

1. If the sum of zeroes of the polynomial  $p(x) = 2x^2 - k\sqrt{2}x + 1$  is  $\sqrt{2}$ , then value of  $k$  is:
  - (a)  $\sqrt{2}$
  - (b) 2
  - (c)  $2\sqrt{2}$
  - (d)  $\frac{1}{2}$
2. If the probability of a player winning a game is 0.79, then the probability of his losing the same game is:
  - (a) 1.79
  - (b) 0.31
  - (c) 0.21
  - (d) 0.21
3. If the roots of the equation  $ax^2 + bx + c = 0, a \neq 0$  are real and equal, then which of the following relations is true?
  - (a)  $a = \frac{b^2}{c}$
  - (b)  $b^2 = ac$
  - (c)  $ac = \frac{b^2}{4}$
  - (d)  $c = \frac{b^2}{a}$
4. In an A.P., if the first term  $a = 7$ ,  $n$ th term  $a_n = 84$ , and the sum of the first  $n$  terms  $s_n = \frac{2093}{2}$ , then  $n$  is equal to:
  - (a) 22
  - (b) 24
  - (c) 23
  - (d) 26

5. If two positive integers  $p$  and  $q$  can be expressed as  $p = 18a^2b^4$  and  $q = 20a^3b^2$  where  $a$  and  $b$  are prime numbers, then  $\text{LCM}(p, q)$  is:
- (a)  $2a^2b^2$
  - (b)  $180a^2b^2$
  - (c)  $12a^2b^2$
  - (d)  $180a^3b^4$
6.  $AD$  is a median of  $\triangle ABC$  with vertices  $A(5, -6)$ ,  $B(6, 4)$ , and  $C(0, 0)$ . The length of  $AD$  is equal to:
- (a)  $\sqrt{68}$  units
  - (b)  $2\sqrt{15}$  units
  - (c)  $\sqrt{101}$  units
  - (d) 10 units
7. If  $\sec \theta - \tan \theta = m$ , then the value of  $\sec \theta + \tan \theta$  is:
- (a)  $1 - \frac{1}{m}$
  - (b)  $m^2 - 1$
  - (c)  $\frac{1}{m}$
  - (d)  $-m$
8. From the data 1, 4, 7, 9, 16, 21, 25, if all the even numbers are removed, then the probability of getting at random a prime number from the remaining is:
- (a)  $\frac{2}{5}$
  - (b)  $\frac{1}{5}$
  - (c)  $\frac{1}{7}$
  - (d)  $\frac{2}{7}$

9. For some data  $x_1, x_2, \dots, x_n$  with respective frequencies  $f_1, f_2, \dots, f_n$ , the value of  $\sum_i^n (f_i x_i - \bar{x})$  is equal to:
- (a)  $n\bar{x}$
  - (b) 1
  - (c)  $\sum f_i$
  - (d) 0
10. The zeroes of a polynomial  $x^2 + px + q$  are twice the zeroes of the polynomial  $4x^2 - 5x - 6$ . The value of  $p$  is:
- (a)  $-\frac{5}{2}$
  - (b)  $\frac{5}{2}$
  - (c)  $-5$
  - (d) 10
11. If the distance between the points  $(3, -5)$  and  $(x, -5)$  is 15 units, then the values of  $x$  are:
- (a) 12,  $-18$
  - (b)  $-12$ , 18
  - (c) 18, 5
  - (d)  $-9$ ,  $-12$
12. If  $\cos(\alpha + \beta) = 0$  then the value of  $\cos\left(\frac{\alpha + \beta}{2}\right)$  is equal to:
- (a)  $\frac{1}{\sqrt{2}}$
  - (b)  $\frac{1}{2}$
  - (c) 0
  - (d)  $\sqrt{2}$

13. A solid sphere is cut into two hemispheres. The ratio of the surface areas of the sphere to that of the two hemispheres taken together is:
- (a) 1 : 1
  - (b) 1 : 4
  - (c) 2 : 3
  - (d) 3 : 2
14. The middle-most observation of every data arranged in order is called:
- (a) mode
  - (b) median
  - (c) mean
  - (d) deviation
15. The volume of the largest right circular cone that can be carved out from a solid cube of edge 2 cm is:
- (a)  $\frac{4\pi}{3}$  cu cm
  - (b)  $\frac{5\pi}{3}$  cu cm
  - (c)  $\frac{8\pi}{3}$  cu cm
  - (d)  $\frac{2\pi}{3}$  cu cm
16. Two dice are rolled together. The probability of getting a sum of numbers on the two dice as 2, 3, or 5 is:
- (a)  $\frac{7}{36}$
  - (b)  $\frac{11}{36}$
  - (c)  $\frac{5}{36}$
  - (d)  $\frac{4}{9}$

17. The center of a circle is at  $(2, 0)$ . If one end of a diameter is at  $(6, 0)$ , then the other end is at:
- (a)  $(0, 0)$
  - (b)  $(4, 0)$
  - (c)  $(-2, 0)$
  - (d)  $(-6, 0)$
18. In the given figure, graphs of two linear equations are shown. The pair of these linear equations is:

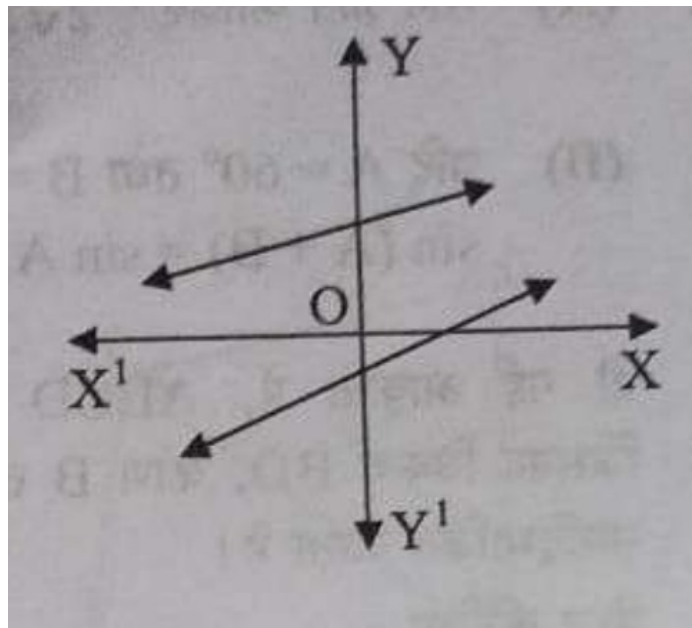


Figure 1

- (a) consistent with a unique solution.
- (b) consistent with infinitely many solutions.
- (c) inconsistent.
- (d) inconsistent but can be made consistent.

**Directions:**

**In Q. No. 19 , a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.**

19. **Assertion (A):** The tangents drawn at the end points of a diameter of a circle are parallel.

**Reason (R):** The diameter of a circle is the longest chord.

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation for Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.