Jee Main 2026 B.Arch Memory Based Question Paper

| Time Allowed :3 Hours | Maximum Marks :300 | Total questions :75 |

Important Instructions

1. **The test is of 3 hours duration.**

2. **This test paper consists of 75 questions. Each subject (PCM) has 25 questions. The maximum marks are 300.**

3. **This question paper contains Three Parts. Part-A is Physics, Part-B is Chemistry, and Part-C is Mathematics. Each part has only two sections: Section-A and Section-B.**

4. **Section-A: Attempt all questions.**

5. **Section-B: Attempt all questions.**

6. **Section-A (01 − 20):** Contains 20 multiple choice questions which have only one correct answer. Each question carries +4 marks for the correct answer and –1 mark for the wrong answer.

7. **Section-B (21 − 25):** Contains 5 Numerical value-based questions. The answer to each question should be rounded off to the nearest integer. Each question carries +4 marks for the correct answer and –1 mark for the wrong answer.

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1. **Let m and n be non–negative integers such that for**

$$x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right), \qquad \tan x + \sin x = m, \quad \tan x - \sin x = n.$$

Then the possible ordered pair (m, n) is:
(A) $(2, 1)$ but not $(3, 4)$
(B) $(3, 4)$ but not $(2, 1)$
(C) both $(2, 1)$ and $(3, 4)$
(D) neither $(2, 1)$ nor $(3, 4)$

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2. **Let $A = [a_{ij}]$, $\det(A) \neq 0$, and $B = [b_{ij}]$ be two 3×3 matrices. If**

$$b_{ij} = 3^{i-j} a_{ij} \quad \textbf{for all } i, j = 1, 2, 3,$$

then:
(A) $3 \det(A) = \det(B)$
(B) $27 \det(A) = \det(B)$
(C) $\det(A) = \det(B)$
(D) $\det(A) = 27 \det(B)$

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3. **Let $f : [-2a, 2a] \to \mathbb{R}$ be a thrice differentiable function and define**

$$g(x) = f(a + x) + f(a - x).$$

If m is the minimum number of roots of $g'(x) = 0$ in the interval $(-a, a)$ and n is the minimum number of roots of $g''(x) = 0$ in the interval $(-a, a)$, then $m + n$ is equal to:

(A) 1
(B) 2
(C) 4
(D) 5

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4. Let
$$f(t) = \int_0^t e^{x^2}\left((1 + 2x^2)\sin x + x\cos x\right) dx.$$

Then the value of $f(\pi) - f\left(\frac{\pi}{2}\right)$ is equal to:

(A) $-\pi e^{\pi^2/4}$

(B) $-\dfrac{\pi}{2}e^{\pi^2/4}$

(C) $\dfrac{\pi}{2}e^{\pi^2/4}$

(D) $\pi e^{\pi^2/4}$