

# Arjuna JEE 2026

## Mathematics

### Basic Mathematics

**DPP: 2**

**Q1** If  $x = 3 + \sqrt{8}$  and  $y = 3 - \sqrt{8}$  then

$$\frac{1}{x^2} + \frac{1}{y^2} =$$

- (A) -34 (B) 34  
(C) 12 (D) -12

**Q2** If  $a$  &  $b$  are rational numbers satisfying

$$a + b\sqrt{75} = 7(\sqrt{108} - 3) + \sqrt{27}, \text{ then value of } a \text{ \& } b \text{ respectively, are}$$

- (A)  $a = 7, b = 9$   
(B)  $a = 45, b = -21$   
(C)  $a = -21, b = 9$   
(D)  $a = 21, b = 9$

**Q3** Which of following pair of natural numbers is both relatively prime (co-prime) as well as twin prime?

- (A) (1, 3) (B) (9, 11)  
(C) (11, 13) (D) (25, 27)

**Q4** If  $ab = c$  where  $a$  is rational number,  $b$  is a irrational number and  $c$  is also a rational number, then value of  $a + c$  is equal to

**Q5** If  $a + b = 5$ , then

$$a^2 + b^2 - 10a - 10b + 2ab + 5 \text{ is}$$

- (A) -20 (B) 30

- (C) -25 (D) 35

**Q6** If  $x = 3 + 3^{1/3} - 3^{2/3}$ , then  $x^3 - 9x^2 + 36x$  is equal to

- (A) -48 (B) 48  
(C) 72 (D) -72

**Q7** If  $a + b = 7$  and  $ab = 12$  then what is the value of  $a^2 - ab - b^2$ ?

- (A) 12 (B) 13  
(C) 14 (D) -5

**Q8** If  $x^2 + \frac{1}{x^2} = 51$ , then what is the value of  $x^3 - \frac{1}{x^3}$ ?

- (A) 364 (B) 365  
(C) 756 (D) 367

**Q9** If  $a + b + c = 12$  and  $a^2 + b^2 + c^2 = 50$ , find the value of  $ab + bc + ca$ .

- (A) 44 (B) 45  
(C) 46 (D) 47

**Q10** On simplifying  $(a + b)^3 + (a - b)^3 + 6a(a^2 - b^2)$  we get

- (A)  $8a^2$  (B)  $8a^2b$   
(C)  $8a^3b$  (D)  $8a^3$



## Answer Key

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Q1 (B)

Q2 (C)

Q3 (C)

Q4 0

Q5 (A)

Q6 (B)

Q7 (D)

Q8 (A)

Q9 (D)

Q10 (D)



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