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Physics Grade 12 — Chapter 6

Alternating Current

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Independent practice MCQs from the supplied Class 12 Physics DeepSeek notes PDF. Total: 34 questions.

A. Important / Main Topics

1. Alternating current changes its polarity:

(A) At regular intervals of time
(B) Never
(C) Only once
(D) Randomly

Correct Answer: A

Explanation: Alternating current changes its polarity At regular intervals of time.

2. Direct current flows:

(A) In both directions 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1392/1830
(B) In one direction only
(C) Randomly
(D) Never

Correct Answer: B

Explanation: Direct current flows In one direction only.

3. The graph of AC voltage against time is a:

(A) Straight line
(B) Parabola
(C) Sine wave
(D) Circle

Correct Answer: C

Explanation: The graph of AC voltage against time is a Sine wave.

4. A sinusoidal alternating voltage or current can be produced by rotating a coil in:

(A) A vacuum
(B) A gravitational field
(C) An electric field
(D) A uniform magnetic field

Correct Answer: D

Explanation: A sinusoidal alternating voltage or current can be produced by rotating a coil in A uniform magnetic field.

5. One complete set of positive and negative values of an alternating quantity is called a:

(A) Cycle
(B) Half-cycle
(C) Phase
(D) Period

Correct Answer: A

Explanation: A cycle is one complete set of positive and negative values.

6. V =V sin(ωt)0 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1394/1830 The time taken to complete one cycle is called:

(A) Frequency

(B) Time period
(C) Amplitude
(D) Phase

Correct Answer: B

Explanation: Time period is the time for one cycle.

7. The number of cycles per second is called:

(A) Time period
(B) Amplitude
(C) Frequency
(D) Wavelength

Correct Answer: C

Explanation: The number of cycles per second is called Frequency.

8. The unit of frequency is:

(A) Second
(B) Metre
(C) Radian
(D) Hertz

Correct Answer: D

Explanation: Frequency is measured in hertz (Hz).

9. The maximum value of an alternating quantity is called:

(A) Peak value
(B) r.m.s. value
(C) Average value T 10/21/26, 10:17 PM notes class 12 physics - DeepSeek
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(D) Effective value

Correct Answer: A

Explanation: The maximum value of an alternating quantity is called Peak value.

10. The r.m.s. value of an AC is:

(A) Always equal to the peak value
(B) The steady DC that produces the same heating effect
(C) Always zero
(D) Always negative

Correct Answer: B

Explanation: r.m.s. is defined in terms of the heating effect.

11. The average value of a sinusoidal AC over one full cycle is:

(A) Maximum
(B) Half of peak
(C) Zero
(D) Infinite

Correct Answer: C

Explanation: The average value of a sinusoidal AC over one full cycle is Zero.

12. The peak value of a sine wave occurs:

(A) Once per cycle
(B) Three times per cycle
(C) Never
(D) Twice per cycle

Correct Answer: D

Explanation: The peak value of a sine wave occurs Twice per cycle.

13. The instantaneous power is always positive because:

(A) The current is squared I R02 I R21 02 2I R02 I R02 P =max I R02 □P□=P max □P□=2P max □P□= P 21 max □P□= P 41 max □P□= P 21 max □P□= P 21 max I Rrms2 I Rrms 2I Rrms2 I R21 rms2 I Rrms2 □P□=I Rrms2 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1399/1830

(B) The current is always positive

(C) The resistance is positive

(D) The voltage is constant

Correct Answer: A

Explanation: The instantaneous power is always positive because The current is squared I R02 I R21 02 2I R02 I R02 P =max I R02 □P□=P max □P□=2P max □P□= P 21 max □P□= P 41 max □P□= P 21 max □P□= P 21 max I Rrms2 I Rrms 2I Rrms2 I R21 rms2 I Rrms2 □P□=I Rrms2 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1399/1830.

14. The process of converting AC voltage into DC voltage is called:

(A) Amplification

(B) Rectification

(C) Modulation

(D) Oscillation

Correct Answer: B

Explanation: The process of converting AC voltage into DC voltage is called Rectification.

15. A half-wave rectifier uses:

(A) Four diodes

(B) Two diodes

(C) One diode

(D) No diodes

Correct Answer: C

Explanation: A half-wave rectifier uses one diode.

16. During the positive half-cycle, the diode in a half-wave rectifier is:

(A) Reverse biased

(B) Open

(C) Destroyed

(D) Forward biased

Correct Answer: D

Explanation: The diode is forward biased during the positive half-cycle.

17. During the negative half-cycle, the diode in a half-wave rectifier is:

(A) Reverse biased

(B) Forward biased

(C) Closed

(D) Conducting

Correct Answer: A

Explanation: The diode is reverse biased during the negative half-cycle.

B. Less Important / Secondary Topics

18. When forward biased, the diode acts as a:

(A) Closed switch

(B) Open switch

(C) Resistor

(D) Capacitor

Correct Answer: A

Explanation: A forward-biased diode acts as a closed switch.

19. When reverse biased, the diode acts as an:

(A) Closed switch
(B) Open switch
(C) Capacitor
(D) Inductor

Correct Answer: B

Explanation: A reverse-biased diode acts as an open switch.

20. 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1401/1830 The output waveform of a half-wave rectifier is:

(A) Pure DC
(B) Pure AC
(C) Pulsating DC
(D) A sine wave

Correct Answer: C

Explanation: 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1401/1830 The output waveform of a half-wave rectifier is Pulsating DC.

21. A full-wave bridge rectifier consists of:

(A) No diode
(B) One diode
(C) Two diodes
(D) Four diodes

Correct Answer: D

Explanation: A bridge rectifier uses four diodes.

22. During the positive half-cycle of a bridge rectifier, which diodes conduct?

(A) and
(B) and
(C) and
(D) All four

Correct Answer: A

Explanation: And — this correctly answers the question.

23. During the negative half-cycle of a bridge rectifier, which diodes conduct?

(A) and
(B) and D 3 D 4 D 1 D 2 D 1 D 3 D 1 D 2 D 1 D 2 D 1 D 2 D 3 D 4 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1402/1830
(C) and
(D) All four

Correct Answer: B

Explanation: And D 3 D 4 D 1 D 2 D 1 D 3 D 1 D 2 D 1 D 2 D 1 D 2 D 3 D 4 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1402/1830 — this correctly answers the question.

24. In a bridge rectifier, the current through the load resistor flows:

(A) In opposite directions during the two half-cycles
(B) Only during the positive half-cycle
(C) In the same direction during both half-cycles
(D) Only during the negative half-cycle

Correct Answer: C

Explanation: In a bridge rectifier, the current through the load resistor flows In the same direction during both half-cycles.

25. The output waveform of a full-wave rectifier is:

(A) Pure AC
(B) Pure DC
(C) A sine wave
(D) Pulsating DC

Correct Answer: D

Explanation: The output waveform of a full-wave rectifier is Pulsating DC.

26. A capacitor filter in a rectifier is used to:

(A) Smooth the pulsating DC D 2 D 4 D 3 D 4 D 3 D 4 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1403/1830
(B) Increase the AC component
(C) Decrease the frequency
(D) Increase the voltage

Correct Answer: A

Explanation: A capacitor filter in a rectifier is used to Smooth the pulsating DC D 2 D 4 D 3 D 4 D 3 D 4 10/21/26, 10:17 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1403/1830.

27. A higher capacitance value in a filter provides:

(A) Worse smoothing
(B) Better smoothing
(C) No effect
(D) Less output voltage

Correct Answer: B

Explanation: A higher capacitance value in a filter provides Better smoothing.

28. A lower load resistance causes the capacitor to discharge:

(A) Slower
(B) Not at all
(C) Faster
(D) Instantly

Correct Answer: C

Explanation: A lower load resistance causes the capacitor to discharge Faster.

29. The negative sign in the self-induced emf equation is in accordance with:

(A) Newton's law
(B) Faraday's law
(C) Ohm's law
(D) Lenz's law

Correct Answer: D

Explanation: The negative sign is in accordance with Lenz's law.

30. The unit of self-inductance is:

(A) Henry
(B) Farad
(C) Volt
(D) Ohm

Correct Answer: A

Explanation: The unit of self-inductance is Henry.

31. One henry is equal to:

(A) 1 V A s
(B) 1 V s A
(C) 1 A s V
(D) 1 V A s

Correct Answer: B

Explanation: One henry is equal to 1 V s A.

32. Mutual induction is the phenomenon in which:

(A) A changing current induces an emf in the same coil
(B) A constant current induces an emf
(C) A changing current in one coil induces an emf in a neighbouring coil
(D) A changing voltage induces a current

Correct Answer: C

Explanation: Mutual induction is the phenomenon in which A changing current in one coil induces an emf in a neighbouring coil.

33. In an inductor AC circuit, the voltage:

(A) Is in phase with the current
(B) Lags the current by
(C) Leads the current by
(D) Leads the current by

Correct Answer: D

Explanation: In an inductor AC circuit, the voltage Leads the current by.

34. In a capacitor AC circuit, the current:

(A) Leads the voltage by
(B) Is in phase with the voltage
(C) Lags the voltage by
(D) Leads the voltage by

Correct Answer: A

Explanation: In a capacitor AC circuit, the current Leads the voltage by.