Class X - CBSE 2020

Mathematics

Quick Notes
Answer Key

[List of probable questions for Board Exams - Question no. wise]

Section - A

Q. 1 & 3 (From L : 1- Real Numbers) **For 1 mark**

1) Find the greatest number of 5 digits, that will give us remainder of 5, when divided by 8 and 9 respectively.
a) 99921 b) 99931 c) 99941 d) 99951 **[C]**

2) For some integers p and 5, there exist unique integers q and r such that p = 5q + r. Possible values of r are
a) 0 or 1 b) 0, 1 or 2 c) 0, 1, 2 or 3 d) 0, 1, 2, 3, or 4 **[D]**

3) If the HCF of 55 and 99 is expressible in the form $55m - 99$, then the value of m is _____.
a) 7 b) -2 c) 2 d) 5 **[C]**

4) If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$, where x, y are prime numbers, then HCF (a, b) is
a) xy b) xy^2 c) x^3y^3 d) x^2y^2 **[B]**

5) Two natural numbers whose difference is 66 and the least common multiple is 360, are:
a) 120 and 54 b) 90 and 24 c) 180 and 114 d) 130 and 64 **[B]**

6) 4 Bells toll together at 9.00 am. They toll after 7, 8, 11 and 12 seconds respectively. How many times will they toll together again in the next 3 hours ?
a) 3 b) 4 c) 5 d) 6 **[C]**

7) Which of the following rational numbers have a terminating decimal expansion ?
a) $\frac{125}{441}$ b) $\frac{77}{210}$ c) $\frac{15}{1600}$ d) $\frac{129}{2^2 \times 5^2 \times 7^2}$ **[C]**

8) A forester wants to plant 66 apple trees, 88 banana trees & 110 mango trees in equal row (in terms of no of trees) Also be wants to make distinct rows of trees (only one type of trees in one row) The no of minimum rows required are
a) 2 b) 3 c) 10 d) 12 **[D]**

9) If p is a prime no & p divides K^2, then p divides **[B]**
a) $2K^2$ b) K c) $3K^3$ d) None of these

10) LCM of 23×32 and 22×33 is **[C]**
a) 23 b) 33 c) $2^3 * 3^3$ d) $2^2 * 3^2$

Q. 2 (From L : 14 - Statistics) : **For 1 mark**

1) Mean of 100 items is 49. It was discovered that three items which should have been 60, 70, 80 were wrongly read as 40, 20, 50 respectively. The correct mean is
a) 48 b) 49 c) 50 d) 60 **[C]**

2) While computing mean of grouped data, we assume that the frequencies are **[B]**
a) evenly distributed over all the classes b) centred at the classmarks of the classes
c) centred at the upper limits of the classes d) centred at the lower limits of the classes

3) In the formula $\bar{x} = a + h\left(\frac{\sum f_i u_i}{\sum f_i}\right)$, for finding the mean of grouped frequency distribution, u_i =

a) $\frac{x_i + a}{h}$ b) $h(x_i - a)$ c) $\frac{x_i - a}{h}$ d) $\frac{a - x_i}{h}$ **[C]**

4) Mode is the value of the variable which has : **[A]**
a) maximum frequency b) minimum frequency
c) mean frequency d) middlest most frequency

5) Mode and mean of a data are 12 k and 15 k. Median of the data is **[B]**
a) 12 k b) 14 k c) 15 k d) 16 k

6) The abscissa of the point of intersection of the less then type and of the more than type cumulative frequency curves of a grouped data gives its **[B]**
a) mean b) median c) mode d) all the three above

7) The relationship between mean, median and mode for a moderately skewed distribution is **[B]**
a) mode = median - 2 mean b) mode = 3 median - 2 mean
c) mode = 2 median - 3 mean d) mode = median - mean

8) Which of the following can not be determined graphically ? **[A]**
a) Mean b) Median c) Mode d) None of the these

9) The mean of 10 numbers is 15 and that of another 20 numbers is 24, then the mean of all 30 observations is
a) 20 b) 15 c) 21 d) 24 **[C]**

10) What should be the frequency of 30 - 40 in this case **[C]**

Marks obtained		**No. of students**
Less than or equal to	50	30
Less than or equal to	40	26
Less than or equal to	30	15
Less than or equal to	20	10
Less than or equal to	10	7
Less than or equal to	0	0

a) 15 b) 26 c) 11 d) 30

11) If $\sum f_i = 11$, $\sum f_i . x_i = 2p + 52$ and mean is 6 then the value of P is **[B]**
a) 5 b) 7 c) 22 d) 11

Q. 3 (From L : 3 - Linear Equations in Two Variables) : For 1 mark

1) The pair of linear equations $2x + 3y = 5$ and $4x + 6y = 10$ is **[C]**
a) inconsistent b) consistent c) parallel d) none of these

2) The pair of equations $x = a$ and $y = b$ graphically represents lines which are **[D]**
a) parallel b) intersecting at (b, a) c) coincident d) intersecting at (a, b)

3) The father's age is six times of his son's age. Four years hence, the age of the father will be four times of his son's age. The present ages, in years, of the son and the father are , respectively. **[C]**
a) 4 and 24 b) 5 and 30 c) 6 and 36 d) 3 and 24

4) The pair of equations $ax + 2y = 7$ and $3x + by = 16$ represent parallel lines if **[D]**

a) $a = b$ b) $3a = 2b$ c) $2a = 3b$ d) $ab = 6$

5) For which values of p, does the pair of equation given below has unique solution ? **[B]**

$4x + py + 8 = 0$ and $2x + 2y + 2 = 0$

a) $p \neq 3$ b) $p \neq 4$ c) $p \neq -4$ d) none of these

6) If the lines given by $2x + ky = 1$ & $3x - 5y = 7$ are parallel then the value of K is **[A]**

a) $-10/3$ b) $10/3$ c) -13 d) -7

Q. 5, 6 , 7 ((From L : 9 - Trigonometry) : **For 1 mark**

1) If $\tan\theta = \frac{a}{b}$ then the value of $\frac{a\sin\theta + b\cos\theta}{a\sin\theta - b\cos\theta}$ is

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

2) The value of $\sin^2 30^\circ - \cos^2 30^\circ$ is

a) $-\frac{1}{2}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{3}{2}$ d) $\frac{2}{3}$

3) If $3\cot\theta = 2$, then the value of $\tan\theta$

a) $\frac{2}{3}$ b) $\frac{3}{2}$ c) $\frac{3}{\sqrt{13}}$ d) $\frac{2}{\sqrt{13}}$

4) If $\sin\theta = \sqrt{3}\cos\theta,\ 0^\circ < \theta < 90^\circ$, then θ is equal to

a) 30° b) 45° c) 60° d) 90°

5) If $\cos 9\alpha = \sin\alpha$ and $9\alpha < 90^\circ$, then the value of $\tan 5\alpha$ is

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

6) $\sin(45^\circ + \theta) - \cos(45^\circ - \theta)$ is equal to

a) $2\cos\theta$ b) 0 c) $2\sin\theta$ d) 1

7) The value of $\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ + ... + \sin^2 90^\circ$ is equal to

a) 8 b) 8.5 c) 9 d) 9.5

8) The value of the expression $[\text{cosec}(75^\circ + \theta) - \sec(15^\circ - \theta) - \tan(55^\circ + \theta) + \cot(35^\circ - \theta)]$

a) -1 b) 0 c) 1 d) $\frac{3}{2}$

9) If cosec $A - \cot A = \frac{4}{5}$, then cosec A =

a) $\frac{47}{40}$ b) $\frac{59}{40}$ c) $\frac{51}{40}$ d) $\frac{41}{40}$

10) If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is

a) 1 b) $\frac{3}{4}$ c) $\frac{1}{2}$ d) $\frac{1}{4}$

11) $\frac{1+\cot^2 A}{1+\tan^2 A} =$

a) $\tan^2 A$ b) $\sec^2 A$ c) $\text{cosec}^2 A - 1$ d) $1 - \sin^2 A$

12) The value of $\cos 0^\circ \cos 1^\circ \cos 2^\circ \ldots\ldots \cos 90^\circ$ is **[C]**

a) 1 b) -1 c) 0 d) $1/\sqrt{2}$

13) If $x \tan 45^\circ . \sin 30^\circ = \cos 30^\circ . \tan 30^\circ$ then x is equal to **[D]**

a) $\sqrt{3}$ b) $1/2$ c) $1/\sqrt{3}$ d) 1

14) sin 2B = 2 sin B is true then the value of B is **[D]**

a) 90° b) 60° c) 30° d) 0°

15) If A & $(2A - 45^\circ)$ are acute angles such that $\sin A = \cos(2A - 45^\circ)$ then tan A is equal to **[C]**

a) 0° b) $1/\sqrt{3}$ c) 1 d) $\sqrt{3}$

16) If $x = a\cos 0^\circ$ & $y = b\sin 0^\circ$ then $b^2x^2 + a^2y^2 =$ **[C]**

a) ab b) $b^2 + a^2$ c) a^2b^2 d) a^4b^4

Q. 8, 9, 10 (From L : 7 - Co-ordinate Geometry) **For 1 mark**

1) A triangle with vertices (4, 0), (– 1, – 1) and (3, 5) is a/an **[C]**
a) equilateral triangle b) right-angled triangle
c) isosceles right-angled triangle d) none of these

2) The points (– 4, 0), (4, 0) and (0, 3) are the vertices of a/an **[B]**
a) right triangle b) isosceles triangle
c) equilateral triangle d) scalene triangle

3) A circle drawn with origin as the centre passes through $\left(\frac{13}{2}, 0\right)$. The point which does not lie in the interior of the circle is

a) $\left(-\frac{3}{4}, 1\right)$ b) $\left(2, \frac{7}{3}\right)$ c) $\left(5, -\frac{1}{2}\right)$ d) $\left(-6, \frac{5}{2}\right)$ **[D]**

4) If the distance between the points (4, p) and (1, 0) is 5 units, then the value of p is
a) 4 only b) ± 4 c) -4 only d) 0 **[B]**

5) The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is
a) 5 b) 12 c) 11 d) $7 + \sqrt{5}$ **[B]**

6) If P(1, 2), Q(4, 6), R(5, 7) and S(a, b) are the vertices of a parallelogram PQRS, then

a) a = 2, b = 4 b) a = 3, b = 4 c) a = 2, b = 3 d) a = 3, b = 5 **[C]**

7) The point P which divides the line segment joining the points A(2,−5) and B(5,2) in the ratio 2 : 3 lies in the quadrant

a) I b) II c) III d) IV **[D]**

8) The area (in square units) of the triangle formed by the points A(a, 0), O(0, 0) and B(0, b) is

a) ab b) $\frac{1}{2}ab$ c) $\frac{1}{2}a^2b^2$ d) $\frac{1}{2}b^2$ **[B]**

9) Find the ordinate of a point whose abscissa is 10 and which is at distance of 10 units from points $P(2,-3)$

a) 3 b) -9 c) both a or b c) none of these **[C]**

10) The distance at point (h, k) from x- axis is

a) h b) k c) |h| d) |k| **[D]**

11) Distance of the point (4, 9) from x-axis is half it's distance from y-axis, then a =

a) 2 b) 8 c) 4 d) 6 **[C]**

12) The end points of diameter of circle are $(2,4)$ and $(-3,-1)$. The radius of circle is

a) $\frac{5\sqrt{2}}{2}$ b) $5\sqrt{2}$ c) $3\sqrt{2}$ d) $\pm\frac{5\sqrt{2}}{2}$ **[A]**

13) What point on x-axis is equidistant from A(7,6), B(−3,4)

a) (0, 4) b) (−4,0) c) (3, 0) d) (0, 3) **[C]**

~0~0~0~0~0~0~