1 to 85 carry 4 mark each :

1. If A and B are any two sets then $A \cap (A \cup B)'$ = _____ .
(*a*) B (*b*) B′ (*c*) A (*d*) ∅

2. If n (U) = 60, n (A′) = 24, n (B′) = 18, n (A′ ∩ B′) = 6, then n (A ∩ B) = _____ .
(*a*) 24 (*b*) 54 (*c*) 36 (*d*) 42

3. Let R = {(1, 3), (4, 2), (2, 4), (2, 3), (3, 1)} be a relation on the set A = {1, 2, 3, 4} the relation R is _____ .
(*a*) not symmetric (*b*) transitive (*c*) a function (*d*) reflexive

4. Which of the following statements is true ?
(*a*) P(A) ∩ P(B) = P(A ∩ B) (*b*) P(A) ∪ P(B) = P(A ∩ B)
(*c*) P(A – B) = P(A) – P(B) (*d*) none of these

5. Let R be a relation on a finite set A having 10 elements, then the number of a relation on A is _____ .
(*a*) 10 (*b*) 10^{10} (*c*) 2^{10} (*d*) none of these

6. The inverse of the function $f(y) = \log_3\left(y+\sqrt{y^2+1}\right)$ is _____ .
(*a*) $\frac{3^y+3^{-y}}{3}$ (*b*) $\frac{3^y-3^{-y}}{3}$ (*c*) $\frac{3^y-y}{2}$ (*d*) none of these

7. If A, B and C are three sets such that A ∩ B = A ∩ C and A ∪ B = A ∪ C, then _____ .
(*a*) A ∩ B = ∅ (*b*) A = B (*c*) A = C (*d*) B = C

8. Let R = {(3, 3), (6, 6), (9, 9), (12, 12), (6, 12), (6, 3), (3, 12), (3, 6) be relation on the set A = {3, 6, 9, 12} then relation is _____ .
(*a*) reflexive and symmetric only (*b*) an equivalence relation
(*c*) reflexive and transitive only (*d*) reflexive only

9. The domain of the real valued function $\sqrt{\log_3\left(\frac{x^2-3x}{4}\right)}$ is _____ .
(*a*) [- 1, 4] (*b*) R – (- 1, 4) (*c*) (- ∞, - 1] ∪ [4, ∞) (*d*) (- ∞, - 1] ∪ (4, ∞)

10. If $z=\left(\frac{\sqrt{3}+i}{2}\right)^{12}+\left(\frac{\sqrt{3}-i}{2}\right)^{12}$, then _____ .
(*a*) Re(z) = 0 (*b*) Im(z) > 0 (*c*) Re(z) > 0 (*d*) none of these

11. The smallest integer n, for which $\left(\frac{1+i}{1-i}\right)^n = -1$.
(*a*) 4 (*b*) 6 (*c*) 2 (*d*) none of these

12. If | z – 4 | < | z – 2 | then _____ .
(*a*) Re(z) > 0 (*b*) Re(z) < 0 (*c*) Re(z) > 3 (*d*) Re(z) > 2

13. If $\omega=\frac{z}{z-\left(\frac{1}{3}\right)i}$ and | ω | = 1, then z lies on _____ .
(*a*) circle (*b*) an ellipse (*c*) parabola (*d*) a straight line

14. The maximum value of $2 – 5x – 3x^2$ is _____ . (x ∈ R)
(*a*) 2 (*b*) $\frac{1}{12}$ (*c*) $\frac{49}{12}$ (*d*) none of these

15. If the sum of the roots of $\frac{1}{x}+\frac{1}{x+a}=\frac{1}{a-n}-\frac{1}{n}$ is zero, then _____ .

(*a*) $2a^2 = n^2$ (*b*) $a^2 = n^2$ (*c*) $a^2 = 2n^2$ (*d*) none of these

16. If the sum of the roots of the equation $ax^2 + bx + c = 0$ is equal to the sum of the squares of their reciprocals, then $\frac{a}{c}, \frac{b}{a}, \frac{c}{b}$ are in _____ .

(*a*) A.P. (*b*) G.P. (*c*) H.P. (*d*) A.G.P.

17. If the roots of the equation $x^2 + px + q = 0$ are tan 30° and tan 15° then $2 + q - p =$ _____ .

(*a*) 2 (*b*) 3 (*c*) 0 (*d*) 1

18. How many real solution does the equation $x^7 + 14x^5 + 16x^3 + 30x - 560 = 0$ have ?

(*a*) 1 (*b*) 3 (*c*) 5 (*d*) 7

19. If $\binom{10}{x-1} > 2\binom{10}{x}$, then _____ .

(*a*) $x \in [2, 9]$ (*b*) x = 8, 9, 10 (*c*) $x \in [6, 10]$ (*d*) none of these

20. If all permutations of the letters of the word AGAIN are arranged in a dictionary, then fiftieth word is _____ .

(*a*) NAAGI (*b*) NAGAI (*c*) NAAIG (*d*) none of these

21. If ${}_nC_{12} = {}_nC_8$ then ${}_{22}C_n =$ _____ .

(*a*) 231 (*b*) 210 (*c*) 252 (*d*) 303

22. A polygon has 44 diagonals, then the number of its side are _____ .

(*a*) 11 (*b*) 7 (*c*) 8 (*d*) none of these

23. Out of 18 points in a plane five are on the same straight line and no three of remaining are collinear. The number of straight lines that can be formed joining them is _____ .

(*a*) 143 (*b*) 144 (*c*) 153 (*d*) none of these

24. Number greater than 1000 but less than 4000 is formed by using the digits 0, 2, 4, 3 if repetition allowed is _____ .

(*a*) 125 (*b*) 105 (*c*) 128 (*d*) 625

25. Total number of four digit odd number that can be formed by using 0, 1, 2, 3, 5, 7 are ___ .

(*a*) 216 (*b*) 375 (*c*) 400 (*d*) 720

26. From 6 different novels and 3 different dictionaries, 4 novels & 1 dictionary are to be selected and arranged in a row on a shelf so that the dictionary is always in the middle. Then the number of such arrangements is _____ .

(*a*) at least 500 but less than 750 (*b*) at least 750 but less than 1000
(*c*) at least 1000 (*d*) less than 500

27. If the letters of the word SACHIN are arranged in all possible ways and these words are written out as in dictionary, then the word SACHIN appears at serial number _____ .

(*a*) 602 (*b*) 603 (*c*) 600 (*d*) 601

28. The coefficient of $\frac{1}{x^2}$ in the expansion of $\left(x - \frac{1}{x^2}\right)^{10}$ is _____ .

(*a*) $\binom{10}{4}$ (*b*) $\binom{10}{5}$ (*c*) $\binom{10}{3}$ (*d*) $\binom{10}{2}$

29. The 8^{th} term in $\left(\frac{1}{x} - x^3\right)^{10}$ when expanded in descending power of x is _____ .

(*a*) $120x^2$ (*b*) $\frac{120}{x^2}$ (*c*) $-120x^2$ (*d*) $-\frac{120}{x^2}$

30. The term independent of x in $(1+x)^{10}\left(1+\frac{1}{x}\right)^{12}$ is _____ .

(*a*) $\binom{22}{10}$ (*b*) $\binom{22}{12}$ (*c*) $\binom{22}{2}$ (*d*) none of these

31. The value of $\binom{15}{3}+\binom{15}{5}+\ldots+\binom{15}{13}=$ _____ .

(*a*) $2^{14}-1$ (*b*) $2^{14}-15$ (*c*) $2^{14}-16$ (*d*) none of these

32. The sum of the coefficient in the expansion of $(a+b)^n$ is 4096 then greatest coefficient in the expansion is _____ .

(*a*) 1594 (*b*) 792 (*c*) 924 (*d*) 2924

33. The number of integral terms in $\left(\sqrt{3}+\sqrt[8]{5}\right)^{256}$ is _____ .

(*a*) 33 (*b*) 34 (*c*) 35 (*d*) 32

34. The last two digit of a number $3^{48}=$ _____ .

(*a*) 99 (*b*) 98 (*c*) 51 (*d*) 61

35. The coefficient of x^2 in the expansion of $(1-x+x^2)^{20}=$ _____ .

(*a*) $\binom{20}{2}$ (*b*) $\binom{21}{2}$ (*c*) $\binom{23}{2}$ (*d*) none of these

36. If x is positive, the first negative term in the expansion of $(1+x)^{27/5}$ is _____ .

(*a*) 5^{th} term (*b*) 8^{th} term (*c*) 6^{th} term (*d*) 7^{th} term

37. If (1, 3) be the centroid of the triangle having vertices A(2, 7), B(- 1, k) and C(h, - 1), find its incentre.

(*a*) (2, 3) (*b*) $\left(\frac{2}{3},3\right)$ (*c*) $\left(\frac{3}{2},3\right)$ (*d*) none of these

38. If one of the lines given by $6x^2-xy+4cy^2=0$ is $3x+4y=0$ then c = _____ .

(*a*) 1 (*b*) – 1 (*c*) 3 (*d*) – 3

39. A straight line passing through (1, 0) intersects the curve $2x^2+5y^2-7x=0$ at two points. The portion of the curve between these two points subtends at the origin an angle equal to _____ .

(*a*) $\frac{\pi}{6}$ (*b*) $\frac{\pi}{4}$ (*c*) $\frac{\pi}{3}$ (*d*) $\frac{\pi}{2}$

40. The point of contact of the circles $x^2+y^2-4x+6y-3=0$ and $x^2+y^2+16x+6y+37=0$ is _____ .

(*a*) (- 8, - 3) (*b*) (2, - 3) (*c*) (- 2, - 3) (*d*) none of these

41. If two tangents drawn from a point P, to the parabola $y^2=4x$ are at right angles, then locus of P is _____ .

(*a*) $2x+1=0$ (*b*) $x=-1$ (*c*) $2x-1=0$ (*d*) $x=1$

42. If foci of the ellipse $\frac{x^2}{16}+\frac{y^2}{b^2}=1$ and the hyperbola $\frac{x^2}{144}-\frac{y^2}{81}=\frac{1}{25}$ coincide, then $b^2=$ _____ .

(*a*) 1 (*b*) 7 (*c*) 5 (*d*) 9

43. If hyperbola $x^2-y^2=a^2$ and $xy=c^2$ are of same size, then _____ .

(*a*) $c^2=2a^2$ (*b*) $2c^2=a^2$ (*c*) $c=2a$ (*d*) none of these

44. The centre of the ellipse $\frac{(x+y-2)^2}{9}+\frac{(x-y)^2}{16}=1$ is _____ .

(*a*) (0, 0) (*b*) (1, 1) (*c*) (1, 0) (*d*) (0, 1)

45. Three normals to parabola $y^2 = x$ are drawn at a point (c, 0) then _____ .

(*a*) $c = \frac{1}{4}$ (*b*) $c = \frac{1}{2}$ (*c*) $c > \frac{1}{2}$ (*d*) none of these

46. $\bar{a}$ and $\bar{c}$ are unit collinear vectors and $|\bar{b}| = 6$. If $\bar{b} - 3\bar{c} = \lambda\bar{a}$ then $\lambda =$ _____ .

(*a*) 3, - 3 (*b*) – 9, 3 (*c*) 9, 3 (*d*) none of these

47. If $\bar{a}$, $\bar{b}$, $\bar{c}$ are three non-coplanar vectors, then $(\bar{a} + \bar{b} - \bar{c}) \cdot [(\bar{a} - \bar{b}) \times (\bar{b} - \bar{c})] =$ _____ .

(*a*) 0 (*b*) $\bar{a} \cdot (\bar{b} \times \bar{c})$ (*c*) $\bar{a} \cdot (\bar{c} \times \bar{b})$ (*d*) $3\bar{a} \cdot (\bar{b} \times \bar{c})$

48. A line $\overrightarrow{AB}$ in three dimensional space makes angles 45° and 120° with positive X-axis and the positive Y-axis respectively. If $\overrightarrow{AB}$ makes an acute angle θ with positive Z-axis then
θ = _____ .

(*a*) 45° (*b*) 60° (*c*) 75° (*d*) 30°

49. If θ is the measure of acute angle between unit vectors $\bar{u}$ and $\bar{v}$ then $2\bar{u} \times 3\bar{v}$ is a unit vector for _____ .

(*a*) exactly two values of θ (*b*) more than two values of θ
(*c*) no value of θ (*d*) exactly one value of θ

50. The vectors $\overrightarrow{AB} = 3\hat{i} + 4\hat{k}$ and $\overrightarrow{AC} = 5\hat{i} - 2\hat{j} + 4\hat{k}$ are the sides of a triangle ABC. The length of the median through A is _____ .

(*a*) $\sqrt{72}$ (*b*) $\sqrt{33}$ (*c*) $\sqrt{288}$ (*d*) $\sqrt{18}$

51. V(4, λ, 1), A(0, - 1, - 1), B(1, 2, 3) and C(4, 4, 4) are vertices of a tetrahedron of volume $\frac{16}{3}$ cubic units then $\lambda =$ _____ .

(*a*) 5 (*b*) – 5 (*c*) $\frac{1}{5}$ (*d*) none of these

52. If $\bar{a} + \bar{b} + \bar{c} = \bar{0}$ then $\bar{a} \times \bar{b} =$ _____ .

(*a*) $\bar{c} \times \bar{a}$ (*b*) $\bar{b} \times \bar{c}$ (*c*) (a) & (b) both (*d*) none of these

53. The projection of a vector on the three co-ordinate axes are 6, - 3, 2 respectively. The direction cosines of the vectors are _____ .

(*a*) $\frac{6}{5}, -\frac{3}{5}, \frac{2}{5}$ (*b*) $\frac{6}{7}, -\frac{3}{7}, \frac{2}{7}$ (*c*) $-\frac{6}{7}, -\frac{3}{7}, \frac{2}{7}$ (*d*) 6, - 3, 2

54. The plane passing through the point (- 2, - 2, 2) and containing the line joining the points (1, 1, 1) and (1, - 1, 2) makes intercepts on the co-ordinate axes the sum of whose lengths is _____ .

(*a*) 4 (*b*) 6 (*c*) 12 (*d*) 18

55. Find the equation of a plane which is at distance of 5 units from the origin and has 2, - 1, 2 as direction ratios of a normal to it.

(*a*) 2x – y + 2z = 15 (*b*) 2x – y + 2z = 0 (*c*) 2x – y + 2z = 1 (*d*) none of these

56. The reflection of the point P(1, 0, 0) in the line $\frac{x-1}{2} = \frac{y+1}{-3} = \frac{z+10}{8}$ is _____ .

(*a*) (1, - 1, 10) (*b*) (5, - 8, - 4) (*c*) (2, - 3, 8) (*d*) (3, - 4, - 2)

57. The shortest distance between the lines $\frac{x-3}{2} = \frac{y+15}{-7} = \frac{z-9}{5}$ and $\frac{x+1}{2} = \frac{y-1}{1} = \frac{z-9}{-3}$ is _____ .

(*a*) $2\sqrt{3}$ (*b*) $4\sqrt{3}$ (*c*) $3\sqrt{6}$ (*d*) $5\sqrt{6}$

58. The angle between the lines 2x = 3y = - z and 6x = - y = - 4z is _____ .
(*a*) 0º (*b*) 90º (*c*) 45º (*d*) 30º

59. The plane x + 2y – z = 4 cuts the sphere $x^2 + y^2 + z^2 - x + z - 2 = 0$ in a circle of radius :
(*a*) 2 (*b*) $\sqrt{2}$ (*c*) 3 (*d*) 1

60. The image of the point (- 1, 3, 4) in the plane x – 2y = 0 is _____ .
(*a*) (8, 4, 4) (*b*) $\left(-\frac{17}{3},-\frac{19}{3},4\right)$ (*c*) (15, 11, 4) (*d*) $\left(\frac{9}{5},-\frac{13}{5},4\right)$

61. The line passing through the point (5, 1, a) and (3, b, 1) crosses the yz – plane at the point $\left(0,\frac{17}{2},-\frac{13}{2}\right)$ then, _____ .
(*a*) a = 4, b = 6 (*b*) a = 6, b = 4 (*c*) a = 8, b = 2 (*d*) a = 2, b = 8

62. The shortest distance from the plane 12x + 4y + 3z = 327 to the sphere $x^2 + y^2 + z^2 + 4x - 2y - 6z = 155$ is _____ .
(*a*) 26 (*b*) $11\frac{4}{13}$ (*c*) 13 (*d*) 39

63. The mean of n items is $\bar{x}$. If each item is successively increased by 3, 3^2, 3^3, …, 3^n then the new mean is _____ .
(*a*) $\bar{x}+\frac{3^{n+1}}{n}$ (*b*) $\bar{x}+3\left(\frac{3^n-1}{2n}\right)$ (*c*) $\bar{x}+\frac{3^n}{n}$ (*d*) $\bar{x}+\frac{3^n-1}{2^n}$

64. Geometric mean of series 1, 2, 4, 8, …, 2^n is _____ .
(*a*) $2^{\frac{n+1}{2}}$ (*b*) 2^{n+1} (*c*) $2^{\frac{n}{2}}$ (*d*) 2^n

65. The sum of deviations of n observation from 50 is – 10 and sum of deviation of values from 46 is 30. Find the value of n.
(*a*) 5 (*b*) 10 (*c*) 20 (*d*) 25

66. The mean of five observation is 4 and their variance is 5.2. If three of them are 1, 2, 6 then other two are _____ .
(*a*) 2, 9 (*b*) 4, 7 (*c*) 5, 6 (*d*) 2, 10

67. The average marks of boys in a class is 52 and that of girls is 42. The average marks of boys and girls combined is 50. The percentage of boys in the class is _____ .
(*a*) 80 (*b*) 60 (*c*) 40 (*d*) 20

68. For two data sets, each of size 5 the variance are given to be 4 and 5 and corresponding means are 2 and 4 respectively. The variance of combined data set is _____ .
(*a*) $\frac{11}{2}$ (*b*) 6 (*c*) $\frac{13}{2}$ (*d*) $\frac{5}{2}$

69. A problem in mathematics is given to three student A, B, C and their respective chance of solving the problem are $\frac{1}{2},\frac{1}{3},\frac{1}{4}$. The probability that problems will be solved is _____ .
(*a*) $\frac{3}{4}$ (*b*) $\frac{1}{2}$ (*c*) $\frac{2}{3}$ (*d*) $\frac{1}{3}$

70. Five horses are in a race. Mr ‘A’ selected two horses randomly and bet on them. The probability that Mr’A’ selected the winning horse is _____ .
(*a*) $\frac{3}{5}$ (*b*) $\frac{1}{5}$ (*c*) $\frac{2}{5}$ (*d*) $\frac{4}{5}$

71. The probability that A speaks truth is $\frac{4}{5}$, B speaks truth is $\frac{3}{4}$. The probability they contradict each other is _____ .

(*a*) $\frac{7}{20}$ (*b*) $\frac{1}{5}$ (*c*) $\frac{3}{20}$ (*d*) $\frac{4}{5}$

72. A dice is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then P(A ∪ B) is _____ .

(*a*) $\frac{2}{5}$ (*b*) $\frac{3}{5}$ (*c*) 0 (*d*) 1

73. The statement $p \to (q \to p)$ is equivalent to _____ .

(*a*) $p \to (p \leftrightarrow q)$ (*b*) $p \to (p \to q)$ (*c*) $p \to (p \vee q)$ (*d*) $p \to (p \wedge q)$

74. Which of the following is logically equivalent to $\sim(\sim p \Rightarrow q)$?

(*a*) $p \wedge q$ (*b*) $\sim p \wedge q$ (*c*) $\sim p \wedge \sim q$ (*d*) $p \Rightarrow \sim q$

75. If $p \Rightarrow (\sim p \vee q)$ is false, then truth values of p and q are respectively _____ .

(*a*) T, T (*b*) F, F (*c*) T, F (*d*) F, T

76. $(p \wedge q) \Rightarrow (p \vee q)$ = _____ .

(*a*) t (*b*) c (*c*) p (*d*) q

77. A pair of dice is thrown independently three times. The probability of getting a score of exactly 9 twice is _____ .

(*a*) $\frac{8}{729}$ (*b*) $\frac{8}{243}$ (*c*) $\frac{1}{729}$ (*d*) $\frac{8}{9}$

78. The mean and variance of a random variable x having binomial distribution are 4 and 2 respectively then P(x = 1) is _____ .

(*a*) $\frac{1}{16}$ (*b*) $\frac{1}{8}$ (*c*) $\frac{1}{4}$ (*d*) $\frac{1}{32}$

79. The mean of 20 observation was found to be 47. Later on it was found that one observation 66 was wrongly taken as 86. Find the correct mean.

(*a*) 45 (*b*) 46 (*c*) 48 (*d*) 42

80. The function f: N →N denoted by $f(n) = 2n + 3$, $n \in$ N is _____ .

(*a*) surjective (*b*) injective (*c*) bijective (*d*) none of these

81. Two finite sets have m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. The values of m and n are _____ .

(*a*) 7, 6 (*b*) 6, 3 (*c*) 5, 1 (*d*) 8, 7

82. $(1 + i)^{10} + (1 - i)^{10}$ = _____ .

(*a*) $32i$ (*b*) $2i$ (*c*) 0 (*d*) none of these

83. $\left(\frac{1+i\sin\frac{\pi}{8}+\cos\frac{\pi}{8}}{1-i\sin\frac{\pi}{8}+\cos\frac{\pi}{8}}\right)^{16}$ = _____ .

(*a*) – 1 (*b*) 0 (*c*) 1 (*d*) none of these

84. The number of real roots of the equation $x^2 - 5|x| + 6 = 0$ is _____ .

(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4

85. The number of real solution of the equation $\frac{1}{x+2}+\frac{1}{x+7}=\frac{1}{x+3}+\frac{1}{x+6}$ is _____ .

(*a*) 0 (*b*) 1 (*c*) 2 (*d*) 3

86 to 100 carry 8 mark each :

86. Statement – 1 : f : R →R is a function defined by f (x) = $\frac{5x-8}{3}$, then f^{-1}(x) = $\frac{3x+8}{5}$.
Statement – 2 : f (x) is not a bijection.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

87. Statement – 1 : Let A = {1, {2, 3}}, then P(A) = {{1}, {2, 3}, ∅, {1, {2, 3}}
Statement – 2 : Power set is set of all subsets of A.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

88. Statement – 1 : If | z | ≥ 13 then least value of $\left|z+\frac{1}{2}\right|$ is $\frac{25}{2}$.
Statement – 2 : $|z_1+z_2| \le |z_1|+|z_2|$.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

89. Statement – 1 : The number of real roots of the equation $\sin 3^x \cdot \cos 3^x = \frac{3^x+3^{-x}}{4}$ is 2.
Statement – 2 : A.M. > G.M.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

90. Statement – 1 : The number of non-negative integral solution of $x_1+x_2+x_3+...+x_n=r$ is $\binom{n+r-1}{r}$.
Statement – 2 : The number of ways in which n indentical things can be distributed into r different groups is $\binom{n+r-1}{n}$.

(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

91. Statement – 1 : 3^{2n} ; $\forall n \in$ N leaves the remainder 1 when divided by 8.
Statement – 2 : $9^n = 1 + 8\lambda$.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

92. Statement – 1 : The coefficient of x^{15} in the expansion of $(1 + 3x + 3x^2 + x^3)^6$ is $\binom{18}{3}$.
Statement – 2 : The coefficient of x^r in the expansion of $(1 + x)^n$ is $\binom{n}{r}$.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

93. Statement – 1 : The coefficient of x^2 in the expansion of $\frac{1-x}{1+x}$ is 2.
Statement – 2 : $(1+x)^{-2} = 1-2x+3x^2-4x^3+\ldots$.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

94. Statement – 1 : If AB + BC = AC then ΔABC can not be possible.
Statement – 2 : Triangle ABC will be possible only if A, B, C are non collinear.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

95. Statement – 1 : Number of circles passing through (- 2, 1), (- 1, 0), (- 4, 3) is 1.
Statement – 2 : Throught three noncollinear points in a plane only one circle can be drawn.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.

(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

96. Statement – 1 : The equation of the director circle to the ellipse $4x^2 + 5y^2 = 20$ is $x^2 + y^2 = 9$.
Statement – 2 : Director circle is the locus of point of intersection of perpendicular tangent to the ellipse.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

97. Statement – 1 : The sum of lengths of projection of $2\hat{i}+3\hat{j}+\hat{k}$ on the co-ordinate axes is 5.
Statement – 2 : Magnitude of projection of $\bar{a}$ on $\bar{b}$ is given by $\dfrac{|\bar{a}\cdot\bar{b}|}{|\bar{a}|}$.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

98. Statement – 1 : Mean of series 1, 2, 4, 8, … , 2^n is $\dfrac{2^{n+1}-1}{n+1}$.
Statement – 2 : Sum of n terms of an increasing G.P. is $a\left(\dfrac{r^n-1}{r-1}\right)$.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

99. Statement – 1 : For any two events A & B $P(A' \cap B) = P(B) - P(A \cap B)$
Statement – 2 : $A \cap B$ & $A' \cap B$ are mutually exclusive events.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.
(*d*) Statement – 1 is false but Statement – 2 is true.

100. Statement – 1 : $\sim(p \leftrightarrow \sim q)$ is equivalent to $p \leftrightarrow q$.
Statement – 2 : $\sim(p \leftrightarrow \sim q)$ is a tautology.
(*a*) Statement – 1 & Statement – 2 are individually true & Statement – 2 is correct explanation of Statement – 1.
(*b*) Statement – 1 & Statement – 2 are individually true but Statement – 2 is not the correct (proper) explanation of Statement – 1.
(*c*) Statement – 1 is true but Statement – 2 is false.

(*d*) Statement – 1 is false but Statement – 2 is true.