

23. If both the roots of $ax^2 + bx + c = 0$ are real, then
- (a) $b^2 = 4ac$ (b) $b^2 < 4ac$
(c) $b^2 > 4ac$ (d) both (a) and (c)

24. Study the statements carefully.

Statement I : Both the roots of the equation $x^2 - x + 1 = 0$ are real.

Statement II : The roots of the equation $ax^2 + bx + c = 0$ are real if and only if $b^2 - 4ac \geq 0$.

Which of the following options hold?

- (a) Both Statement I and Statement II are true.
(b) Both Statement I and Statement II are false.
(c) Statement I is true but Statement II is false.
(d) Statement I is false and Statement II is true.

25. Two numbers differ by 3 and their product is 504. The numbers are

- (a) 21, 24 (b) 24, -21
(c) -24, 21 (d) None of these

26. Find the value of k for the equation $2x^2 + kx + 2 = 0$, if it has equal roots.

- (a) 4 (b) -4
(c) Both (a) and (b) (d) 2

27. If -5 is root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots, find the value of k .

- (a) $7/4$ (b) $1/7$ (c) $2/7$ (d) $3/4$

28. A rope of 16 m is divided into two parts such that twice the square of the greater part exceeds the square of the smaller part by 164. Then greater and smaller parts are respectively

- (a) 11 m, 5 m (b) 9 m, 7 m
(c) 12 m, 4 m (d) 10 m, 6 m

29. Out of a number of Saras birds, one fourth the number are moving about in lotus, $\frac{1}{9}$ coupled (along) with, $1/4^{\text{th}}$ as well as 7 times the square root of the number move on a hill, 56 birds remain in the vakula trees. What is the total number of birds?

- (a) 376 (b) 576 (c) 36 (d) 144

30. A farmer wishes to fence a 100 m^2 rectangular vegetable garden. Since he has with him only 30 m barbed wire, he fences three sides of the rectangular garden, letting compound wall of adjoining house act as the fourth side fence. Find the dimensions of his garden.

- (a) 20 m, 5 m (b) 25 m, 4 m
(c) 22 m, 4 m (d) 50 m, 2 m

31. Find the value of k for which the roots of the equation $kx(3x - 4) + 4 = 0$, are equal.

(a) 1

(b) 2

(c) 3

(d) 4

32. If the quadratic equation $x^2 - 3kx + 2e^{2\log k} - 1 = 0$ has real roots such that the product of roots is 7, then the value of k is

(a) ± 1

(b) ± 2

(c) ± 3

(d) None of these

33. A school decided to award prizes to the most punctual and the most obedient student. The sum of the two prizes is ₹ 150 and their product is ₹ 5600. Find the prize money for punctuality and obedience.

(a) ₹ 70, ₹ 80

(b) ₹ 40, ₹ 110

(c) ₹ 60, ₹ 90

(d) ₹ 50, ₹ 100

34. The sum of the lives of the two electric lamps one C.F.L. and other ordinary lamp is 10 years. The product of the lives of these two lamps is 26 years. Is this situation possible?

(a) No

(b) Yes

(c) Can't be determined

(d) None of these

35. The number of real roots of the equation

$$(x - 1)^2 + (x - 2)^2 + (x - 3)^2 = 0 \text{ is}$$

(a) 2

(b) 1

(c) 0

(d) 3