

29. 'P' produces an important white pigment lithopone with aqueous solution of

- A. $ZnSO_4$
- B. Na_2CO_3
- C. $Cu(NO_3)_2$
- D. $Pb(NO_3)_2$

30. Some organic compounds are listed as :

- (i) Pentan-3-one
- (ii) 3-Ethylbromobenzene
- (iii) 1, 2, 3-Trimethylcyclopropane
- (iv) Pentane-2-one
- (v) 3, 4-Dimethylbromobenzene

(vi) Benzyl alcohol

(vii) Cyclohexane

(viii) 4-Methylphenol

Now, read the given passage and fill in the blanks by selecting an appropriate option.

(vi) and (viii) are x isomers, while (iii) and (vii) are y isomers. (ii), (v) and (i), (iv) are pairs of z isomers.

	x	y	z
A.	Functional	Positional	Chain
B.	Chain	Functional	Positional
C.	Functional	Chain	Positional
D.	Positional	Functional	Chain

SECTION-3

MATHEMATICS

31. For $n \in N$, $x^{n+1} + (x+1)^{2n-1}$ is divisible by

- A. x
- B. $x+1$
- C. x^2+x+1
- D. x^2-x+1

32. Which of the following equations have real and equal roots?

- A. $\frac{1}{x+3} + \frac{2}{2x+1} = \frac{3}{x+4}$
- B. $16 \times 4^{x+2} - 16 \times 2^{x+1} + 1 = 0$
- C. $\frac{x+2}{x-1} - \frac{x+1}{x+3} = \frac{2}{x+4}$
- D. All of these

33. Let $f(x) = \frac{x - [x]}{1 + x - [x]}$, $x \in R$, then the range of f is

- A. $[0, 1]$
- B. $[0, 1/2]$
- C. $[0, 1/2)$
- D. $(0, 1)$

34. If $A = \{(x, y) : x^2 + y^2 = 4; x, y \in R\}$ and $B = \{(x, y) : x^2 + y^2 = 9; x, y \in R\}$, then

- A. $A - B = \phi$
- B. $A \cap B = A$
- C. $A \cap B \neq \phi$
- D. None of these

35. A five digit number is formed by the digits 1, 2, 3, 4, 5, 6 and 8 using each only once. The probability that the number has even digit at both ends is

- A. $\frac{3}{7}$
- B. $\frac{4}{7}$
- C. $\frac{2}{7}$
- D. None of these

36. The greatest and the least value of $|z_1 + z_2|$ if $z_1 = 24 + 7i$ and $|z_2| = 6$ respectively are

- A. 31, 19
- B. 25, 19
- C. 31, 25
- D. None of these

37. Read the statements carefully and select the correct option.

Statement-1 : A is a point at a distance 13 cm from the centre O of a circle of radius 5 cm. AP and AQ are the tangents to the circle at P and Q. If a tangent BC is drawn at a point R lying on the minor arc PQ to intersect AP at B and AQ at C, then the perimeter of ΔABC is 24 cm.

Statement-2 : A point P is 15 cm from the centre of a circle. If the radius of circle is 5 cm, then the length of the tangent drawn to the circle from the point P is 10 cm.

- A. Both Statement-1 and Statement-2 are true.
- B. Statement-1 is true but Statement-2 is false.
- C. Statement-1 is false but Statement-2 is true.
- D. Both Statement-1 and Statement-2 are false.

38. Sum of the last 30 coefficients in the expansion of $(1+x)^{59}$, when expanded in ascending powers of x , is

- A. 2^{29}
- B. 2^{28}
- C. ${}^{60}C_{30} - 2^{19}$
- D. 2^{58}