Physics Grade 10 — Chapter 7

Current Electricity

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Independent practice MCQs from the supplied Class 10 Physics DeepSeek notes PDF. Total: 44 questions.

A. Important / Main Topics

1. Electric current is defined as:

(A) Charge per unit time
(B) Charge multiplied by time
(C) Time per unit charge
(D) Charge squared per unit time

Correct Answer: A

Explanation: Current is the rate of flow of charge:.

2. The SI unit of electric current is:

(A) Coulomb
(B) Ampere
(C) Volt
(D) Ohm I = ΔQ/Δt

Correct Answer: B

Explanation: The SI unit of current is the ampere (A).

3. One ampere is equal to:

(A) 1 C × s
(B) 1 s/C
(C) 1 C/s
(D) 1 C²/s

Correct Answer: C

Explanation: One ampere is equal to 1 C/s.

4. The direction of conventional current is:

(A) From negative to positive
(B) Random
(C) From left to right
(D) From positive to negative

Correct Answer: D

Explanation: Conventional current flows from positive to negative.

5. The actual flow of electrons in a metal is from:

(A) Negative to positive
(B) Positive to negative
(C) Left to right
(D) Right to left

Correct Answer: A

Explanation: Electrons flow from the negative terminal to the positive terminal.

6. In metals, electric current is due to the flow of:

(A) Protons
(B) Electrons
(C) Neutrons
(D) Positive ions

Correct Answer: B

Explanation: In metals, current is carried by negatively charged electrons.

7. If a current of 2 A flows for 5 seconds, the charge that flows is:

(A) 2 C
(B) 5 C
(C) 10 C
(D) 0.4 C

Correct Answer: C

Explanation: If a current of 2 A flows for 5 seconds, the charge that flows is 10 C.

8. In gases and electrolytes, current is carried by:

(A) Only electrons
(B) Only protons
(C) Only neutrons 10 A −3 1 mA = 10 A −3 1 μA 10 A −3 10 A −6 10 A 3 10 A 6 10 A −6 1 μA = 10 A −6 Q = I × t = 2 × 5 = 10 C
(D) Both positive and negative charges

Correct Answer: D

Explanation: In gases and electrolytes, current is carried by both positive and negative ions.

9. Direct current flows in:

(A) One direction
(B) Two directions
(C) Random directions
(D) No direction

Correct Answer: A

Explanation: Direct current flows in One direction.

10. Alternating current:

(A) Flows in one direction
(B) Reverses direction periodically
(C) Is always steady
(D) Cannot be measured

Correct Answer: B

Explanation: Alternating current Reverses direction periodically.

11. Potential difference is defined as:

(A) Charge per unit time
(B) Force per unit charge
(C) Work done per unit charge
(D) Charge per unit area

Correct Answer: C

Explanation: Potential difference is the work done per unit charge:.

12. The SI unit of potential difference is:

(A) Ampere
(B) Coulomb ΔV = ΔW/Δq
(C) Ohm
(D) Volt

Correct Answer: D

Explanation: The unit of potential difference is the volt (V).

13. The positive terminal of a battery is at:

(A) Higher potential
(B) Lower potential
(C) Zero potential
(D) The same potential as the negative terminal

Correct Answer: A

Explanation: The positive terminal is at higher potential.

14. Conventional current flows from:

(A) Lower to higher potential
(B) Higher to lower potential
(C) Randomly
(D) No direction

Correct Answer: B

Explanation: Conventional current flows from higher potential to lower potential.

15. V = I/R V = IR V = I R 2 V = R/I V = IR V = IR The device that provides potential difference in a circuit is:

(A) Resistor
(B) Switch
(C) Battery
(D) Wire

Correct Answer: C

Explanation: V = I/R V = IR V = I R 2 V = R/I V = IR V = IR The device that provides potential difference in a circuit is Battery.

16. Potential difference is measured using a:

(A) Ammeter
(B) Galvanometer
(C) Ohmmeter
(D) Voltmeter

Correct Answer: D

Explanation: A voltmeter measures potential difference and is connected in parallel.

17. If 10 J of work is done to move 2 C of charge between two points, the potential difference is:

(A) 5 V
(B) 2 V
(C) 10 V
(D) 20 V

Correct Answer: A

Explanation: If 10 J of work is done to move 2 C of charge between two points, the potential difference is 5 V.

18. The potential difference is measured across a component by connecting the voltmeter:

(A) In series
(B) In parallel
(C) In series or parallel
(D) Across the battery only

Correct Answer: B

Explanation: A voltmeter is connected in parallel across the component.

19. Electromotive force (emf) is defined as:

(A) Force per unit charge
(B) Charge per unit energy
(C) Energy supplied per unit charge
(D) Power per unit charge

Correct Answer: C

Explanation: Emf is the energy supplied by a source per unit charge.

20. The SI unit of emf is:

(A) Newton
(B) Joule

(C) Ampere
(D) Volt

Correct Answer: D

Explanation: The SI unit of emf is Volt.

21. One volt is equal to:

(A) 1 J/C
(B) 1 C/J
(C) 1 N/C
(D) 1 A/s

Correct Answer: A

Explanation: One volt is equal to 1 J/C.

22. An emf source converts:

(A) Electrical energy into non-electrical energy
(B) Non-electrical energy into electrical energy
(C) Electrical energy into electrical energy
(D) Mechanical energy into mechanical energy

Correct Answer: B

Explanation: An emf source converts Non-electrical energy into electrical energy.

B. Less Important / Secondary Topics

23. Which of the following is an emf source?

(A) Battery
(B) Resistor
(C) Switch
(D) Wire

Correct Answer: A

Explanation: A battery is an emf source (chemical → electrical).

24. EMF is a property of:

(A) The component
(B) The source
(C) The wire
(D) The switch

Correct Answer: B

Explanation: Emf is a property of the source (battery, generator). $\varepsilon = W \times q$ $\varepsilon = W/q$ $\varepsilon = q/W$ $\varepsilon = W + q$ $\varepsilon = W/q$ $\varepsilon = W/q$.

25. Potential difference is a property of:

(A) The source
(B) The switch
(C) The component
(D) The battery

Correct Answer: C

Explanation: Potential difference is a property of the component (resistor, bulb).

26. A solar panel converts:

(A) Chemical energy into electrical energy
(B) Mechanical energy into electrical energy
(C) Thermal energy into electrical energy
(D) Solar energy into electrical energy

Correct Answer: D

Explanation: A solar panel converts Solar energy into electrical energy.

27. A thermocouple converts:

(A) Thermal energy into electrical energy
(B) Chemical energy into electrical energy
(C) Mechanical energy into electrical energy
(D) Solar energy into electrical energy

Correct Answer: A

Explanation: A thermocouple converts Thermal energy into electrical energy.

28. The - graph for an ohmic device is:

(A) A curved line
(B) A straight line through the origin
(C) A horizontal line
(D) A vertical line

Correct Answer: B

Explanation: The - graph for an ohmic device is A straight line through the origin.

29. Which of the following is an ohmic device?

(A) Filament bulb
(B) Thermistor
(C) Metal wire
(D) Diode

Correct Answer: C

Explanation: Metal wire is an ohmic device; the others are non-ohmic.

30. Which of the following is a non-ohmic device?

(A) Copper wire
(B) Resistor
(C) Silver wire
(D) Filament bulb

Correct Answer: D

Explanation: A filament bulb is non-ohmic because its resistance changes with temperature.

31. Ohm's law is valid only if:

(A) Temperature is constant
(B) Voltage is high
(C) Current is low
(D) Resistance is zero

Correct Answer: A

Explanation: Ohm's law is valid only if Temperature is constant.

32. In a filament bulb, as current increases, the resistance:

(A) Decreases
(B) Increases
(C) Remains constant
(D) Becomes zero

Correct Answer: B

Explanation: In a filament bulb, as current increases, the resistance Increases.

33. A thermistor's resistance typically:

(A) Increases with temperature
(B) Remains constant
(C) Decreases with temperature (for NTC)
(D) Is infinite

Correct Answer: C

Explanation: For a negative temperature coefficient (NTC) thermistor, resistance decreases with temperature.

34. A diode allows current to flow:

(A) In both directions equally
(B) Only when heated
(C) Only when cooled
(D) Easily in one direction and blocks it in the other

Correct Answer: D

Explanation: A diode allows current to flow Easily in one direction and blocks it in the other.

35. If and , the current is:

(A) 3 A
(B) 4 A
(C) 12 A
(D) 48 A

Correct Answer: A

Explanation: If and , the current is 3 A.

36. The slope of a - graph represents: V = 12 V R = 4 Ω I = V /R = 12/4 = 3 A V I

(A) Current
(B) Resistance
(C) Voltage
(D) Power

Correct Answer: B

Explanation: "Resistance" is correct: it matches the idea asked in the question ("The slope of a - graph represents: V = 12 V R = 4 Ω I = V /R = 12/4 = 3 A V I"), while the other choices do not.

37. Resistance is defined as:

(A) The flow of charge
(B) The energy per unit charge
(C) The opposition to the flow of charge
(D) The power per unit charge

Correct Answer: C

Explanation: Resistance is the opposition to the flow of electric charge.

38. The SI unit of resistance is:

(A) Ampere
(B) Volt
(C) Coulomb
(D) Ohm

Correct Answer: D

Explanation: The unit of resistance is the ohm (Ω).

39. One ohm is equal to: V I R V = IR R = I/V R = V /I R = V × I R = V + I R = V /I R = V /I

(A) 1 V/A
(B) 1 A/V
(C) 1 V × A
(D) 1 A × V

Correct Answer: A

Explanation: "1 V/A" is correct: it matches the idea asked in the question ("One ohm is equal to: V I R V = IR R = I/V R = V /I R = V × I R = V + I R = V /I R = V /I"), while the other choices do not.

40. Which of the following is a factor affecting resistance?

(A) Color of the wire
(B) Length of the wire
(C) Shape of the wire
(D) Weight of the wire

Correct Answer: B

Explanation: Length of the wire — this correctly answers the question.

41. Which of the following is a type of resistor?

(A) Capacitor
(B) Inductor
(C) Carbon film resistor
(D) Diode

Correct Answer: C

Explanation: Carbon film resistor is a type of resistor.

42. A rheostat is a:

(A) Fixed resistor
(B) Capacitor
(C) Diode
(D) Variable resistor

Correct Answer: D

Explanation: A rheostat is a variable resistor used to control current.

43. 1 Ω = 1 V/A If a device has a resistance of 10 Ω and a current of 2 A flows through it, the voltage across it is:

(A) 20 V
(B) 5 V
(C) 10 V
(D) 0.2 V

Correct Answer: A

Explanation: 1 Ω = 1 V/A If a device has a resistance of 10 Ω and a current of 2 A flows through it, the voltage across it is 20 V.

44. Resistance is independent of which of the following (for ohmic devices)?

(A) Material
(B) Voltage
(C) Length
(D) Cross-sectional area

Correct Answer: B

Explanation: For ohmic devices, resistance is independent of voltage and current; it depends on material, length, and area. Answer.