Sample KCET 2025 Maths Question Paper and Answer Key PDF

1. Question: (Sets, Relations, and Functions)

- If f(x)=x-1x, then f(f(x)) is:
 - (A) x
 - **(B) 1/x**
 - (C) 1-x
 - (D) 1/(1-x)
- Answer: (A) x
- Solution:
 - \circ f(f(x))=f(x-1x)=x-1x-1x-1x
 - \circ =x-1x-(x-1)x-1x=x-1x×1x-1=x
- 2. Question: (Complex Numbers)
 - If z=1+i, then |z2| is:
 - (A) 1
 (B) 2
 (C) 4
 (D) 8
 - Answer: (B) 2
 - Solution:
 - $z^2 = (1+i)^2 = 1 + 2i + i^2 = 1 + 2i 1 = 2i$

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$$|z^2| = |2i| = \sqrt{0^2 + 2^2} = \sqrt{4} = 2$$

- 3. Question: (Matrices and Determinants)
 - If A=[1221], then adj(A) is:
 - (A) [1-2-21]
 - (B) [−122−1]
 - (C) [1221]
 - (D) [-1-2-2-1]
 - Answer: (A) [1-2-21]

- Solution:
 - For a 2x2 matrix, adj(A) is obtained by interchanging the diagonal elements and changing the signs of the off-diagonal elements.
- 4. Question: (Limits and Continuity)
 - limx→0xsinx is:
 - (A) 0
 - (B) 1
 - ∘ (C) ∞
 - o (D) -1
 - Answer: (B) 1
 - Solution:
 - This is a standard limit result.
- 5. Question: (Differentiation)
 - If y=sin(x2), then dxdy is:
 - (A) cos(x2)
 - (B) 2xcos(x2)
 - (C) -2xcos(x2)
 - (D) 2sinxcosx
 - Answer: (B) 2xcos(x2)
 - Solution:

Using the chain rule: dxdy=cos(x2)×2x

- 6. Question: (Integration)
 - ∫ex(sinx+cosx)dx is:
 - (A) exsinx+C
 - (B) excosx+C
 - (C) ex(sinx-cosx)+C
 - (D) ex(cosx-sinx)+C
 - Answer: (A) exsinx+C
 - Solution:
 - This is a standard integral of the form $\int ex(f(x)+f'(x))dx=exf(x)+C$.
- 7. Question: (Differential Equations)
 - The order and degree of the differential equation (dx2d2y)3+(dxdy)2+y=0 are:
 - (A) 2, 3

- (B) 3, 2
 (C) 2, 2
- (D) 3, 3
- Answer: (A) 2, 3
- Solution:
 - Order is the highest order derivative (2). The degree is the power of the highest order derivative (3).
- 8. Question: (Vector Algebra)
 - If a = i + j + k and b = 2i j + 3k, then $a \cdot b$ is:
 - (A) 4
 - (B) 5
 - (C) 6
 - (D) 7
 - Answer: (A) 4
 - Solution:

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$$a \cdot b = (1)(2) + (1)(-1) + (1)(3) = 2 - 1 + 3 = 4$$

- 9. Question: (Probability)
 - If P(A) = 1/2, P(B) = 1/3, and $P(A \cap B) = 1/4$, then $P(A \cup B)$ is:
 - **(A) 1/12**
 - (B) 5/12
 - **(C) 7/12**
 - (D) 3/4
 - Answer: (C) 7/12
 - Solution:

• $P(A \cup B) = P(A) + P(B) - P(A \cap B) = 1/2 + 1/3 - 1/4 = 6/12 + 4/12 - 3/12 = 7/12.$ 10. Question: (Coordinate Geometry)

• The equation of the line passing through the point (2, 3) and parallel to the line 3x + 2y -

5 = 0 is: • (A) 3x + 2y - 12 = 0• (B) 2x + 3y - 12 = 0• (C) 3x - 2y - 12 = 0

- (D) 2x 3y 12 = 0
- Answer: (A) 3x + 2y 12 = 0
- Solution:
 - Parallel lines have the same slope. The given line's slope is -3/2.
 - The required line is 3x + 2y + c = 0.
 - Passing through (2, 3): 3(2) + 2(3) + c = 0, so 6 + 6 + c = 0, c = -12.
 - Therefore, 3x + 2y 12 = 0.
- 11. Question: (Binomial Theorem)
 - The middle term in the expansion of (x+1/x)10 is:
 - (A) ²⁰C₅
 - (B) ¹⁰C₅
 - (C) ¹⁰C₆
 - (D) ²⁰C₆
 - Answer: (B) ¹⁰C₅
 - Solution:
 - In the expansion of $(a+b)^n$, the middle term is given by ${}^nC_{n/2}$ when n is even.
 - Here, n = 10, so the middle term is ${}^{10}C_{10/2} = {}^{10}C_5$.
- 12. Question: (Linear Programming)
 - The feasible region for a linear programming problem is bounded. The objective function z = ax + by has:
 - (A) a unique optimal value
 - (B) no optimal value
 - (C) infinitely many optimal values
 - (D) an optimal value at a corner point of the feasible region
 - Answer: (D) an optimal value at a corner point of the feasible region
 - Solution:
 - The optimal value of the objective function occurs at a corner point of the feasible region in a bounded linear programming problem.
- 13. Question: (Statistics)
 - The standard deviation of the data 6, 7, 10, 12, 13, 4, 8, 12 is:
 - (A) 3
 - (B) 4
 - (C) 5
 - (D) 6

- Answer: (A) 3
- Solution:
 - Calculate the mean, then the variance, and finally the standard deviation (square root of variance).
- 14. Question: (Area under Curves)
 - The area bounded by the curve $y=x^2$, the x-axis, and the lines x = 1 and x = 2 is:
 - (A) 7/3
 - **(B) 8/3**
 - (C) 4
 - o (D) 5
 - Answer: (A) 7/3
 - Solution:
 - Area = ∫12x2dx=[3x3]12=38-31=37

15. Question: (Permutations and Combinations)

- The number of ways to arrange the letters of the word "ARRANGE" is:
 - **(A) 1260**
 - o (B) 720
 - **(C) 60**
 - o (D) 360
- Answer: (A) 1260
- Solution:
 - The word "ARRANGE" has 7 letters, with A appearing twice and R appearing twice.
 - Number of arrangements = 2!2!7!=45040=1260