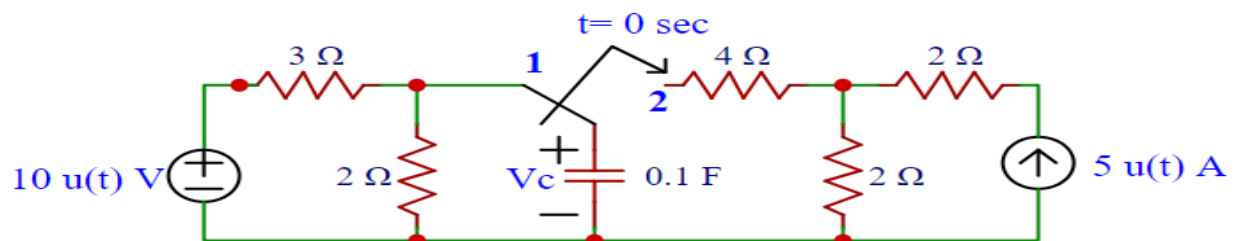

Figure 7