

$$E = P \times T$$

$$100 \times 7200 \text{ watt seconds} = 720000 \text{ watt seconds}$$

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Expt. No. BEE (Basics of el eng)

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1. How much energy does a 100 W electric bulb consume in 2 hours? 720 KJ

$$\text{Power} = 100 \text{ W}$$

$$\text{Time (T)} = 2 \text{ hours}$$

$$= 2 \times 60 \text{ minutes}$$

$$= 2 \times 60 \times 60 \text{ seconds}$$

$$= 7200 \text{ seconds}$$

$$\text{Energy} = P \times T$$

$$= 100 \times 7200 \text{ watt seconds}$$

$$= 720000 \text{ Joules}$$

$$= \boxed{720 \text{ KJ}}$$

2. 100 W consume in 24 hours

$$P = 100$$

$$T = 24 = 1 \text{ KWH}$$

3. An electric iron draws 2 A at 120 V. Find its resistance:

$$\text{from ohm's law } R = \frac{V}{I} = \frac{120}{2} = 60 \text{ ohm}$$

4. Voltage is measured in Volts

5. electron volt (eV) is the unit of energy

6. The Internal resistance of a 20,000 ohm/ volt, voltmeter set on the 5V range is

$$20000 \times 5$$

$$\text{Ans) } \boxed{100000}$$

7. A balanced wheatstone bridge consists of an R_1 of 3,500 ohm, an R_2 of 200 ohm, & an

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$$R = \frac{V}{I}$$

$\sqrt{2} \times 10^{-2}$

$$\begin{array}{r} 200 \\ 200 \\ 600 \\ \hline 4200 \end{array}$$

$$\begin{array}{r} 200 \times 250 \\ 50 = 250 \\ \hline 250 \end{array}$$

Ro of 100 ohm arranged clockwise. The value of

$R_4 = 2.029$

Unit of conductivity are

Siemens per meter or $\Omega^{-2} m^{-2}$

9. The power consumed in a circuit element will be least when the phase diff. between the current & voltage is 90°

20. The phase diff. b/w volt & I wave through a circuit element is given as 30° . The essential condition is that both waves must have same frequency.

21. Resistivity of a wire depends on material.

22. Two bulbs marked 200 watt 250 volts & 200 watt 250 volts are joined in series to 250 volts supply. Power consumed in circuit is 67 watt

23. We have three resistances of values 2Ω , 3Ω & 6Ω . Which of the following combination will give an effective resistance of 4Ω
 2Ω resistance in series with parallel combination of 3Ω & 6Ω resistance

24. The ratio of the resistance of a $200W, 220V$ lamp to that of a $100W, 220V$ lamp will be nearly 4

25. Unit of capacitance As/V

26. A $200W$ & a $100W$ bulb both meant for operation at $220V$ are connected in series. When connected in ~~to~~ to a $220V$ supply, power consumed by them is 66W

$$C = Q/V \text{ or } Q = CV$$

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17. A 3K ohm resistor is in parallel with 6K ohm resistor, both in parallel with 25 mA current source. Current in 3K resistor will be
10 mA
18. It is the opposition to the flow of current
Resistance
19. The unit of resistance is ohm (Ω)
20. The power is measured in Watts
21. The energy consumed is measured in Joules
22. The insulating medium b/w the 2 plates of capacitor is known as Dielectric
23. An Inductor works as a short circuit for DC supply.
24. If the voltage across a capacitor is constant, then current passing through it is 0
25. The expression for energy of an Inductor is $\frac{1}{2} Li^2$
26. The Inductor doesn't allow sudden changes in Current
27. The Capacitor // // // //
in Voltage
28. The formula used to find the capacitance C is Q/V or $Q = CV$
29. The impedance of an electric circuit may be defined as: the opposition of circuit to flow of AC

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$$C = Q/V \text{ or } Q = CV$$

- A) Stress
C) Deformation

- B) Strain
D) Defect

Q 60. Which of the following is dissipated as heat while deforming the material?

- A) Elastic Strain Energy
C) Both A and B
- D) Tensile Strength
B) Plastic Strain Energy
D) None of the Above

ohm mho (Ω)

$\frac{1}{2} \Omega^2$

$\frac{1}{3} \text{CV}^2$

35. The reactance offered by an inductor is given by: $2\pi fL$ (Ω) or ωL

$$XL = \omega L = 2\pi fL$$

36. What is reactance
Resistance offered to ac current by coil
& capacitance:

37. In capacitance current leads the voltage
38. In Inductor/coil voltage leads the current
39. A device that is a coil of wire around a central core & can store energy in a mag. field when current flows through it. This device is Inductor

40. The unit of Inductance is Henry, H

41. Resistance of a choke coil is low

42. The unit of reactance is ohm

43. Inductors store Magnetic energy

44. Siemens or Mho (Ω) is the unit of conductance

45. Unit of Impedance is ohm (Ω)

46. The expression for energy of an inductor $\frac{1}{2} \text{CV}^2$

47. Unit of capacitance is Farad, F

48. Ability to carry electric charge conductance

49. to store electric charge capacitance

50. source transformation is

A procedure for transforming a voltage source in series with a resistor to a current source in parallel with a resistor

51. An Ideal voltage source has zero series / internal resistance

- Q. constant voltage source is active & unilateral
53. A practical voltage source can also be represented as a resistance in series with an ideal voltage source
54. A practical current source can also be represented as a resistance in parallel with an ideal current source
55. A network of linear resistors and ideal voltage source, if the value of resistors are doubled the voltage across each resistor remains unchanged / constant
56. An ideal current source have infinite internal resistance
57. voltage source & terminal voltage can be related as terminal voltage is always lower than source emf
58. For a voltage source to be neglected, the terminals across the source should be short circuited. For current source open circuited
59. A dependent source must be a current source or a voltage source
60. A voltage source having an open circuit volt of 200V & internal resistance of 50Ω is equivalent to a current source of 4A with 50Ω in ||.
61. If current in a circuit is zero ampere, it is circuit is open

$I = \frac{V}{R}$
 $V = IR$
 $\frac{V}{R} = \frac{200}{50}$
 $= 4$

$I = \frac{V}{R}$
 $= \frac{200}{50}$
 $= 4$

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PO
C
M
D

10³ or 10⁹ 9-2

In Ideal voltage source voltage is constant & terminal volt is independent of load resistance

In practical voltage source If load resistance across the source is decrease load current ↑ terminal voltage ↓

A dependent source may be a current source or a volt source

A dependent sources are of 4 kinds

In CCVS, voltage depends on the current & the constant called transresistance

In VCCS, current depends on the voltage current & the constant called transconductance

Which of the following is an active element?
(a) Resistor (b) Inductor (c) Capacitor (d) OP-AMP

The S.I unit of Power is J/s or $J s^{-1}$ or watt

The C.G.S unit of Power is erg/s or $erg s^{-1}$

Power is a scalar quantity

1 watt is equal to $10^7 erg s^{-1}$

The S.I unit of energy is joule

The C.G.S unit of energy is erg

It is a scalar quantity

1 eV is equal to $2.6 \times 10^{-19} J$

1 Wh = 3600 J = 3.6 KJ

1 joule = $10^7 erg$

1 Kwh = $3.6 \times 10^6 J$ = 3.6 MJ

1 joule of energy is equal to $2.6 \times 10^{-19} ev$

color coding is used to indicate numerical value of
rating of resistor

The resistor color coding was developed by Radio
Manufacturers Association (RMA)

99. KVL is based on conservation of energy

order of families:
circles \rightarrow 1 order, 1°
ellipses \rightarrow 2 order, 2°
parabolas \rightarrow 2 order, 2°
ellipses \rightarrow 2 order, 2°
Hyperbolas \rightarrow 2 order, 2°

circles \rightarrow 1st
1st
2.2

parabolas:
order 2
& degree
2

ellipses:
order four \rightarrow