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ACADEMY FOR DDCET

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Practice Set 2 Solution

Electric CURRENT

Topics :

1. Ohm's Law and application
2. Charge, interaction of charges, Coulomb's force.
3. Electric field, electric potential, electric flux, electric current.

DDCET final exam weightage of this topic : 3 Questions (6 Marks)

Total Practice sets of this topic :	2 (sets) x 30 (questions) = 60 Questions
Total Practice tests of this topic :	2 (exams) x 20 (questions) = 40 Questions
Offline / Online during lecture :	4 (lectures) X 50 (Questions) = 200 Question

DDCET 2025

Total 300 Questions to practice this topic

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Section 1 :

1. Ohm's Law and application
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1 What happens to resistance when the length of a wire doubles?

A) Halves
B) Remains the same
C) Doubles ✓
D) Quadruples

2 A short circuit has:

A) Very low resistance ✓
B) Very high resistance
C) No resistance
D) Infinite resistance

3 Which unit is equivalent to Ohm?

A) A / V
B) V / A ✓
C) W / A
D) C / V

4 Current is measured in:

A) Coulombs
B) Watts
C) Newtons
D) Amperes ✓

5 A fuse is used to:

A) Store electric charge
B) Increase voltage
C) Protect circuits from high currents ✓
D) Convert DC to AC

6 Which factor does not affect resistance?

A) Length
B) Area
C) Material
D) Mass of wire ✓

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7 Which of these follows Ohm's Law?

A) Semiconductor
B) Diode
C) Resistor ✓
D) Transistor

8 If a wire's thickness is increased, resistance:

A) Increases
B) Decreases ✓
C) Remains constant
D) First increases, then decreases

9 The unit of conductance is:

A) Ohm
B) Siemens ✓
C) Tesla
D) Henry

10 A voltmeter is connected in:

A) Series
B) Parallel ✓
C) Either Series or Parallel
D) None of this

11 Ohm's Law does not apply to:

A) Metallic conductors
B) Non-linear components like diodes ✓
C) Resistors
D) Circuits with constant temperature

12 Resistance increases when:

A) Temperature increases ✓
B) Temperature decreases
C) Voltage increases
D) Current increases

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13 A 60W, 220V bulb has a resistance of:

A) 220Ω
B) 807Ω ✓ (R=(VxV)/P = (220X220)/60 = 806.67Ω. = 807Ω)
C) 440Ω
D) 30Ω

14 What is the unit of charge in the International System of Units (SI) ?

A) Ampere
B) Coulomb ✓
C) Volt
D) Ohm

15 What is the charge of an electron?

A) $+1.6 \times 10^{-19}$ C
B) -1.6×10^{-19} C ✓
C) $+1.6 \times 10^{20}$ C
D) -1.6×10^{20} C

16 Coulomb's Law describes the force between

A) Two masses
B) Two electric charges ✓
C) Two magnetic poles
D) Two gravitational bodies

17 What is the direction of the electric force between two like charges?

A) Attractive
B) Repulsive ✓
C) No force
D) Depends on the medium

18 Coulomb's Law is valid in a:

A) Vacuum only
B) Air only
C) Non-conducting medium
D) Any medium ✓

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19 Which of the following is the correct formula for Coulomb's Law?

A) $F = k * (q_1 * q_2) / r^2$ ✓
B) $F = k * (q_1 + q_2) / r^2$
C) $F = k * (q_1 - q_2) / r^2$
D) $F = k * (q_1 * q_2) * r^2$

20 In Coulomb's Law, the constant k is known as:

A) Coulomb's constant ✓
B) Gravitational constant
C) Permittivity of free space
D) Magnetic constant

21 The value of Coulomb's constant (k) in vacuum is approximately:

A) 8.99×10^9 N·m²/C² ✓
B) 9.81×10^7 N·m²/C²
C) 8.85×10^{-12} C²/N·m²
D) 6.67×10^{-11} N·m²/kg²

22 What happens to the force between two charges if the distance between them is doubled?

A) It becomes four times weaker ✓
B) It becomes twice weaker
C) It becomes half as strong
D) It remains the same

23 Two charges, +3 μC and -3 μC, are placed 1 meter apart. The force between them will be:
A) Attractive ✓
B) Repulsive
C) Zero
D) Dependent on the medium

24 Which of the following correctly describes the interaction of two charges in vacuum if both have the same sign?

A) Attractive force
B) Repulsive force ✓
C) No force
D) Force depends on their magnitude

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25 In Coulomb's law, the force is inversely proportional to the:

A) Charge of the particles
B) Square of the distance between the charges ✓
C) Sum of the charges
D) Distance between the charges

26 What will happen if the magnitude of the charges in Coulomb's Law is increased?

A) The force between them will increase ✓
B) The force between them will decrease
C) The force remains unaffected
D) The force becomes zero

27 The force between two point charges is 4 N. If the distance between them is doubled, the new force will be:

A) 16 N
B) 4 N
C) 1 N ✓
D) 2 N

28 What is the force between two charges if the charges are 3 μC and 5 μC and are 2 meters apart in a vacuum?

A) 4.5×10^{-2} N
B) 3.6×10^{-2} N ✓
C) 5.0×10^{-2} N
D) 1.8×10^{-2} N

29 In Coulomb's Law, what effect does a dielectric material between the charges have?

A) Increases the force between charges
B) Decreases the force between charges ✓
C) Has no effect
D) It changes the nature of the force

30 If two opposite charges are placed 3 meters apart, the force between them will be:

A) Decreased by a factor of 9 if the distance is tripled ✓
B) Increased by a factor of 3 if the distance is halved
C) Unaffected by the distance
D) Increased by a factor of 3 if the distance is doubled

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