MASSACHUSETTS PHYSICS · UNIT 3 · 25 QUESTIONS

Electricity, Magnetism, and Waves — 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 **A current of 3 A flows through a resistor of 4 ohms. The voltage across it is**

- A 0.75 V
- B 7 V
- C 1.33 V
- D 12 V

Understand It with Pulse | Flag a mistake

2 **A voltage of 24 V is applied across a 8 ohm resistor. The current is**

- A 3 A
- B 192 A
- C 32 A
- D 0.33 A

Understand It with Pulse | Flag a mistake

3 **Resistors of 4 ohms and 6 ohms in series have total resistance**

- A 2.4 ohms
- B 24 ohms
- C 10 ohms
- D 1.5 ohms

Understand It with Pulse | Flag a mistake

4 **Resistors of 6 ohms and 3 ohms in parallel have total resistance**

- A 9 ohms
- B 2 ohms
- C 18 ohms
- D 0.5 ohms

Understand It with Pulse | Flag a mistake

5 **A device uses current 2 A at voltage 12 V. Its electric power is**

- A 6 W
- B 14 W
- C 0.17 W
- D 24 W

Understand It with Pulse | Flag a mistake

6 **If the distance between two point charges doubles, the electric force between them**

A doubles

B halves

C becomes one fourth

D becomes four times

Understand It with Pulse | Flag a mistake

7 **Like electric charges**

A attract

B repel

C have no effect

D always cancel

Understand It with Pulse | Flag a mistake

8 **The electric field at a point is defined as the force per unit**

A mass

B charge

C distance

D time

Understand It with Pulse | Flag a mistake

9 **In a series circuit, the quantity that is the same through every part is the**

A voltage

B resistance

C current

D power

Understand It with Pulse | Flag a mistake

10 **In a parallel circuit, the quantity that is the same across every branch is the**

A current

B voltage

C resistance

D charge

Understand It with Pulse | Flag a mistake

11 **A wave has frequency 5 Hz and wavelength 4 m. Its speed is**

A 1.25 m/s

B 9 m/s

C 20 m/s

D 0.8 m/s

Understand It with Pulse | Flag a mistake

12 **A wave has period 0.2 s. Its frequency is**

A 0.2 Hz

B 20 Hz

C 0.04 Hz

D 5 Hz

Understand It with Pulse | Flag a mistake

13 **Sound travels fastest in**

A a vacuum

B air

C water

D steel

Understand It with Pulse | Flag a mistake

14 **A magnetic field exerts a force on a charged particle only when the particle is**

A at rest

B moving

C neutral

D inside a wire

Understand It with Pulse | Flag a mistake

15 **Changing the magnetic flux through a coil**

A induces a voltage in the coil

B stops all current

C has no effect

D removes the magnetic field

Understand It with Pulse | Flag a mistake

16 **The unit of electric charge is the**

A ampere

B volt

C ohm

D coulomb

Understand It with Pulse | Flag a mistake

17 **A current of 4 A flows for 5 s. The charge transferred, in coulombs, is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

18 **A voltage of 18 V is applied across a 6 ohm resistor. The current, in amperes, is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

19 **A wave has speed 300 m/s and frequency 50 Hz. Its wavelength, in meters, is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

20 **A wave has frequency 20 Hz. Its period, in seconds, is _____**

ANSWER _____

Understand It with Pulse | Flag a mistake

21 **In a transverse wave, particles of the medium move**

A along the wave direction

B perpendicular to the wave direction

C only at the source

D not at all

Understand It with Pulse | Flag a mistake

22 **When light reflects from a flat mirror, the angle of reflection compared with the angle of incidence is**

- **A** larger
- **B** smaller
- **C** equal
- **D** twice as large

Understand It with Pulse | Flag a mistake

23 **The speed of light in a vacuum is about**

- **A** $3.0 \times 10^{8} \ \frac{m}{s}$
- **B** $3.0 \times 10^{5} \ \frac{m}{s}$
- **C** 340 m/s
- **D** $1.5 \times 10^{8} \ \frac{m}{s}$

Understand It with Pulse | Flag a mistake

24 **A device uses current 3 A at voltage 10 V. Its power, in watts, is ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

25 **Two resistors of 10 ohms each in series have total resistance, in ohms, of ____**

ANSWER _____

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. D
2. A
3. C
4. B
5. D
6. C
7. B
8. B
9. C
10. B
11. C
12. D
13. D
14. B
15. A
16. D
17. 20
18. 3
19. 6
20. 0.05
21. B
22. C
23. A
24. 30
25. 20

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