

# AP EAPCET 2026 May 18 Shift 1

## Question Paper (Memory-Based)

Conducted by JNTU, Kakinada



### General Instructions

- (i) The test is of 3 hours duration.
- (ii) This test paper consists of 160 questions. The maximum marks are 160.
- (iii) Physics and Chemistry contains 40 questions each and Mathematics contains 80 questions.
- (iv) Each question carries +1 marks for correct answer and there is no negative marking for wrong answer.

1. If  $A = \begin{bmatrix} x & y & y \\ y & x & y \\ y & y & x \end{bmatrix}$  is a matrix such that  $5A^{-1} = \begin{bmatrix} -3 & 2 & 2 \\ 2 & -3 & 2 \\ 2 & 2 & -3 \end{bmatrix}$ , then  $A^2 - 4A =$

- (A)  $5A^{-1}$
- (B)  $5I$
- (C)  $0$
- (D)  $I$

2. A value of  $\theta$  lying between  $0$  and  $\pi/2$  and satisfying

$$\begin{vmatrix} 1 + \sin^2 \theta & \cos^2 \theta & 4 \sin 4\theta \\ \sin^2 \theta & 1 + \cos^2 \theta & 4 \sin 4\theta \\ \sin^2 \theta & \cos^2 \theta & 1 + 4 \sin 4\theta \end{vmatrix} = 0$$

is:

- (A)  $\frac{5\pi}{24}$
- (B)  $\frac{7\pi}{24}$

(C)  $\frac{\pi}{8}$

(D)  $\frac{3\pi}{8}$

---

3. If  $\begin{vmatrix} 1 & 2 & 3-\lambda \\ 0 & -1-\lambda & 2 \\ 1-\lambda & 1 & 3 \end{vmatrix} = A\lambda^3 + B\lambda^2 + C\lambda + D$ , then  $D + A =$

(A) 1

(B) -4

(C) -5

(D) 3

---

4. If  $A = \begin{bmatrix} x & 2 & 1 \\ -2 & y & 0 \\ 2 & 0 & -1 \end{bmatrix}$ ,  $x$  and  $y$  are non-zero numbers, trace of  $A = 0$  and determinant of  $A = -6$ , then the minor of the element 1 of  $A$  is:

(A) -4

(B) 4

(C) 2

(D) -2

---

5. The determinant

$$\det \begin{bmatrix} \frac{a^2+b^2}{c} & c & c \\ a & \frac{b^2+c^2}{a} & a \\ b & b & \frac{c^2+a^2}{b} \end{bmatrix}$$

is equal to:

(A)  $(a-b)(b-c)(c-a)$

(B)  $(a+b)(b+c)(c+a)$

(C)  $2abc$

(D)  $4abc$

---

6. A mass of 1 kg is attached to a spring of force constant 100 N/m. Time period is:

- (A)  $0.2\pi$  s
  - (B)  $0.1\pi$  s
  - (C)  $0.5\pi$  s
  - (D)  $2\pi$  s
- 

7. A particle in SHM has amplitude 2 m and total energy 8 J. Its potential energy at displacement 1 m is:

- (A) 1 J
  - (B) 2 J
  - (C) 4 J
  - (D) 8 J
- 

8. Two SHMs are given by:

$$x_1 = A \sin \omega t,$$

$$x_2 = A \cos \omega t.$$

Phase difference is:

- (A) 0
  - (B)  $\pi/4$
  - (C)  $\pi/2$
  - (D)  $\pi$
- 

9. A particle executes SHM with amplitude 0.1 m and angular frequency 10 rad/s. Maximum acceleration is:

- (A)  $1 \text{ m/s}^2$
  - (B)  $5 \text{ m/s}^2$
  - (C)  $10 \text{ m/s}^2$
  - (D)  $100 \text{ m/s}^2$
-

10. A wave is represented by  $y = 0.1 \sin(200t - 10x)$ . Find wave velocity.

- (A) 10 m/s
  - (B) 20 m/s
  - (C) 5 m/s
  - (D) 2 m/s
- 

11. The IUPAC name of the complex shown below is  $K_3[Co(ox)_3]$ :

- (A) Tripotassium trioxalatocobaltate (III)
  - (B) Potassium trioxalate cobaltate(III)
  - (C) Potassium trioxalatecobalt(III)
  - (D) Potassium trioxalatocobaltate(III)
- 

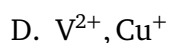
12. Match the following complexes in List-1 with their hybridisation in List-2:

LIST - 1	LIST - 2
1. $[Ni(CO)_4]$	a. $sp^3d^2$
2. $[Ni(CN)_4]^{2-}$	b. $d^2sp^3$
3. $[Co(NH_3)_6]^{3+}$	c. $dsp^2$
4. $[CoF_6]^{3-}$	d. $sp^3$

- (A) 1-c, 2-d, 3-a, 4-b
  - (B) 1-d, 2-c, 3-a, 4-b
  - (C) 1-d, 2-c, 3-b, 4-a
  - (D) 1-c, 2-d, 3-b, 4-a
- 

13. Which of the following pairs of ions will have same spin only magnetic moment values within the pair?

- A.  $Zn^{2+}, Ti^{2+}$
- B.  $Cr^{2+}, Fe^{2+}$
- C.  $Ti^{3+}, Cu^{2+}$



Choose the correct answer from the options given below:

- (A) C and D only
  - (B) A and D only
  - (C) A and B only
  - (D) B and C only
- 

14. The correct order of the wavelength of light absorbed by the following complexes is:

- A.  $[Co(NH_3)_6]^{3+}$
- B.  $[Co(CN)_6]^{3-}$
- C.  $[Cu(H_2O)_4]^{2+}$
- D.  $[Ti(H_2O)_6]^{3+}$

Choose the correct answer from the options given below:

- (A)  $C < D < A < B$
  - (B)  $C < A < D < B$
  - (C)  $B < D < A < C$
  - (D)  $B < A < D < C$
- 

15. The greater the valence of the flocculating ion added, the greater is its power to cause precipitation of a colloid. This rule is:

- (A) Hund's rule
  - (B) Pauling's rule
  - (C) Henry's rule
  - (D) Hardy - Schulze rule
-