UEEECD0044 - Revision

1. List the four factors that govern the resistance of any material.

2. Does increasing the length of a conductor increase or decrease its resistance?

3. Does increasing the cross-sectional area of a conductor increase or decrease its resistance?

4. Does the resistance of a metallic conductor, increase or decrease with a rise in temperature?

5. Two copper conductors of identical length, carrying the same amount of current, one 1.5mm² and the other 4mm². Which of these will have the lesser voltage drop.

6. What is the resistance of a 1.5mm² copper conductor, that has a length of 50 meters?
   Resistivity of Copper – 1.72 x 10^{-8}

7. Give an example of where a Series/parallel circuit is used in the electrotechnology industry?

8. Calculate the total current and power in the circuit if resistor R2 became open circuited.

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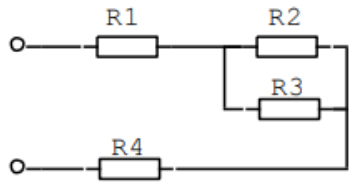
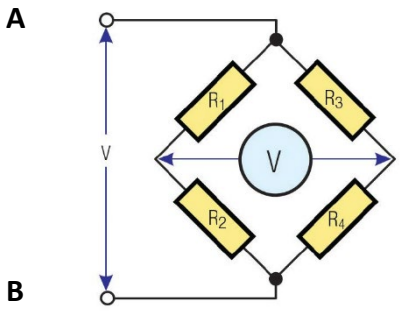
R1 = 30Ω R2 = 60Ω R3 = 40Ω R4 = 10Ω VT = 180V



9. Calculate the voltage that would appear on the Voltmeter in the Bridge Circuit.

   R1 = 100Ω R2 =200Ω R3 = 10Ω R4 = 20Ω VT = 12V



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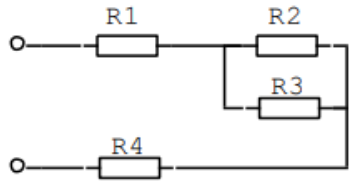
10. Calculate the total current, the currents through and the voltage drops for each resistor.

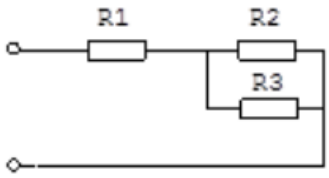


Resistor	Resistance	Current	Voltage	Power
R1	120Ω			
R2	120Ω			
R3	60Ω			
R4	80Ω			
Total			120V	

11. Give an example of where a Parallel circuit is used in the electrotechnology industry?

12. Calculate the total resistance, current and power in the circuit if resistor R1 became short circuited.

R1 = 6Ω R2 = 4Ω R3 = 6Ω VT = 12V



13. What is Kirchoff's current law for Parallel circuits?

14. Connecting cells in Parallel will –

A	**Increase the Resistivity**
B	**Decrease the Voltage**
C	**Increase the available Current**
D	**Increase the available Capacitance**

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15. What is the advantage of using a Clip-On Ammeter as opposed to a standard Ammeter.?

16. How can you avoid Parallax error, when reading Analogue Meters?

17. Does a Voltmeter have a High or Low internal Resistance?

18. What meter would you use to test the integrity of the insulation in an electrical appliance?

19. What must you check before connecting an Ohmmeter to a circuit?

20. According to the AS/NZS 3000, what is the minimum acceptable Insulation Resistance for an Electrical Appliance that contains a sheathed heating element?

21. Draw the symbols for a fixed, a variable, an electrolytic and a trimmer capacitor.

22. What is the unit of Capacitance?

23. Calculate the Quantity of charge if the applied Voltage is 120V and the Capacitance is 37µF.

24. Calculate the Time Constant for an RC circuit containing a 220µF Capacitor and a 100kΩ Resistor?

$T = R \times C$

25. Calculate the time to reach full charge for the previous RC circuit.

26. What is the recommended method for discharging a capacitor?

27. What is a potential hazard when working with capacitors?

28. Draw a circuit containing 4 capacitors connected in Parallel, with the following values, 37µF, 12µF, 18µF and 28µF and then calculate the total capacitance of the circuit.

29. Draw a circuit containing 4 capacitors connected in Series, with the following values, 37µF, 12 µF, 18 µF and 28 µF and then calculate the total capacitance of the circuit.

30. What effect would increasing the distance between the plates, have on a capacitor?

31. What are the common faults that occur in capacitors?

32. State an application for Capacitors in the electrotechnology industry.