# Prayas JEE 2026

## Mathematics

## Basic Maths

**DPP: 1**

**Q1** The equation $\frac{2x^2}{x-1} - \frac{2x+7}{3} + \frac{4-6x}{x-1} + 1 = 0$ has the roots-

(A) $4$ and $1$

(B) only $1$

(C) only $4$

(D) Neither $4$ nor $1$

**Q2** If $x + \frac{1}{x} = a, x^2 + \frac{1}{x^3} = b$, then $x^3 + \frac{1}{x^2}$ is

(A) $a^3 + a^2 - 3a - 2 - b$

(B) $a^3 - a^2 - 3a + 4 - b$

(C) $a^3 - a^2 + 3a - 6 - b$

(D) $a^3 + a^2 + 3a - 16 - b$

**Q3** Suppose that $w = 2^{1/2}, x = 3^{1/3}, y = 6^{1/6}$ and $z = 8^{1/8}$. From among these number list the biggest, second biggest numbers are

(A) $w, x$

(B) $x, w$

(C) $y, z$

(D) $x, z$

**Q4** If $x = \frac{4}{(\sqrt{5}+1)(\sqrt[4]{5}+1)(\sqrt[8]{5}+1)(\sqrt[16]{5}+1)}$. Then the value of $(1+x)^{48}$ is-

(A) $5$ (B) $25$

(C) $125$ (D) $625$

**Q5** If $A = (4+\sqrt{15})^{1/3} + (4-\sqrt{15})^{1/3}$, the $A^3 - 3A$ is equal to

**Q6** If $\sqrt{x^2-6x+9} + \sqrt{e^y - 1} + \sqrt{\tan^2\theta - 3}, = 0$ then the value of $x + y + \sec^2\theta$ is

**Q7** If $5a^2 + 4b^2 + 4c^2 - 8ab - 4ac = 0$ then

(A) $\frac{a}{b} \cdot \frac{a}{c} = 2$

(B) $\frac{a}{b} + \frac{a}{c} = 3$

(C) $\frac{a}{c} - \frac{a}{b} = 1$

(D) $\frac{a}{c} \div \frac{a}{b} = 2$

**Q8** The least value of expression $x^2 + 4y^2 + 9z^2 - 2x + 8y + 27z + 15$

(A) $15$

(B) $5$

(C) $-\frac{31}{7}$

(D) $-\frac{41}{4}$

**Q9** The values of $\frac{1}{1+x^{m-n}+x^{m-p}} + \frac{1}{1+x^{n-m}+x^{n-p}} + \frac{1}{1+x^{p-m}+x^{p-n}}$

(A) $-1$ (B) $1$

(C) $2$ (D) $-2$

# Answer Key

| | |
|---|---|
| Q1 | (C) |
| Q2 | (A) |
| Q3 | (B) |
| Q4 | (C) |
| Q5 | 8 |
| Q6 | 7 |
| Q7 | (A, B, C, D) |
| Q8 | (D) |
| Q9 | (B) |


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