Prayas JEE 2026

Mathematics

Basic Maths

DPP: 3

Q1 If $x^2+5y^2+z^2-4xy+2yz=0$ $x,y,z\neq 0, x,y,z\in R$ then
(A) $\frac{x}{y}=2$
(B) $\frac{x}{y}+\frac{y}{z}=1$
(C) $\frac{x}{y}-\frac{y}{z}=3$
(D) $\frac{x}{z}=-2$

Q2 If $a,b,c\in N$, then find the least positive value of $a^2+b^2+c^2-ab-bc-ca$.
(A) 18 (B) 9
(C) 3 (D) 1

Q3 One of the factor of x^6-10x^3-27 is
(A) $\left(x^2+x-3\right)$
(B) $\left(x^2+x+3\right)$
(C) $\left(x^2-x+3\right)$
(D) $\left(x^2-x-3\right)$

Q4 If $\left(a^2+b^2+c^2\right)\left(x^2+y^2+z^2\right)$, Show that $=(ax+by+cz)^2$
$x:a=y:b=z:c$.

Q5 Find the value of a, if $x-a$ is a factor of x^3-a^2x+x+2.

Q6 Find the value of l and m is $8x^3+lx^2-27x+m$ is divisible by $2x^2-x-6$

Q7 A polynomial in x of the third degree which will vanish when $x=1$ and $x=-2$ and will have the values $4\&28$ when $x=-1$ and $x=2$ respectively is _____.

Q8 If $x=b+c, y=c+a, z=a+b$, then find the value of $\frac{x^2+y^2+z^2-xy-yz-zx}{a^2+b^2+c^2-ab-bc-ca}$

Q9 If $a+b+c=0$, then the value of $\frac{a^2(b+c)+b^2(c+a)+c^2(a+b)}{abc}$ is
(A) 3
(B) -3
(C) $-\frac{1}{3}$
(D) $\frac{1}{3}$

Q10 If $a+b=5$, then $a^2+b^2-10a-10b+2ab+5$ is
(A) -20 (B) 30
(C) -25 (D) 35

Q11 If $a+b+c=19, ab+bc+ca=-13$, then the value of $a^2+b^2+c^2$ is equal to
(A) 346 (B) 345
(C) 387 (D) 361

Q12 If $\frac{x}{7}=\frac{y}{11}=\frac{z}{13}=\frac{2x-3y+z}{m}$, then the value of m is
(A) 6
(B) -6
(C) $\frac{1}{6}$
(D) $-\frac{1}{6}$

Q13 Find the value of $\frac{a^3+b^3+c^3-3abc}{ab+bc+ca-a^2-b^2-c^2}$, when a = –5, b = –6, c = 10
(A) 1 (B) –1
(C) 2 (D) –2

Q14

Simplify: $(3a - 4b)(9a^2 + 12ab + 16b^2) + (4a - 3b)(16a^2 + 12ab + 9b^2)$

(A) $91a^3 + 91b^3$

(B) 0

(C) $91a^3 - 91b^3$

(D) 1

Answer Key

Q1	(A, B, C, D)	Q8	1
Q2	(D)	Q9	(B)
Q3	(D)	Q10	(A)
Q4	proof	Q11	(C)
Q5	a = - 2	Q12	(B)
Q6	l=2, m=-18	Q13	(A)
Q7	$P(x) = (x-1)(x+2)(3x+1)$	Q14	(C)