QB365 Question Bank Software

10th Maths Important Questions with Answer Keys For - 2024

10th Standard

Maths

Total Marks : 50

CHOOSE THE CORRECT ANSWER: 50 x 1 = 50

1) A = {a,b,p}, B = {2,3}, C = {p,q,r,s} then n[(A U C) x B] is

(a) 8 (b) 20 **(c) 12** (d) 16

2) The range of the relation R = {(x, x^2) |x is a prime number less than 13} is

(a) {2,3,5,7} (b) {2,3,5,7,11} **(c) {4,9,25,49,121}** (d) {1,4,9,25,49,121}

3) If the ordered pairs (a + 2, 4) and (5, 2a + b) are equal then (a,b) is

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

4) Let f and g be two functions given by
f = {(0,1), (2,0), (3,-4), (4,2), (5,7)}
g = {(0,2), (1,0), (2,4), (-4,2), (7,0)} then the range of f o g is

(a) {0,2,3,4,5} (b) {–4,1,0,2,7} (c) {1,2,3,4,5} **(d) {0,1,2}**

5) If g = {(1,1), (2,3), (3,5), (4,7)} is a function given by g(x) = αx + β then the values of α and β are

(a) (-1,2) **(b) (2,-1)** (c) (-1,-2) (d) (1,2)

6) Given $F_1 = 1$, $F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is

(a) 3 (b) 5 (c) 8 **(d) 11**

7) In an A.P., the first term is 1 and the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?

(a) 6 (b) 7 **(c) 8** (d) 9

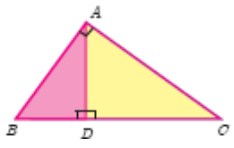
8) The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to

(a) $\frac{16}{5}\left|\frac{x^2z^4}{y^2}\right|$ (b) $16\left|\frac{y^2}{x^2z^4}\right|$ (c) $\frac{16}{5}\left|\frac{y}{xz^2}\right|$ **(d)** $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

9) In a $\triangle ABC$, AD is the bisector $\angle BAC$. If AB = 8 cm, BD = 6 cm and DC = 3 cm. The length of the side AC is

(a) 6 cm **(b) 4 cm** (c) 3 cm (d) 8 cm

10) In the adjacent figure $\angle BAC = 90^o$ and AD $\perp$ BC then

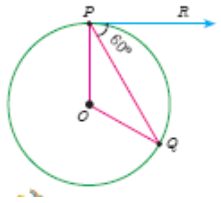


(a) $BD.CD = BC^2$ (b) $AB.AC = BC^2$ **(c) $BD.CD = AD^2$** (d) $AB.AC = AD^2$

11) A tangent is perpendicular to the radius at the

(a) centre **(b) point of contact** (c) infinity (d) chord

12) In figure if PR is tangent to the circle at P and O is the centre of the circle, then $\angle PQR$ is



(a) 120° (b) 100° (c) 110° (d) 90°

13) The point of intersection of $3x - y = 4$ and $x + y = 8$ is

(a) (5, 3) (b) (2, 4) **(c) (3, 5)** (d) (4, 4)

14) If slope of the line PQ is $\frac{1}{\sqrt{3}}$ then slope of the perpendicular bisector of PQ is

(a) $\sqrt{3}$ **(b)** $-\sqrt{3}$ (c) $\frac{1}{\sqrt{3}}$ (d) 0

15) Consider four straight lines
(i) $l_1 : 3y = 4x + 5$
(ii) $l_2 : 4y = 3x - 1$
(iii) $l_3 : 4y + 3x = 7$
(iv) $l_4 : 4x + 3y = 2$
Which of the following statement is true?

(a) l_1 and l_2 are perpendicular (b) l_1 and l_4 are parallel **(c) l_2 and l_4 are perpendicular**
(d) l_2 and l_3 are parallel

16) A straight line has equation $8y = 4x + 21$. Which of the following is true

(a) The slope is 0.5 and the y intercept is 2.6 (b) The slope is 5 and the y intercept is 1.6
(c) The slope is 0.5 and the y intercept is 1.6 (d) The slope is 5 and the y intercept is 2.6

17) $\tan\theta \operatorname{cosec}^2\theta - \tan\theta$ is equal to

(a) $\sec\theta$ (b) $\cot^2\theta$ (c) $\sin\theta$ **(d)** $\cot\theta$

18) If $\sin\theta + \cos\theta = a$ and $\sec\theta + \operatorname{cosec}\theta = b$, then the value of $b(a^2 - 1)$ is equal to

(a) 2a (b) 3a (c) 0 (d) 2ab

19) $a\cot\theta + b\operatorname{cosec}\theta = p$ and $b\cot\theta + a\operatorname{cosec}\theta = q$ then $p^2 - q^2$ is equal to

(a) $a^2 - b^2$ **(b) $b^2 - a^2$** (c) $a^2 + b^2$ (d) $b - a$

20) The angle of depression of the top and bottom of 20 m tall building from the top of a multistoried building are 30° and 60° respectively. The height of the multistoried building and the distance between two buildings (in metres) is

(a) 20, $10\sqrt{3}$ (b) 30, $5\sqrt{3}$ (c) 20, 10 **(d) 30, $10\sqrt{3}$**

21) If the radius of the base of a cone is tripled and the height is doubled then the volume is

(a) made 6 times **(b) made 18 times** (c) made 12 times (d) unchanged

22) The height and radius of the cone of which the frustum is a part are h_1 units and r_1 units respectively. Height of the frustum is h_2 units and radius of the smaller base is r_2 units. If $h_2 : h_1 = 1:2$ then $r_2 : r_1$ is

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

23) The mean of 100 observations is 40 and their standard deviation is 3. The sum of squares of all observations is

(a) 40000 **(b) 160900** (c) 160000 (d) 30000

24) The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is

(a) 3 (b) 15 (c) 5 **(d) 225**

25) A purse contains 10 notes of Rs. 2000, 15 notes of Rs. 500, and 25 notes of Rs. 200. One note is drawn at random. What is the probability that the note is either a Rs. 500 note or Rs. 200 note?

(a) $\frac{1}{5}$ (b) $\frac{3}{10}$ (c) $\frac{2}{3}$ **(d)** $\frac{4}{5}$

26) $\left(x - \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$ then f(x) =

(a) $x^2 + 2$ (b) $x^2 + \frac{1}{x^2}$ (c) $x^2 - 2$ (d) $x^2 - \frac{1}{x^2}$

27) A function is also called as a _____

(a) mapping (b) transformation **(c) both a and b** (d) none of these

28) If n(A) = p; n(B) = q; then the total number of relations that exist between A and B is _____

(a) 2^p (b) 2^q **(c) 2^{p+q}** (d) 2^{pq}

29) If A, B, C are any three sets, then $A \times (\dot{B} \cup C)$ is equal to _____

(a) $(A \times B) \cup (A \times C)$ (b) $(A \cup B) \cup (A \cup C)$ (c) Both (a) and (b) (d) None of these

30) Given $a_1 = -1$, $a = \frac{a_n}{n+2}$, then a_4 is _____

(a) $-\frac{1}{20}$ (b) $-\frac{1}{4}$ (c) $-\frac{1}{840}$ **(d) $-\frac{1}{120}$**

31) A Quadratic polynomial whose one zero is 5 and sum of the zeroes is 0 is given by _____

(a) x^2-25 (b) x^2-5 (c) x^2-5x (d) x^2-5x+5

32) If P and Q are matrices, then which of the following is true?

(a) PQ ≠ QP (b) $(P^T)^T \neq P$ (c) P + Q ≠ Q + P (d) All are true

33) solve for x : $\left(x-\frac{1}{2}\right)^2 - \left(x-\frac{3}{2}\right)^2 = x+2$

(a) 4 (b) 8 (c) -4 (d) -8

34) The LCM of $8x^4y^2z^3, 10xy^3z^5$ and $12x^2y^2z^4$ is

(a) $120x^2y^2z^2$ **(b) $120x^4y^3z^5$** (c) $2xy^2z^3$ (d) $120x^3y^3z^5$

35) Common root of $x^2 + x - 6 = 0$ and $x^2 + 3x - 10 = 0$ is _____

(a) -2 **(b) 2** (c) -3 (d) -5

36) For the given matrix $A = \begin{bmatrix} 1 & 3 & 5 \\ 2 & 4 & 6 \end{bmatrix}$ the order of the matrix $\left(\mathbf{A}^{\mathrm{T}}\right)^{\mathrm{T}}$ is

(a) 2 x 3 (b) 3 x 2 (c) 3 x 4 (d) 4 x 3

37) The height of an equilateral triangle of side a is

(a) $\frac{a}{2}cm$ (b) $\sqrt{3a}$ **(c) $\frac{\sqrt{3}}{2}a$** (d) $\frac{\sqrt{3}}{4}a$

38) If the angle between two radio of a circle is °, the angle between the tangents at the end of the radii is _____

(a) 50° (b) 90° (c) 40° (d) 70°

39) In a triangle, the internal bisector of an angle bisects the opposite side. Find the nature of the triangle.

(a) right angle **(b) equilateral** (c) scalene (d) isosceles

40) If the points (0, 0), (a, 0) and (0, b) are colllinear, then _____

(a) a = b (b) a + b **(c) ab = 0** (d) a ≠ b

41) The angle of elevation of a cloud from a point h metres above a lake is b. The angle of depression of its reflection in the lake is 45°. The height of location of the cloud from the lake is _____

(a) $\frac{h(1+tan\beta)}{1-tan\beta}$ (b) $\frac{h(1-tan\beta)}{1+tan\beta}$ (c) h tan(45°- β) (d) None of these

42) If $\tan\theta + \cot\theta = 3$ then $\tan^2\theta + \cot^2\theta$ is equal to _____

(a) 4 **(b) 7** (c) 6 (d) 9

43) From a given point when height of an object increases the angle of elevation_____

(a) increases (b) decreases (c) neither increases nor decreases (d) equal

44) If the angle of elevation of a tower from a distance of 100 m from its foot is 60°, then the height of the tower is _____

(a) $100\sqrt{3}m$ (b) $\frac{100}{\sqrt{3}}m$ (c) $50\sqrt{3}m$ (d) $\frac{200}{\sqrt{3}}m$

45) The angle of elevation of the top of tree from a point at a distance of 250 m from its base is 60° The height of the tree is

(a) 250 m **(b)** $250\sqrt{3}$ m (c) $\frac{250}{\sqrt{3}}$ m (d) $200\sqrt{3}$ m

46) A cylinder 10 cone and have there are of a equal base and have the same height. what is the ratio of there volumes?

(a) 3:1:2 (b) 3:2:1 (c) 1:2:3 (d) 1:3:2

47) The volume of a frustum if a cone of height L and ends-radio and r_1 and r_2 is _____

(a) $\frac{1}{3}\pi h1(r_1^2+r_2^2+r_1r_2)$ (b) $\frac{1}{3}\pi h(r_1^2+r_2^2-r_1r_2)$ (c) $\pi h(r_1^2+r_2^2+r_1r_2)$ (d) $\pi h(r_1^2+r_2^2-r_1r_2)$

48) A girl calculates the probability of her winning in a match is 0.08 what is the probability of her losing the game _____

(a) 91% (b) 8% (c) 92% (d) 80%

49) Standard deviation of population is denoted by_____

(a) Ω (b) ω **(c)** σ (d) Δ

50) In a single throw of die, the probabilityof getting a muttiple of 3 is _____

(a) $\frac{1}{2}$ **(b)** $\frac{1}{3}$ (c) $\frac{1}{6}$ (d) $\frac{2}{3}$