Foundation

UDAAN 2025

PHYSICS

DHA : 06

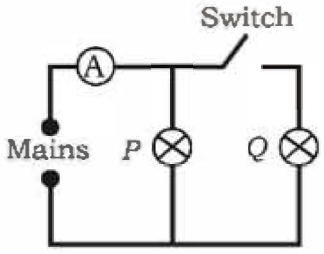
Electricity

Q1 $1\mathrm{KWh}$ is equal to
(A) 3.6×10^3 J
(B) 3.6×10^5 J
(C) 3.6×10^6 J
(D) 3.6×10^8 J

Q2 The coil of a heater is cut into two equal halves and only one of them is used in the heater. The ratio of the heat produced by this half of the coil to that produced by the original coil is
(A) 2 : 1 (B) 4 : 1
(C) 1 : 2 (D) 1 : 4

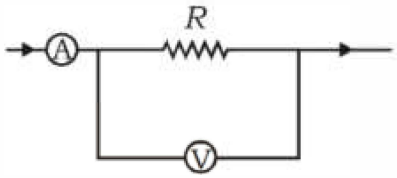
Q3 What is the power output of a 1.5 V ideal battery which is delivering a current of 0.3 A?
(A) 0.45 W (B) 4.5 W
(C) 45 W (D) none of these

Q4 How will the reading in the ammeter A be affected if another identical bulb Q is connected in parallel to P? (Fig.). The voltage in the mains is maintained at a constant value.



(A) The reading will be reduced to one-half
(B) The reading will not be affected.
(C) The reading will be double the previous value.
(D) The reading will be increased fourfold.

Q5 In the circuit shown below, the ammeter A reads 5A and the voltmeter V reads 20 V (Fig.) The correct value of resistance R is



(A) Exactly Ω
(B) Slightly greater than 4Ω
(C) Slightly less than 4Ω
(D) Zero

Q6 **A cooler of 1500 W, 200 volts and a fan of 500 W, 200 volts are to be used from a household supply. The rating of the fuse to be used is**
(A) 2.5 A (B) 5.0 A
(C) 7.5 A (D) 10 A

Q7 **In an electrical circuit, two resistors of 2 Ω and 4 Ω, respectively, are connected in series to a 6 V battery. The heat dissipated by the 4 Ω resistor in 5 s will be**
(A) 5 J (B) 10 J
(C) 20 J (D) 30 J

Q8 **In order to reduce electricity consumption at home, what kind of appliance should one purchase?**
(A) One which draws low power
(B) One which produces less heat
(C) One which operates at a higher voltage
(D) One which draws a high amount of current

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Q9 **An electric toaster has a power rating of 200 W. It operates for 1 hour in the morning and 1 hour in the evening. How much does it cost to operate the toaster for 10 days at Rs. 5 per kW h?**

(A) Rs. 20 (B) Rs. 400

(C) Rs. 5000 (D) Rs. 10000

Q10 **A coil in the heater consumes power P on passing current. If it is cut into halves and joined in parallel, it will consume power**

(A) P (B) P/2

(C) 2 P (D) 4 P

Answer Key

Q1	(C)	Q6	(D)
Q2	(A)	Q7	(C)
Q3	(A)	Q8	(A)
Q4	(C)	Q9	(A)
Q5	(B)	Q10	(D)

Hints & Solutions

Q1 Text Solution:

Energy = power × time. Also, KWh is the unit of energy.

Video Solution:

Q2 Text Solution:

Current is doubled when resistance is halved.

Video Solution:

Q3 Text Solution:

Use P = VI

Video Solution:

Q4 Text Solution:

Current is doubled when resistance is halved

Video Solution:

Q5 Text Solution:

Voltmeter will also draw some current

Video Solution:

Q6 Text Solution:

I= P/V

Video Solution:

Q7 Text Solution:

Find the equivalent resistance of the Circuit, Find the current through 4Ω resistor, Heat dissipated through 4Ω resistor by H=I^2RT

Video Solution:

Q8 Text Solution:

Purchasing an appliance that draws low power will help reduce electricity consumption at home.

Video Solution:

Q9 Text Solution:

Power = 200 W = 200/1000 kW = 0.2 kW
Energy consumed per day = Power x time = 0.2 kW x 2 hours = 0.4 kWh

Energy consumed for 10 days = 0.4 kWh/day x 10 days = 4 kWh
Cost per kWh = Rs. 5
Total cost = Energy consumed x Cost per kWh = 4 kWh x Rs. 5/kWh = Rs. 20

Video Solution:

Q10 **Text Solution:**

If a wire is cut into half the new resistance R' = R/2

If both are connected in parallel equivalent resistance is Req=R'n= R/4.

Video Solution: