

AP EAPCET 2026 May 13 Shift 2

Question Paper (Memory-Based)

Conducted by National Testing Agency (NTA)



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 and B are both 3×3 matrices, then which of the following statements are true?

- (i) $AB = 0 \Rightarrow A = 0$ or $B = 0$
- (ii) $AB = I_3 \Rightarrow A^{-1} = B$
- (iii) $(A - B)^2 = A^2 - 2AB + B^2$

- (A) (i) is false and (ii), (iii) are true
- (B) (ii) is true (i), (iii) are false
- (C) (i) and (ii) are true, (iii) is false
- (D) All are true

2. Let $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} x & y \\ 1 & 2 \end{bmatrix}$ be two matrices such that $(A + B)(A - B) = A^2 - B^2$.

If $C = \begin{bmatrix} x & 2 \\ 1 & y \end{bmatrix}$, then trace $(C) =$

- (A) 3
- (B) 5
- (C) 7

(D) 9

3. If

$$A = \begin{bmatrix} 3 & 4 \\ 5 & 6 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} x & 0 \\ 0 & y \end{bmatrix},$$

where $x, y \in \mathbb{N}$, then:

- (A) there is exactly one such matrix B such that $AB = I$
 - (B) there is no matrix B such that $AB = BA$
 - (C) there exist only a finite number of matrices B such that $AB = BA$
 - (D) there exist infinite number of matrices B such that $AB = BA$
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4. If the system of equations

$$2x + 3y - 3z = 3, \quad x + 2y + \alpha z = 1, \quad 2x - y + z = \beta$$

has infinitely many solutions, then

$$\frac{\alpha}{\beta} - \frac{\beta}{\alpha} =$$

- (A) $\frac{53}{14}$
 - (B) $\frac{45}{14}$
 - (C) $-\frac{53}{14}$
 - (D) $-\frac{45}{14}$
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5. The positive value of a for which the system of linear homogeneous equations

$$x + ay + z = 0, \quad ax + 2y - z = 0, \quad 2x + 3y + z = 0$$

has non-trivial solution is

- (A) 0

- (B) 1
(C) $\frac{1 + \sqrt{5}}{2}$
(D) $\frac{\sqrt{5} - 1}{2}$
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6. Escape velocity on a planet is 10 km/s. If the radius remains same but the mass becomes 4 times, the new escape velocity is:

- (A) 10 km/s
(B) 20 km/s
(C) 5 km/s
(D) 40 km/s
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7. At what depth inside Earth does g become half of its surface value? (Earth radius = R)

- (A) $\frac{R}{2}$
(B) $\frac{R}{4}$
(C) $\frac{3R}{4}$
(D) R
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8. A mass m is taken from Earth's surface to infinity. Work done is:

- (A) $+\frac{GMm}{R}$
(B) $-\frac{GMm}{R}$
(C) 0
(D) $\frac{GMm}{2R}$
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9. A wire of length 2 m and area $1 \times 10^{-6} m^2$ stretches by 1 mm under force 200 N. Young's modulus is:

- (A) $2 \times 10^{11} Pa$
(B) $4 \times 10^{11} Pa$
(C) $1 \times 10^{11} Pa$
(D) $5 \times 10^{10} Pa$
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10. A wire is stretched by 2 mm under force 100 N. Elastic energy stored is:

- (A) 0.05 J
 - (B) 0.1 J
 - (C) 0.2 J
 - (D) 0.01 J
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11. The IUPAC name of an element with atomic number 119 is:

- (A) Ununennium
 - (B) Unnilennium
 - (C) Unununium
 - (D) ununoctium
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12. Consider the following:

- a) 0.0025
- b) 500.0
- c) 2.0034

Number of significant figures in A, B and C respectively are

- (A) 5, 4, 4
 - (B) 2, 4, 2
 - (C) 4, 3, 2
 - (D) 2, 4, 5
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13. Identify the correct set of molecules with zero dipole moment.

- (A) CO_2 , NH_3 , H_2O
 - (B) NH_3 , NF_3 , BF_3
 - (C) PF_3 , NH_3 , CH_4
 - (D) CH_4 , BF_3 , CO_2
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14. Calculate the amount of CO_2 gas produced, when 32g of CH_4 is burned with sufficient amount of oxygen (Given atomic weight of $C = 12, O = 16$ and $H = 1$)

- (A) 132g
 - (B) 44g
 - (C) 88g
 - (D) 176g
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15. Which of the following pairs of gases contains the same number of molecules?

- (A) 11 g of CO_2 and 7 g of N_2
 - (B) 44 g of CO_2 and 14 g of N_2
 - (C) 22 g of CO_2 and 28 g of N_2
 - (D) All the above pairs of gases
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