



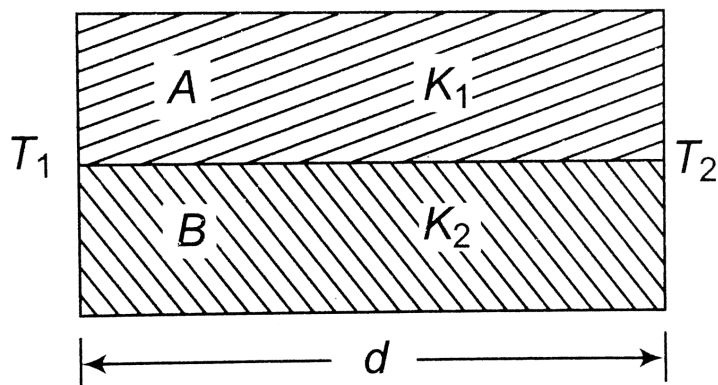
PHYSICS

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

THERMAL AND CHEMICAL EFFECTS OF CURRENT

Exercise

1. Two rods A and B of different materials are welded together as shown in figure. Their thermal conductivities are K_1 and K_2 . The thermal conductivity of the composite rod will be



A. $\frac{K_1 + K_2}{2}$

B. $\frac{3(K_1 + K_2)}{2}$

C. $K_1 + K_2$

D. $2(K_1 + K_2)$

Answer: A



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2. A spherical black body with a radius of 12 cm radiates 450 watt power at 500 K. If the radius were halved and the temperature doubled, the power radiated in watt would be

A. 225

B. 450

C. 1000

D. 1800

Answer: D



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3. The charge flowing through a resistance R varies with time $as Q = at - bt^2$. The total heat produced in R is

A. $\frac{a^3 R}{3b}$

B. $\frac{a^3 R}{2b}$

C. $\frac{a^3 R}{b}$

D. $\frac{a^3 R}{6b}$

Answer: D



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4. A filament bulb ($500W, 100V$) is to be used in a $230V$ main supply. When a resistance R is

connected in series, it works perfectly and the bulb consumes $500W$. The value of R is

A. 230Ω

B. 46Ω

C. 26Ω

D. 13Ω

Answer: C



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5. Two cities are 150km apart. Electric power is sent from one city to another city through copper wire. The fall of km is 0.5Ω . The power less in the wire is

A. $19.2W$

B. $19.2kW$

C. $19.2J$

D. $12.2kW$

Answer: B



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6. If voltage across a bulb rated 220 volt-100 watt drops by 2.5 % of its value, the percentage of the rated value by which the power would decrease is

A. 20 %

B. 2.5 %

C. 5 %

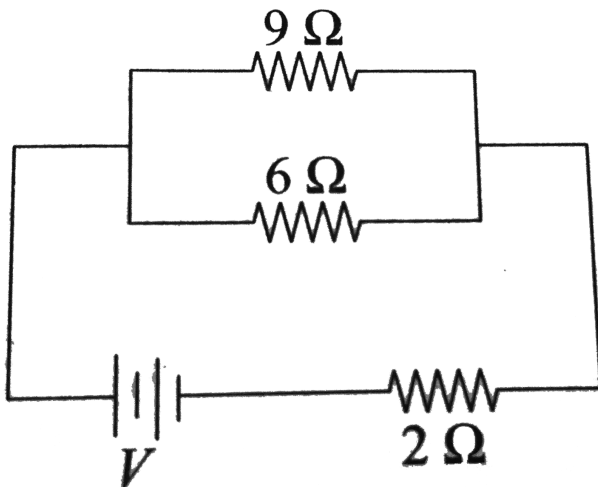
D. 10 %

Answer: C



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7. If power dissipated in the 9Ω resistor in the resistor shown is $36W$, the potential difference across the 2Ω resistor is



A. 8V

B. 10 V

C. 2V

D. 4 V

Answer: B



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8. In producing chlorine through electrolysis 100W power at 125V is being consumed. How

much chlorine per min is liberated ? *ECE* of chlorine is $0.367 \times 10^6 \text{ kg} / \text{C}$

A. $1.76 \times 10^{-3} \text{ kg}$

B. $9.67 \times 10^{-3} \text{ kg}$

C. $17.61 \times 10^{-3} \text{ kg}$

D. $3.67 \times 10^{-3} \text{ kg}$

Answer: C



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9. An electric kettle takes $4A$ current at $220V$.

How much time will it take to boil $1kg$ of water

from temperature $20^{\circ}C$? The temperature of

boiling water is $100^{\circ}C$

A. 6.3 min

B. 8.4 min

C. 12.6 min

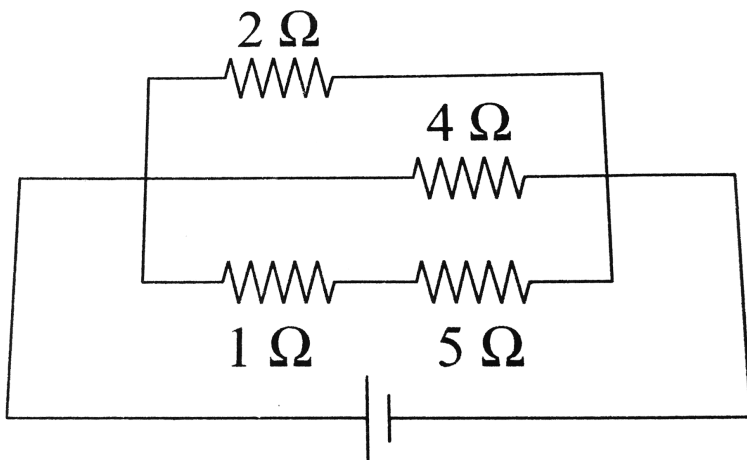
D. 4.2 min

Answer: A



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10. A current of 3A flows through the 2Ω resistor as shown in the circuit. The power dissipated in the 5Ω resistor is



A. 4W

B. 2W

C. 1W

D. 5W

Answer: D



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11. A steady current of $1.5A$ flows through a copper voltameter for 10 min. If the electrochemical equivalent of copper is $30 \times 10^{-5} gC^{-1}$, the mass of copper deposited on the electrode will be

A. 0.40 g

B. 0.50 g

C. 0.67 g

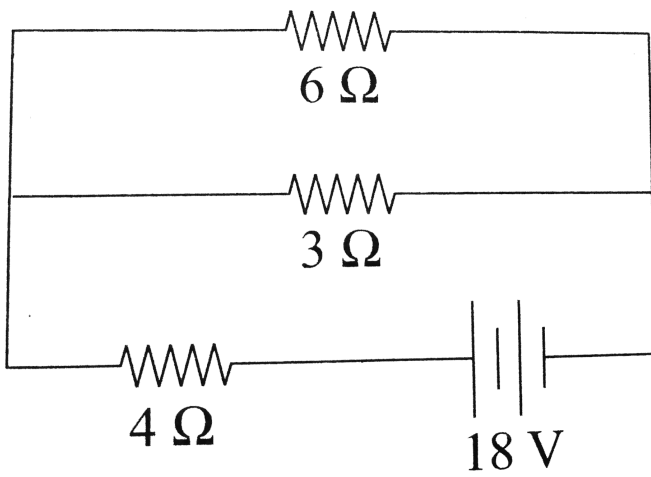
D. 0.27 g

Answer: D



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12. The total power dissipated in watts in the circuit shown here is



A. 16

B. 40

C. 54

D. 4

Answer: C



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13. If the cold junction of thermocouple is kept at $0^{\circ}C$ and the hot junction is kept at $T^{\circ}C$, then the relation between neutral temperature (T_n) and temperature of inversion (T_i) is

A. $T_n = \frac{T_i}{2}$

B. $T_n = 2T_i$

C. $T_n = T_i - T$

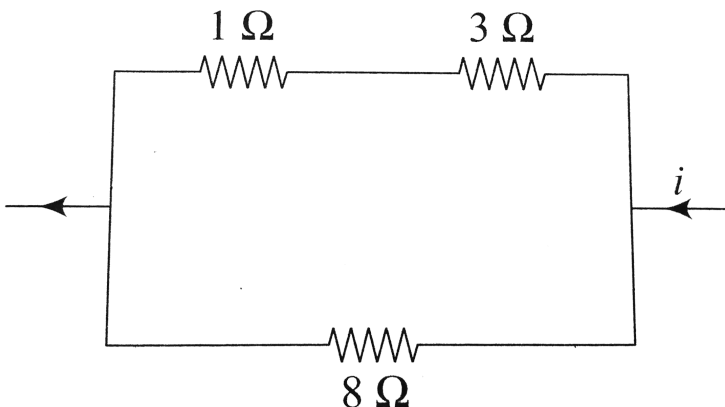
D. $T_n = T_i + T$

Answer: A



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14. Power dissipated across the 8Ω in the circuit shown here is $2W$. The power dissiated in watt units across the 3Ω is



A. 2.0

B. 1.0

C. 0.5

D. 3.0

Answer: D



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15. A $5 - A$ wire can withstand a maximum power of $1W$ in circuit. The resistance of the fuse wire is

A. 0.2Ω

B. 5Ω

C. 0.4Ω

D. 0.04Ω

Answer: D



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16. In India electricity is supplied for domestic use at $220V$. It is supplied at $110V$ in USA. If the resistance of a $60W$ bulb for use in India is

R , the resistance of a $60W$ bulb for use in USA will be

A. R

B. $2R$

C. $\frac{R}{4}$

D. $\frac{R}{2}$

Answer: C



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17. When three identical bulbs of $60W$, $200V$ rating are connected in series to a $200V$ supply, the power drawn by them will be

A. 60 W

B. 180 W

C. 10 W

D. 20 W

Answer: D



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18. Two 220 V, 100 W bulbs are connected first in series and then in parallel. Each time the combination is connected to a 220 V AC supply line. The power drawn by the combination in each case respectively will be :

A. 200 W, 150 W

B. 50 W , 200 W

C. 50 W , 100 W

D. 100 W , 50 W

Answer: B



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19. An electric kettle has two heating coils. When one of the coils connected to an AC source, the water in the kettle boils in 10 min. when the other coil is used the water boils in 40 min. if both the coils are connected in parallel, the time taken by the same quantity of water of boil will be

A. 25 min

B. 15 min

C. 8 min

D. 4 min

Answer: C



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20. Fuse wire is a wire of :

A. low resistance and low melting point

B. low resistance and high melting point

C. high resistance and high melting point

D. high resistance and low melting point

Answer: D



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21. In electrolysis the mass deposited on an electrode is directly proportional to:

A. current

B. square of current

C. concentration of solution

D. inverse of current

Answer: A



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22. Two bulbs $25W, 220V$ and $100W, 220V$ are given . Which has higher resistance ?

A. $25W$ bulb

B. $100W$ bulb

C. Both bulb will have equal resistance

D. Resistance of bulbs cannot be compared

Answer: A



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23. If nearly 10^5 coulomb liberate $1g$ equivalent of aluminium, then the amount of aluminium (equivalent weight 9) deposited through electrolysis in 20 minutes by a current of 50 amp will be

A. $0.6g$

B. $0.09g$

C. $5.4g$

D. $10.8g$

Answer: C



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24. A $5^{\circ}C$ rise in the temperature is observed in a conductor by passing some current. When the current is doubled, then rise in temperature will be equal to

A. $16^{\circ}C$

B. $10^{\circ}C$

C. $20^{\circ}C$

D. $12^{\circ}C$

Answer: C



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25. Three equal resistor connected in series across a source of emf together dissipate $10W$. If the same resistors are connected in

parallel across the same emf, then the power dissipated will be

A. $\frac{10}{3}$

B. 10

C. 30

D. 90

Answer: D



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26. A $100W200V$ bulb is connected to a $160V$ power supply. The power consumption would be

A. $125W$

B. $100W$

C. $80W$

D. $64W$

Answer: D



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27. A heating coil is labelled $100W$, $220V$. The coil is cut in two equal halves and the two pieces are joined in parallel to the same source. The energy now liberated per second is

A. $25J$

B. $50J$

C. $200J$

D. $400J$

Answer: D



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28. A $4\mu F$ capacitor is charged to 400 volts and then its plates are joined through a resistor of resistance $1K\Omega$. The heat produced in the resistor is

A. $0.16J$

B. $1.28J$

C. $0.64J$

D. $0.32J$

Answer: D



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29. Direct current is passed through a copper sulphate solution using platinum electrodes.

The elements liberated at the electrodes are

- A. copper at anode and sulphur at cathode
- B. sulphur at anode and copper at cathode
- C. oxygen at anode and copper at cathode
- D. copper at anode and oxygen at cathode

Answer: C



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30. A battery of e.m.f. $10V$ and internal resistance 0.5Ω is connected across a variable resistance R . The value of R for which the power delivered in it is maximum is given by

A. 0.5Ω

B. 1.0Ω

C. 2.0Ω

D. 0.25Ω

Answer: A



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31. Faraday's law are consequence of conservation

A. energy

B. energy and magnetic field

C. charge

D. magnetic field

Answer: A



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32. Two identical batteries each of emf $E = 2$ volt and internal resistance $r = 1$ ohm are available t . produce heat in an external resistance by passing a current through it. What is the maximum power that can be

developed across an external resistance R using these batteries?

A. $3.2W$

B. $2W$

C. $1.28W$

D. $\frac{8}{9}W$

Answer: B



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33. 40 electric bulb are connected in series across a $220V$ supply. After one bulb is fused the remaining 39 are connected again in series across the same supply. The illumination will be

- A. more with 40 bulbs than with 39
- B. more with 39 bulbs than with 40
- C. equal in both the cases
- D. in the ratio $40^2 : 39^2$

Answer: B



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34. A current of $2A$, passing through a conductor produces $80J$ of heat in $10s$. The resistance of the conductor in ohm is

A. 0.5

B. 2

C. 4

D. 20

Answer: B



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