

Electric Current and Its Effects

1. When current is passed through a conductor, the heat produced in it depends upon
I. The material of the conductor
II. The current flowing through the conductor
III. The time for which the current flows.

(a) I and II only (b) I and III only
(c) II and III only (d) All I, II and III

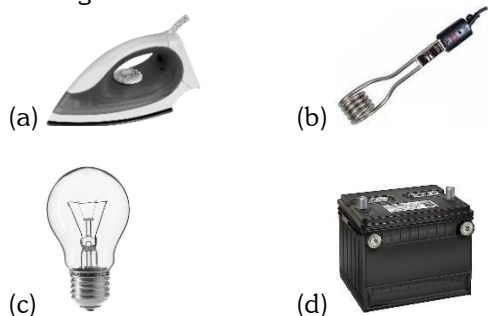
2. Which of the following appliances does not use an electromagnet?

(a) Washing machine (b) Refrigerator
(c) Electric heater (d) Electric bell

3. When the strength of the current flowing through a coil is increased, which of the following statements is true for it?

(a) Strength of the magnetic field decreases,
(b) Strength of the magnetic field increases,
(c) Amount of heat generated due to resistance decreases,
(d) Strength of the magnetic field remains constant.

4. Which of the following does not work on the heating effect of current?

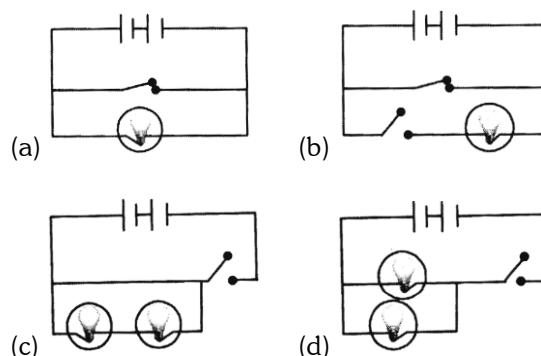


5. The magnetic field around a current carrying coil
(a) Lasts for three hours
(b) Lasts as long as current flows through it
(c) Lasts till its half-life period
(d) Is permanent.

6. Which of the following is not a circuit element?
(a) Battery (b) Voltmeter
(c) Potential difference (d) Resistor

7. A fuse wire is made up of alloy
(a) Nichrome (b) Tin-lead
(c) Manganin (d) Constantan.

8. In which of the following circuits bulb will glow?



9. Marking on a bulb is 60 W, 220 V. What does it signify?

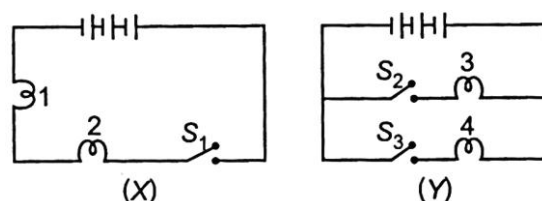
(a) The bulb is connected across the 220 volts, 60 joules of energy is consumed for every second.
(b) The bulb is connected across 220 volts, 60 joules of energy is released.
(c) 60 unit of current will flow in the bulb.
(d) 220 unit of current will flow in the bulb.

10. Match the two columns and select the correct option from codes given below.

Column I	Column II
(A) A bad conductor of electricity but good conductor of heat	(i) CFL
(B) A wire twisted Nichrome many times in the form of circles	(ii) Nichrome
(C) Smart eco-friendly bulb	(iii) Mica
(D) An alloy whose temperature can rise up to 900°C and used as heating element	(iv) Coil

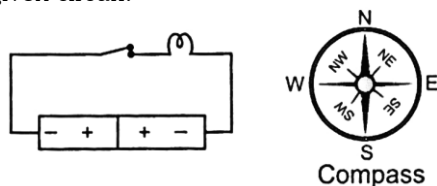
(a) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)
(b) (A)-(i), (B)-(ii), (C)-(iii), (D)-(iv)
(c) (A)-(iii), (B)-(iv), (C)-(i), (D)-(ii)
(d) (A)-(ii), (B)-(iv), (C)-(i), (D)-(iii)

11. Observe the given circuit diagrams (X and Y) and identify the correct statement.



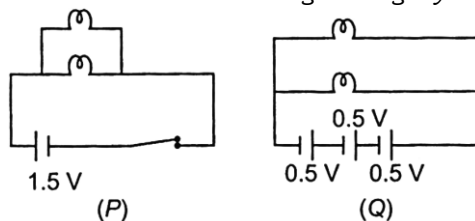
- (a) Circuit Y is a series circuit.
 (b) Bulb 2 in circuit X will glow, even when the bulb 1 is fused, and switch S_1 is closed.
 (c) In circuit Y, bulb 3 will glow if only switch S_2 is closed.
 (d) Both circuits X and Y are parallel circuits.

12. Which of the following statements is incorrect for the given circuit?



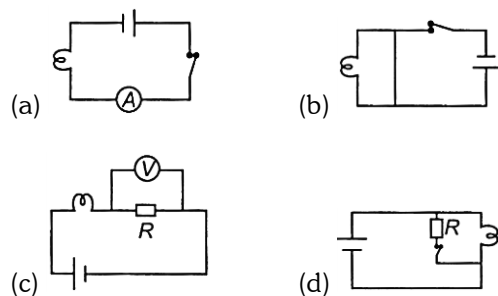
- (a) The wire has no magnetic effect.
 (b) When compass is kept near to the circuit, it will not show any deflection.
 (c) The given circuit is incomplete because there is no source of electric energy.
 (d) Due to battery in this circuit, electric wire behaves as a magnet.

13. In which circuit the bulbs will glow brightly?



- (a) In circuit P only
 (b) In circuit Q only
 (c) In both circuits P and Q, the bulbs will glow with equal brightness
 (d) Neither P nor Q

14. Which of the following diagrams represents a short circuit?

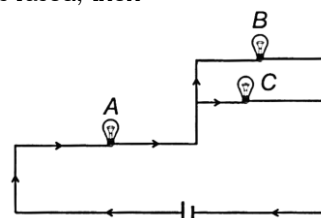


15. Copper wires are used as connecting wires because
 (a) Copper has very high melting point
 (b) Copper wires are very thick wires

- (c) Copper wire offers a lower resistance
 (d) None of these

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16. Three bulbs A, B and C are connected as shown in figure. The bulbs B and C are identical. If the bulb C is fused, then



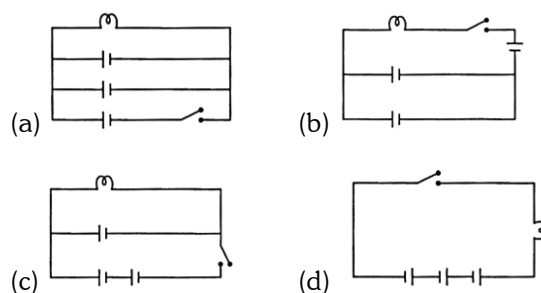
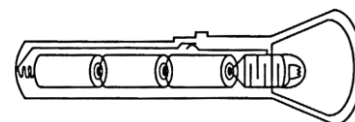
- (a) Brightness of both bulbs A and B will increase
 (b) Brightness of both bulbs A and B will decrease
 (c) Brightness of the bulb A decreases and that of bulb B increases
 (d) None of the bulbs will glow.

17. Consider the following statements and select the correct option which correctly identifies true (T) and false (F).

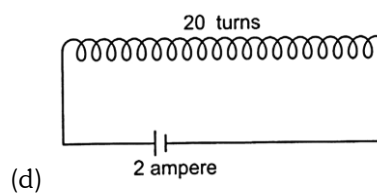
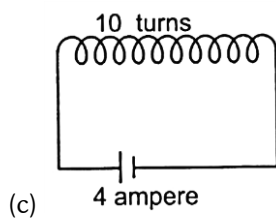
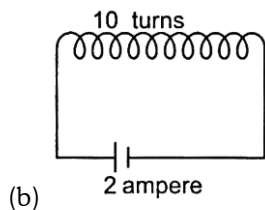
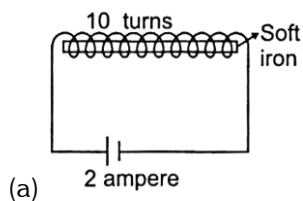
- (i) Iron loses its magnetism easily,
 (ii) Steel is a hard magnetic material.
 (iii) Iron is used to make permanent magnet,
 (iv) Steel is used to make electromagnet.

	(i)	(ii)	(iii)	(iv)
(a)	F	F	T	T
(b)	T	T	F	F
(c)	T	F	T	F
(d)	F	T	F	T

18. Which of the following circuit diagram represents the given torch?



19. In the given figures, there are four electromagnets. Which electromagnet is stronger?



20. Read the given statements and select the correct option.

Statement 1: In a circuit, surface of the bulb becomes warmer than the connecting wires when the same current flows through them.

Statement 2: A thin and long wire has higher resistance than a thick and short wire.

- (a) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
 (b) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
 (c) Statement 1 is true and statement 2 is false.
 (d) Statement 2 is true and statement 1 is false.

Answer key

1. D	2. C	3. B	4. D	5. B
6. C	7. B	8. A	9. A	10. C
11. C	12. D	13. C	14. B	15. C
16. C	17. B	18. D	19. A	20. B

HINTS & EXPLANATIONS

1. (d) Not Available
2. (c) Not Available
3. (b): The strength of the magnetic field of a coil is directly proportional to the strength of the current flowing through it.
4. (d) Not Available
5. (b) Not Available
6. (c) Not Available
7. (b) Not Available
8. (a): Circuit (a) is closed so, current flows through the circuit and bulb glows. Circuits (b), (c) and (d) are open.
9. (a): 60 W, 220 V means the power of the bulb is 60W i.e., 60 joules of electrical energy is consumed in one second, if it is given a potential difference of 220 V.
10. (c) Not Available
11. (c): Circuit X is series circuit and circuit Y is parallel circuit. As circuit X is a series circuit, so bulb 2 will not glow if switch S., is closed and bulb 1 is fused.
12. (d): In the circuit, the batteries are not connected properly, hence no current will flow in the circuit and compass will not be deflected as wire will not behave as a magnet.
13. (c): In both circuits P and Q, the bulbs are connected in parallel and the voltage is same.
14. (b): In an electrical circuit, short circuit occurs when a naked live wire and a neutral wire come in contact. In other way, a device (bulb) is shorted by simply connecting a wire across it.
15. (c) Not Available
16. (c): In circuit, bulbs B and C are parallel with each other and bulb A is in series with this combination. If bulb C is fused then bulb A will glow less brightly because current flowing is decreased but bulb B will glow a bit more brightly as the voltage is increased.
17. (b) Not Available
18. (d): In torch, three batteries are connected in series with the bulb and switch.
19. (a): In (a), electromagnet has a soft iron rod inside it which increases the magnetic field in the electromagnet.
20. (b): The filament of the electric bulb is made of a very thin and coiled tungsten wire which offers a large resistance and heat is produced when a current passes through it. On the other hand, connecting wires are thicker than filament of bulb so, it has lower resistance. The higher the resistance, the greater is the heat produced.