

VITEEE 2025 Apr 26 Shift 1 Question Paper

1. A resistor of $10\ \Omega$ and an inductor of $0.1\ \text{H}$ are connected in series to a $100\ \text{V}$, $50\ \text{Hz}$ AC source. The impedance of the circuit is:

- (A) $10\ \Omega$
 - (B) $\sqrt{100 + 100\pi^2}\ \Omega$
 - (C) $\sqrt{100 + 10000\pi^2}\ \Omega$
 - (D) $100\ \Omega$
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2. The escape velocity from the surface of Earth is $11.2\ \text{km/s}$. If the radius of Earth is doubled and mass remains the same, the new escape velocity will be:

- (A) $11.2\ \text{km/s}$
 - (B) $7.92\ \text{km/s}$
 - (C) $15.84\ \text{km/s}$
 - (D) $22.4\ \text{km/s}$
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3. A convex lens of focal length $20\ \text{cm}$ forms a real image at $30\ \text{cm}$ from the lens. The object distance is:

- (A) $60\ \text{cm}$
 - (B) $12\ \text{cm}$
 - (C) $15\ \text{cm}$
 - (D) $10\ \text{cm}$
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4. The half-life of a radioactive element is $8\ \text{days}$. The fraction remaining after $32\ \text{days}$ is:

- (A) $1/2$
- (B) $1/4$

- (C) $1/8$
(D) $1/16$
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5. The oxidation number of Cr in $K_2Cr_2O_7$ is:

- (A) +3
(B) +6
(C) +7
(D) +12
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6. Which of the following is a secondary alcohol?

- (A) CH_3CH_2OH
(B) $(CH_3)_2CHOH$
(C) $CH_3CH_2CH_2OH$
(D) $(CH_3)_3COH$
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7. The pH of 0.01 M NaOH solution is:

- (A) 2
(B) 12
(C) 11
(D) 13
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8. The monomer of natural rubber is:

- (A) Isoprene
(B) Chloroprene
(C) Neoprene
(D) Styrene
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9. If $\sin \theta + \cos \theta = \sqrt{2}$, then $\tan \theta + \cot \theta$ is:

- (A) 1
(B) 2

(C) $\sqrt{2}$

(D) 0

10. The number of terms in the expansion of $(a + b + c)^5$ is:

(A) 15

(B) 21

(C) 56

(D) 126

11. The differential equation $\frac{dy}{dx} = \frac{y}{x}$ represents:

(A) Straight lines through origin

(B) Parabola

(C) Circle

(D) Ellipse

12. If the vectors $2\hat{i} + 3\hat{j} + \hat{k}$ and $4\hat{i} - \hat{j} + 2\hat{k}$ are perpendicular, the value of λ in $\lambda\hat{i} + 2\hat{j} + 3\hat{k}$ is:

(A) -1

(B) 1

(C) 2

(D) -2

13. Find the missing number: 2, 6, 12, 20, 30, ?

(A) 42

(B) 40

(C) 45

(D) 50

14. If 'APPLE' is coded as 'CRRNG', then 'ORANGE' is coded as:

- (A) QSURGJ
 - (B) QSUPIJ
 - (C) RTVSHK
 - (D) QSURIG
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15. Choose the word that is most nearly opposite in meaning to “Obscure”:

- (A) Hidden
 - (B) Clear
 - (C) Vague
 - (D) Mysterious
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