

الإسم ..... الرقم .....

أجب عن جميع الأسئلة

\*ورقة الإمتحان تشتمل على 6 صفحات\*

**Question (1)(15marks)**

Define the following

1. **Potential Difference.** What its unit?

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2. **Resistivity.** What its unit?

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3. **Electric power.** What its unit?

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4. **Electrical Charge.** What its unit?

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5. **Kirchhoff's current law?**

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6. **ohm's law?**

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**Question (2) (20marks)**

**Choose the correct answer:**

1-Which of the following is a unit of electrical resistance?

- A. Volt
- B. Amp
- C. ohm
- D. coulomb

2- Is a closed loop conducting path in which an electrical current flows.

- a- Network
- b- Relay
- c- Circuit
- d- loop

3- The formula for electrical current is?

- a- Voltage / Resistance
- b- Resistance \* Voltage
- c- Voltage + Resistance
- d- Resistance / Voltage

4- For series connected voltages

- a-  $V_T = V_1 + V_2$
- b-  $V_T = V_1 = V_2$
- c-  $V_T = V_1 / V_2$
- d-  $V_T = V_1 * V_2$

5- Which of the following is a unit of temperature?

- a. Celsius
- b. Volume
- c. Fahrenheit
- d. Kelvin

6- The prefix meaning .001 is called

- a- Kilo
- b- Deci
- c- Centi
- d- Milli

7- The prefix meaning 1000 is called

- a- Kilo
- b- Deci
- c- Centi
- d- Milli

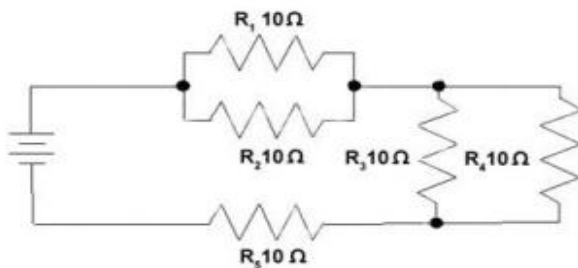
8- Factor that Affecting Resistance is;

- a- length
- b- cross-sectional area
- c- temperature
- d- all answer are correct

9- A single line of connecting elements or sources

- a- Node
- b- loop
- c- Circuit
- d- Path

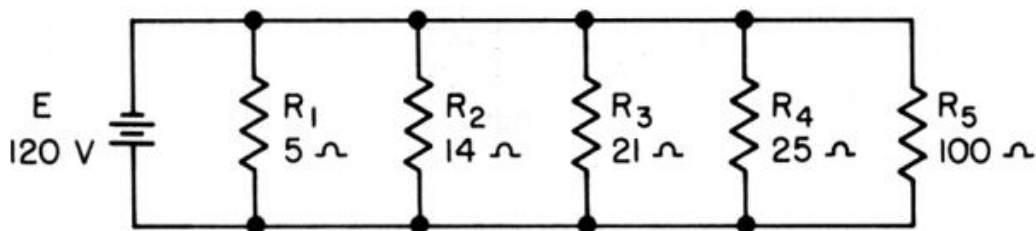
10- What type of circuit is shown in the diagram



- a- Parallel Circuit
- b- Series-Parallel
- c- Series Circuit
- d- b and c

**Question (3) (20marks)**

A. From the electrical circuit, find the equivalent resistor and then draw the final circuit



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B. After calculating the equivalent resistance, calculate the following

- 1. Total Current?

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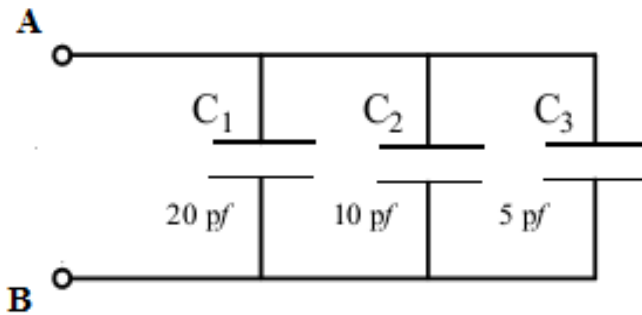
- 2. Total voltage?

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- 3. Total power?

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C. Find Total capacitance



**Question (4) (30marks)**

(1) What length L of copper wire is required to produce a 2 mΩ resistor? Assume the diameter of the wire is 1 mm and that the resistivity ρ of copper is  $1.72 \times 10^{-8} \Omega m$

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(2) The electric current in a wire is 6 A. How many electrons flow past a given point in a time of 3s?

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(3) Calculate the energy needed to move charge 50μc between tow points Voltage between them =3v.

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(4) Complete the table:

color code	value of resistance	Upper value	Lower value
Red black red gold			
Green black yellow silver			
Orange Orange red gold			
	4.4K $\Omega$		
	660 $\Omega$		

(5) Draw electric field line.



(6). if the E is given by  $E = 4i + 3j + 2k$  and A is given by  $A = 2i + 2j + k$ .

Find:

A. the net flux

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B. angle between A and E.

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