ONTARIO PHYSICS, GRADE 12, UNIVERSITY PREPARATION (SPH4U) · UNIT C · 25 QUESTIONS

Gravitational, Electric, and Magnetic Fields — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Gravitational field strength is force per unit**

- A Time
- B Mass
- C Charge
- D Distance

Understand It with Pulse | Flag a mistake

2 **A mass of 4 kilograms experiences gravitational force 40 newtons. The field strength, in newtons per kilogram, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

3 **Electric field strength is force per unit**

A Charge

B Current

C Distance

D Mass

Understand It with Pulse | Flag a mistake

4 **A charge of 2 coulombs experiences electric force 12 newtons. The field strength, in newtons per coulomb, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

5 **Electric field lines point away from a positive charge and toward a**

A Neutral point

B Positive charge

C Negative charge

D Magnet

Understand It with Pulse | Flag a mistake

6 **The electric field between parallel plates is approximately**

A Uniform

B Radial

C Circular

D Zero

Understand It with Pulse | Flag a mistake

7 **A test charge placed in an electric field experiences a force in the direction of the field if it is**

- **A** Positive
- **B** Neutral
- **C** Stationary always
- **D** Negative

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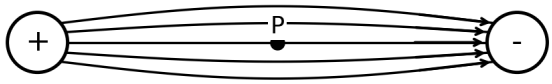
8 **The diagram shows a positive charge on the left and a negative charge on the right with point P between them. The field at P points**



- **A** Toward the positive charge
- **B** Upward only
- **C** Toward the negative charge
- **D** Downward only

Understand It with Pulse | Flag a mistake

9 **Coulomb law states electric force is proportional to the product of charges and inversely proportional to distance**

- A Not at all
- B Squared
- C Cubed
- D Directly

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10 **Doubling the distance between two charges reduces the electric force to what fraction of its original value, expressed as a decimal**

ANSWER _____

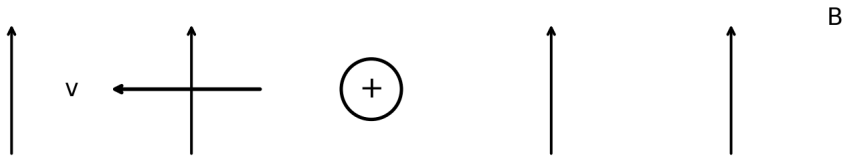
Understand It with Pulse | Flag a mistake

11 **A magnetic field is produced by**

- **A** Insulators
- **B** Moving charges and currents
- **C** Stationary charges only
- **D** Neutral atoms only

Understand It with Pulse | Flag a mistake

12 **The diagram shows a positive particle in a magnetic field. The magnetic force on it points**



- **A** Into the page
- **B** Out of the page
- **C** To the right
- **D** To the left

Understand It with Pulse | Flag a mistake

13 **The diagram shows a vertical wire with current upward and point P to its right. The magnetic field at P points**



- **A** Into the page
- **B** Out of the page
- **C** Downward
- **D** Upward

Understand It with Pulse | Flag a mistake

14 **A charged particle moves through a magnetic field. The magnetic force on the particle acts in a direction that is**

- **A** Perpendicular to velocity and field
- **B** Zero always
- **C** Along the field
- **D** Parallel to velocity

Understand It with Pulse | Flag a mistake

15 **The force on a moving charge in a magnetic field is zero when velocity is**

- **A** Perpendicular to the field
- **B** At 45 degrees
- **C** Maximum
- **D** Parallel to the field

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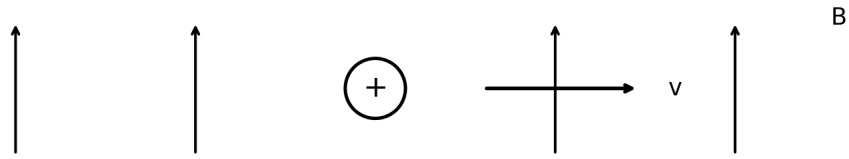
16 **The diagram shows a positive particle moving right in a magnetic field pointing up. The magnetic force on it points**



- **A** Out of the page
- **B** Into the page
- **C** Right
- **D** Left

Understand It with Pulse | Flag a mistake

17 **A solenoid produces a magnetic field similar to that of a**

A Bar magnet

B Charged plate

C Single wire

D Electric dipole

Understand It with Pulse | Flag a mistake

18 **Which change increases the magnetic field strength of a solenoid?**

A Removing the core

B Reducing length only

C Decreasing current

D Increasing turns per length

Understand It with Pulse | Flag a mistake

19 **An electric motor converts electrical energy into**

A Chemical energy

B Mechanical energy

C Thermal energy only

D Light only

Understand It with Pulse | Flag a mistake

20 **Electromagnetic induction occurs when magnetic flux through a coil**

A Is constant

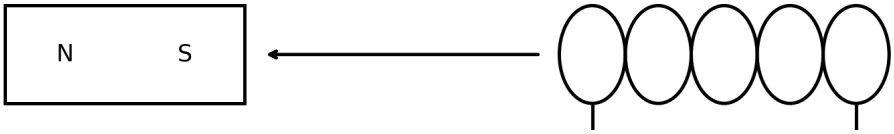
B Is zero always

C Changes

D Is parallel only

Understand It with Pulse | Flag a mistake

21 **The diagram shows a bar magnet and a coil. The induced current in the coil, when viewed from the magnet, flows**



- **A** clockwise
- **B** counterclockwise
- **C** out of the page at the top of the coil
- **D** no current is induced

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22 **A transformer works only with**

- **A** Alternating current
- **B** Static charge
- **C** Direct current
- **D** No current

Understand It with Pulse | Flag a mistake

23 **In a step up transformer, the secondary coil has more turns and the secondary voltage is**

- A Higher
- B Equal
- C Lower
- D Zero

Understand It with Pulse | Flag a mistake

24 **A transformer has 100 primary turns and 500 secondary turns with primary voltage 20 volts. The secondary voltage, in volts, is**

ANSWER _____

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25

Magnetic flux is measured in

A Amperes

B Webers

C Teslas

D Volts

Understand It with Pulse

Flag a mistake

ANSWER KEY

1. B
2. 10
3. A
4. 6
5. C
6. A
7. A
8. C
9. B
10. 0.25
11. B
12. A
13. A
14. A
15. D
16. B
17. A
18. D
19. B
20. C
21. B
22. A
23. A
24. 100
25. B

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