

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 numbers 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



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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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