

CUET PG 2026 Mathematics / Applied Math / Electronics Question Paper

Time Allowed :1 Hour 30 Minutes	Maximum Marks :300	Total Questions :75
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General Instructions

Read the following instructions very carefully and strictly follow them:

- The Question Paper consists of 75 Multiple Choice Questions (MCQs).
- Total marks for the exam is 300.
- The total duration is 90 minutes; a timer on the screen will display the remaining time, and the exam will automatically submit when the time reaches zero.
- For every correct answer, 4 marks (+4) will be awarded to the candidate, and a 1 mark (-1) will be deducted for every incorrect answer.
- Question papers are available in both English and Hindi.

1. What is the dimension of the vector space of all $n \times n$ real symmetric matrices?

- (A) n^2
(B) $\frac{n(n+1)}{2}$
(C) $\frac{n(n-1)}{2}$
(D) $2n$

2. If a function $f(x)$ is continuous on a closed interval $[a, b]$, is it necessarily uniformly continuous?

- (A) Yes, always uniformly continuous
(B) No, never uniformly continuous
(C) Only if differentiable
(D) Only if bounded

3. What is the value of the limit $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n$?

- (A) 1
(B) 0
(C) e
(D) ∞

4. How many elements of order 5 are there in a cyclic group of order 25?

- (A) 1
(B) 4

- (C) 5
 - (D) 10
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5. If A is a 3×3 matrix with eigenvalues 1, 2, 3, what is the determinant of A^2 ?

- (A) 6
 - (B) 12
 - (C) 18
 - (D) 36
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6. Which theorem states that every bounded sequence in $\mathbb{R}^n$ has a convergent subsequence?

- (A) Mean Value Theorem
 - (B) Bolzano–Weierstrass Theorem
 - (C) Rolle’s Theorem
 - (D) Taylor’s Theorem
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7. What is the radius of convergence of the power series $\sum_{n=0}^{\infty} \frac{x^n}{n!}$?

- (A) 0
 - (B) 1
 - (C) ∞
 - (D) e
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8. Is the set of all rational numbers $\mathbb{Q}$ a countable or uncountable set?

- (A) Finite set
 - (B) Countable set
 - (C) Uncountable set
 - (D) Empty set
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9. If $T : V \rightarrow W$ is a linear transformation, what is the relationship between $\text{rank}(T)$, $\text{nullity}(T)$, and $\dim(V)$?

- (A) $\text{rank}(T) + \text{nullity}(T) = \dim(W)$
 - (B) $\text{rank}(T) \times \text{nullity}(T) = \dim(V)$
 - (C) $\text{rank}(T) + \text{nullity}(T) = \dim(V)$
 - (D) $\text{rank}(T) = \text{nullity}(T)$
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10. What is the condition for a group G to be Abelian based on the commutator subgroup?

- (A) Commutator subgroup is equal to G
 - (B) Commutator subgroup is trivial
 - (C) Commutator subgroup is infinite
 - (D) Commutator subgroup is cyclic
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11. What is the value of the integral $\int_{-\infty}^{\infty} e^{-x^2} dx$?

- (A) 0
 - (B) 1
 - (C) $\sqrt{\pi}$
 - (D) π
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12. In a metric space, is every Cauchy sequence necessarily a convergent sequence?

- (A) Yes, always
 - (B) No, not always
 - (C) Only in finite spaces
 - (D) Only for bounded sequences
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13. What are the possible values for the rank of a 4×3 matrix?

- (A) 0, 1, 2, 3, 4
 - (B) 1, 2, 3, 4
 - (C) 0, 1, 2, 3
 - (D) Only 3
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14. What is the order of the group of permutations S_3 ?

- (A) 3
 - (B) 6
 - (C) 9
 - (D) 12
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15. Which partial differential equation represents the Laplace equation in two dimensions?

- (A) $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 0$
 - (B) $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$
 - (C) $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$
 - (D) $\frac{\partial u}{\partial t} = k \frac{\partial^2 u}{\partial x^2}$
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