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IMPORTANT QUESTIONS [MARKS = 50]

10th - STANDARD

CHAPTER - 1

I) 7×1 = 1

1) If $n(A \times B) = 6$ and $A = \{1, 3\}$ then $n(B)$ is

2) If $\{(a, 8), (6, b)\}$ represents an identity function, then value of a and b are

3) If $f(x) = 2x^2$ and $g(x) = \frac{1}{3x}$ then fog is

4) Let $f(x) = \sqrt{1+x^2}$ then

5) $f(x) = (x+1)^3 - (x-1)^3$ represents a function which is

6) If $n(A) = p$, $n(B) = q$, then the total number of relations that exist from A to B is

7) If $n(A) = m$, $n(B) = n$ then the total number of non empty relations that exist from A to B is

II) 5×2 = 10

1) If $A \times B = \{(3,2)(3,4)(5,2)(5,4)\}$ then find A and B

2) Let $A = \{1, 2, 3, 4 \ldots 45\}$ and R be the relation defined as "is square of a number" on A. Write R as a subset of A×A. Also find domain and Range of R

3) Given the function $f: x \to x^2 - 5x + 6$. Evaluate
i) $f(-1)$ ii) $f(2a)$ iii) $f(2)$ iv) $f(x-1)$

4) A function f is defined by $f(x) = 3 - 2x$. Find x such that $f(x^2) = (f(x))^2$

5) Find k if $fog(k) = 5$, where $f(k) = 2k - 1$

6) Let $f(x) = x^2 - 1$. Find i) fof ii) fofof

7) If the ordered pairs $(x^2 - 3x, y^2 + 4y)$ and $(-2, 5)$ are equal, then find x and y

III) 5×5 = 25

1) Let $A = \{x \in W \mid x < 2\}$, $B = \{x \in N \mid 1 < x \le 4\}$ and $C = \{3, 5\}$ verify i) $A \times (B \cup C) = (A \times B) \cup (A \times C)$

2) Let $A = \{3, 4, 7, 8\}$ and $B = \{1, 7, 10\}$. Which sets are relation from A to B?
i) $R_1 = \{(3,7)(4,7)(7,10)(8,1)\}$
ii) $R_2 = \{(3,7)(4,10)(7,7)(7,8)(8,11)(8,7)(8,10)\}$

3) Let $f(x) = 2x + 5$. If $x \neq 0$ then find $\frac{f(x+2) - f(2)}{x}$

4) If the function $f: R \to R$ is defined by
$$f(x) = \begin{cases} 2x+7 & ; x < -2 \\ x^2 - 2 & ; -2 \le x < 3 \\ 3x - 2 & ; x \ge 3 \end{cases}$$
Find the values of i) $f(4)$ ii) $f(-2)$ iii) $f(1) - 3f(4)$

5) If $f(x) = 2x + 3$, $g(x) = 1 - 2x$ and $h(x) = 3x$ $f(-3)$ To prove $fo(goh) = (fog)oh$

6) Let $f = \{(-1,3)(0,-1)(2,-9)\}$ be a linear function from Z to Z. find $f(x)$

7) If $f(x) = \frac{x-1}{x+1}$, $x \neq -1$ show $f(f(x)) = -1/x$, provide $x \neq 0$

IV) 1×8 = 8

1) construct a Δ similar to a given ΔLMN with its sides equal to 4/5 of the corresponding sides of triangle LMN (scale factor 4/5 < 1)

(or)

2) construct a Δ similar to a given triangle PQR with its sides equal to 7/4 of corresponding sides of the triangle PQR (scale factor 7/4 > 1)

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IMPORTANT QUESTIONS [MARKS-50]

10th STANDARD

CHAPTER-2

I) 7 x 1 = 7

1) The sum of the exponents of prime factors in the prime factorisation of 1729 is

2) $7^{4k} \equiv$ — (mod 100)

3) If 6 times of 6th term of an A.P is equal to 7 times the 7th term then the 13th term of the A.P is

4) The next term of the sequence $3/16, 1/8, 1/12, 1/18$ is

5) The value of $(1^3+2^3+3^3+\dots+15^3)-(1+2+3+\dots+15)$ is

6) If the HCF of 65 and 117 is expressible in the form of $65m-117$, then the value of m is

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

II) 5 x 2 = 10

1) Use Euclid's division algorithm to find the highest common factor (HCF) of 867 and 255.

2) Prove that two consecutive positive integers are always coprime.

3) a and b are two positive integers such that $a^b \times b^a = 800$. Find a and b

4) If $13824 = 2^a \times 3^b$ then find a and b

5) Solve $3x - 2 \equiv 0$ (mod 11)

6) How many consecutive odd integers beginning with 5 will sum to 480?

7) Find the sum $3 + 1 + 1/3 + \dots \infty$

III) 5 x 5 = 25

1) Find the HCF of 396, 504, 636

2) Find the remainder when 2^{81} is divided by 17.

3) If l^{th}, m^{th} and n^{th} terms of an A.P are x, y, z respectively, then show that

i) $x(m-n)+y(n-l)+z(l-m)=0$

ii) $(x-y)n+(y-z)l+(z-x)m=0$

4) The sum of three consecutive terms that are in A.P is 27 and their product is 288. Find the three terms

5) If $S_1, S_2, S_3, \ldots, S_m$ are the sums of n terms of m A.P's whose first terms are 1, 2, 3, ... m and whose common differences are 1, 3, ... (2m-1) respectively then show that $S_1 + S_2 + S_3 + \ldots + S_m = \frac{1}{2} mn(mn+1)$

6) The product of three consecutive terms of a geometric progression is 343 and their sum is 91/3. Find the three terms

7) A person saved money every year, half as much as he said in the previous year. If he had totally saved ₹ 7875 in 6 years then how much did he save in the first year?

(V) $1 \times 8 = 8$.

1) Graph the following quadratic equation and state their nature of solutions $x^2 - 4x + 4 = 0$

(OR)

2) Draw the graph of $y = (x-1)(x+3)$ and hence solve $x^2 - x - 6 = 0$

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IMPORTANT QUESTIONS [MARKS]-50

10th STANDARD

CHAPTER-3

I) 7×1=7.

1) A system of three linear equations in three variables is inconsistent if their planes

2) $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is

3) The values of a and b if $4x^4-24x^3+76x^2+ax+b$ is a perfect square are

4) Graph of linear polynomial is a

5) If A is a 2×3 matrix and B is a 3×4 matrix, how many columns does AB have

6) Transpose of a column matrix is

7) If number of columns and rows are not equal in a matrix then it is said to be a

II) 5×2=10

1) Solve $2x-3y=6$, $x+y=1$

2) Find the LCM of $8x^4y^2$, $48x^2y^4$

3) Find the square root of $4x^2+20x+25$

4) Determine the quadratic equation, whose sum and products of roots are $-(2-a)^2$, $(a+5)^2$

5) Solve the following quadratic equation by factorisation method $\sqrt{a(a-7)}=3\sqrt{2}$

6) If the difference between a number and its reciprocal is 24/5 find the number

7) Find transpose of A, if $A=\begin{bmatrix} 5 & 4 & 3 \\ 1 & -7 & 9 \\ 3 & 8 & 2 \end{bmatrix}$

III) 5×5=25

1) Vani, her father and her grand father have an average age of 53. One half of her grand father's age plus one third of her father's age plus one fourth of vani's age is 65. Four years ago if vani's grandmother was four times as old as vani then how old are

they all now ?

2) Find the GCD of given polynomial

$3x^4 + 6x^3 - 12x^2 - 24x,\ 4x^4 + 14x^3 + 8x^2 - 8x$

3) If a polynomial $p(x) = x^2 - 5x - 14$ is divided by another polynomial $q(x)$ we get $\frac{x-7}{x+2}$, find $q(x)$

4) If $A = \frac{x}{x+1}$, $B = \frac{1}{x+1}$ prove that $\frac{(A+B)^2 + (A-B)^2}{A \div B} = \frac{2(x^2+1)}{x(x+1)^2}$

5) Find the values of a and b if the following polynomial are perfect square $ax^4 + bx^3 + 361x^2 + 220x + 100$

6) Solve $pqx^2 - (p+q)^2 x + (p+q)^2 = 0$

7) The hypotenuse of a right angled triangle is 25 cm and its perimeter 56 cm. Find the length of the smallest side.

IV $1 \times 8 = 8$

1) Draw the graph of $xy = 24$; $x, y > 0$ using the graph find,

i) y when $x = 3$ and ii) x when $y = 6$

(or)

2) Discuss the nature of solutions of the following quadratic equations $x^2 + x - 12 = 0$

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IMPORTANT QUESTIONS [MARKS-50]

10th STANDARD

CHAPTER-4

I) 7×1=7

1) In ΔLMN, $\angle L = 60^\circ$, $\angle M = 50^\circ$. If $\Delta LMN \sim \Delta PQR$ then then value of $\angle R$ is

2) The perimeter of two similar triangles ΔABC and ΔPQR are 36 cm and 24 cm respectively. If PQ = 10cm then the length of AB is

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

4) Two poles of heights 6cm and 11m stand vertically on a plane ground. If the distance between their feet is 12m, what is the distance between their tops?

5) A tangent is perpendicular to the radius at the

6) How many tangent can be drawn to the circle from an exterior point?

7) In a right angle triangle the sum of other two angle is

II) 5×2=10

1) If ΔABC is similar to ΔDEF such that BC = 3cm, EF = 4cm and area of ΔABC is $54 cm^2$. Find area of ΔDEF.

2) A vertical stick of length 6cm casts a shadow 400cm long on the ground and at the same time a tower casts a shadow 28m long. Using similarity, find the height of tower.

3) AD is bisector of $\angle A$. If BD = 4cm, DC = 3cm and AB = 6cm, find AC.

4) If AD = 8x − 1, DB = 5x − 3, AE = 4x − 3 and EC = 3x − 1, find the value of x.

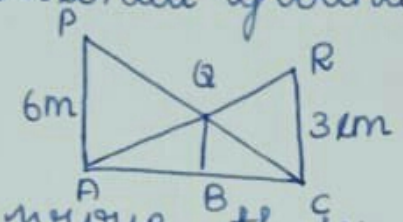
5) What length of ladder is needed to reach a height of 7ft along the wall when the base of the ladder is 4ft from the wall? Round off your answers to the nearest tenth place.

6) A man goes 18m due east and 24m due north. Find the distance of his current position from the starting point?

7) PQ is a tangent drawn from a point P to a circle with centre O and QOR is a diameter of the circle such that $\angle PQR = 120°$, find $\angle OPQ$.

III) 5X5=25

1) Two vertical poles of height 6m and 3m are erected above a horizontal ground AC. Find value of y.



2) State and prove thales theorem

3) P and Q are the mid points of the sides CA and CB respectively of a ΔABC, right angled at C. Prove that $4(AQ^2 + BP^2) = 5AB^2$

4) The perpendicular PS on the base QR of a ΔPQR intersects QR at S such that $QS = 3SR$. Prove that $2PQ^2 = 2PR^2 + QR^2$

5) PQ is a chord of length of 8cm to a circle of radius 5cm. The tangent at P and Q intersect at a point T. Find the length of tangent TP

6) Show that in a triangle, medians are concurrent

7) Show that angle bisectors of a triangles are concurre

IV) 1X8=8

1) Draw a circle of radius 4.5cm. Take a point on the circle. Draw the tangent at the point using alternate segment theorem.

(or)

2) Draw a circle of radius 4cm. At a point L on it draw a tangent to the circle using alternate segment theorem.

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10th STANDARD
CHAPTER - 5

I) 7x1=7.

1) The area of triangle formed by points (-5,0), (0,-5) (5,0) is
2) The straight line given by the equation $x = 11$ is
3) The slope of line joining (12,3), (4,a) is $\frac{1}{8}$. The value of a
4) When proving that a quadrilateral is a parallelogram by using slopes you must find
5) The equation of line passing through origin and perpendicular to the line $7x - 3y + 4 = 0$
6) If (5,7), (3,p) and (6,6) are collinear, the value of p
7) When proving that a quadrilateral is a trapezium it is necessary to show

II) 5x2=10

1) Find the area of triangle whose vertices are (-3,5), (5,6), (5,-2).
2) In each of the following, find the value of a for which points are collinear (2,3), (4,a) and (6,-3)
3) The line p passes through the points (3,-2), (12,4) and the line q through the points (6,-2) and (12,2) Is p parall to q?
4) Find the slope of line joining the points (sinθ, -cosθ) and (-sinθ, cosθ)
5) Find the equation of a line passing through the points (3,-4) and having slope -5/7
6) Find the intercepts made by the following lines on the coordinate axes $3x - 2y - 6 = 0$
7) Show that the straight lines $2x + 3y - 8 = 0$ and $4x + 6y + 18 = 0$ are parallel.

(III) $5 \times 5 = 25$

1) If the points $A(-3,9)$, $B(a,b)$ and $C(4,-5)$ are collinear and if $a+b=1$ then find a and b

2) Find the area of quadrilateral whose vertices are $(-9,0)$, $(-8,6)$, $(-1,-2)$ and $(-6,-3)$

3) Prove analytically that the line segment joining the mid points of two sides of a triangle is parallel to third side and is equal to half of its length

4) Find the equation of a straight line passing through $(1,-4)$ and has intercepts which are in ratio $2:5$

5) Find the equation of a straight line parallel to Y axis and passing through point of intersection of line $4x+5y=13$ and $x-8y+9=0$

6) $A(-3,0)$, $B(10,-2)$ and $C(12,3)$ are the vertices of ΔABC. Find the equation of altitude through A and B.

7) Find the equation of a straight line joining the point of intersection of $3x+y+2=0$ and $x-2y-4=0$ to the point of intersection of $7x-3y=-12$ and $2y=x+3$

(IV) $1 \times 8 = 8$

1) Draw the graph of $y=x^2+x$ and hence solve $x^2+1=0$

(or)

2) Graph the following quadratic equations and state their nature of solutions $(2x-3)(x+2)=0$

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10th STANDARD
CHAPTER - 6.

I) 7 x 1 = 7

1) $\tan\theta \operatorname{cosec}^2\theta - \tan\theta$ is equal to
2) If $\sin\theta + \cos\theta = a$ and $\sec\theta + \operatorname{cosec}\theta = b$, then the value of $b(a^2-1)$ is equal to
3) If $x = a\tan\theta$ and $y = b\sec\theta$ then
4) A tower is 60m height. Its shadow is x meters shorter when the suns altitude is 45° than when it has been 30°, then x is equal to
5) If $5x = \sec\theta$ and $\frac{5}{x} = \tan\theta$, then $x^2 - \frac{1}{x^2}$ is equal to
6) $a\cot\theta + b\operatorname{cosec}\theta = p$ and $b\cot\theta + a\operatorname{cosec}\theta = q$ then $p^2 - q^2$ is equal to
7) The value of $\sin^2\theta + \frac{1}{1+\tan^2\theta}$ is equal to

II) 5 x 2 = 10

1) Prove that $\frac{\sec\theta}{\sin\theta} - \frac{\sin\theta}{\cos\theta} = \cot\theta$
2) Prove $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}} = \sec\theta + \tan\theta$
3) A kite is flying at a height of 15m above ground the string attached to the kite is temporarily tied to a point on the ground. The inclination of string with the ground is 60°. Find the length of string assuming that there is no slack in the string
4) Find the angle of elevation of a top of a tower from a point on the ground, which is 30m away from the foot of a tower of height is $10\sqrt{3}$m
5) From the top of a rock $50\sqrt{3}$m high, angle of depression of a car on the ground is observed to be 30°. Find the distance of car from the rock
6) Prove $\frac{\tan^2\theta - 1}{\tan^2\theta + 1} = 1 - 2\cos^2\theta$
7) If $a\cos\theta - b\sin\theta = c$, then prove that $(a\sin\theta + b\cos\theta) = \pm\sqrt{a^2+b^2-c^2}$

1) Prove $\frac{\sin A}{1+\cos A} + \frac{\sin A}{1-\cos A} = 2\operatorname{cosec} A$

2) Prove $\frac{\sin A}{\sec A + \tan A - 1} + \frac{\cos A}{\operatorname{cosec} A + \cot A - 1} = 1$

3) If $\frac{\cos\theta}{1+\sin\theta} = \frac{1}{a}$ then prove that $\frac{a^2-1}{a^2+1} = \sin\theta$

4) From the point on the ground, the angles of elevation of top and bottom of a tower fixed at the top of a 30m high building are 45° and 60° Find the height of tower. ($\sqrt{3} = 1.732$)

5) A player sitting on the top of tower of height 20m observes angle of depression of a ball lying on the ground is 60°. Find the distance between the foot of tower and ball ($\sqrt{3} = 1.732$)

6) A pole 5m high is fixed on the top of a tower The angle of elevation of top of pole observed from a point A on the ground is 60° and angle of depression to the point A from the top of tower is 45°. Find the height of a tower ($\sqrt{3} = 1.732$)

7) If $x\sin^3\theta + y\cos^3\theta = \sin\theta\cos\theta$ and $x\sin\theta = y\cos\theta$ prove that $x^2+y^2 = 1$

(iv) $1 \times 8 = 8$

1) Construct a ΔPQR which the base $PQ = 4.5$ cm, $\angle R = 35°$ and the median from R to RG is 6 cm

(or)

2) Construct a ΔPQR such that $QR = 6.5$ cm, $\angle P = 60°$ and the altitude from P to Q is length of 4.5 cm.

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10th STANDARD
CHAPTER-7.

I) 7x1=7

1) The curved surface area of a right circular cone of height 15cm and base diameter 16cm is
2) The total surface area of cylinder whose radius is 1/3 of its height is
3) If the radius of base of a cone is tripled and height is doubled then the volume is
4) The total surface area of a hemi-sphere is how much times the square of its radius
5) A shuttle cock used for playing badmition has the shape of combination of
6) A spherical ball of radius r_1 units is melted to make 8 new identical balls each of radius r_2 units Then $r_1 : r_2$ is
7) The ratio of volume of cylinder, a cone and a sphere if each has the same diameter and same height is

II) 5x2=10

1) The slant height of a frustum of a cone is 5cm and radii of its ends are 4cm and 1cm. Find its CSA.
2) The radius of sphere increased by 25%. Find the percentage in its surface area
3) If the ratio of radii of two spheres is 4:7. find ratio of their volume.
4) Find the volume of a cylinder whose height is 2m and whose base area is $250m^2$
5) A vessel is in the form of a hemispherical bowl mounted by a hollow cylinder. The diameter is 14cm and height of vessel is 13cm. Find capacity of vessel.
6) A metallic sphere of radius 16cm is melted and recast into small spheres each of radius 2cm. How

many small sphere can be obtained.

(III) 5 x 5 = 25

1) A girl wishes to prepare birthday caps in the form of right circular cones for her birthday party using a sheet of paper whose area is 5720 cm^2, how many caps can be made with radius 5cm, height 12cm

2) The ratio of volume of two cones 2 : 3. Find ratio of their radii if height of second cone is double the height of the first

3) A solid sphere and solid hemisphere have equal TSA. Prove ratio of their volume is $3\sqrt{3} : 4$

4) A toys in the shape of a cylinder mounted by a hemisphere. The height of the toy is 25cm. Find TSA of toy if its common diameter is 12cm.

5) A capsule is in the shape of a cylinder with two hemisphere stuck to each of its ends. If the length of entire capsule is 12mm and diameter of capsule is 3mm, how much medicine it can hold?

6) A solid sphere of radius 6cm is melted into a hollow cylinder of uniform thickness. If external radius of base of cylinder is 5cm and its height is 32cm, then find the thickness of the cylinder.

(IV) 1 x 8 = 8

1) Draw the graph of $y = x^2 + x - 2$, hence solve $x^2 + x - 2 = 0$

(or)

2) Draw the graph of $y = x^2 + 4x + 3$ and hence find the roots of $x^2 + x + 1 = 0$

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IMPORTANT QUESTIONS [MARKS - 50]

10th STANDARD.

CHAPTER - 8

I) 7 x 1 = 7

1) The range of the data 8, 8, 8, .. 8 is

2) Variance of 20 (first) natural numbers is

3) If the standard deviation of x, y, z is p then the standard deviation of 3x+5, 3y+5, 3z+5 is

4) The sum of all deviation of data from its mean is

5) A page is selected at random from a book. The probability that the digits at units place of page number chosen is less than 1 is

6) The probability of getting a job for a person is $x/3$. If the probability of not getting job is $\frac{2}{3}$ then the value of x is

7) If a letter is chosen at random from the english alphabets {a, b ... z} then the probability that the letter choses precedes x.

II) 5 x 2 = 10

1) The range of a set of data is 13.67 and the largest value is 70.08. Find the smallest value.

2) Find the standard deviation of first 21 natural numbers

3) The mean of a data is 25.6 and its coefficient of variation is 18.75. Find the standard deviation

4) If $n = 5$, $\bar{x} = 6$, $\Sigma x^2 = 165$, the calculate coefficient of variation

5) A bag contains 5 blue balls and 4 green balls. A ball is drawn at random from the bag. Find the probability that ball is drawn i) blue ii) not blue

6) write the sample space for tossing three coins using tree diagram.

7) If $P(A) = 0.37$, $P(B) = 0.42$, $P(A \cap B) = 0.09$. the find $P(A \cup B)$.

III) 5x5=25

1) The number of television sold in each of a day of a week are 13, 8, 4, 9, 7, 12, 10. Find its standard deviation.

2) A teacher asked the students to complete 60 pages of record note book. Eight students have completed only 32, 35, 37, 30, 33, 36, 35 and 37 pages. Find the standard deviation of pages yet to be completed by them.

3). The time taken (in minutes) to complete a homework by 8 students in a day are given by 38, 40, 47, 44, 46, 43, 49, 53. Find coefficient of variation.

4) Express the sample space for rolling two dice using tree diagram.

5) In a box there are 20 non defective and some defective bulbs. If the probability that a bulb selected at random from the box found to be defective is 3/8 then, find number of defective bulbs

6) Prove addition theorem of probability, if A and B are any two events then $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

7) A card is drawn out from a pack of 52 cards. Find probability of getting a king or a heart or a red card.

IV) 1x8=8

1) Draw a triangle ABC of base BC=5.6cm, $\angle A = 40^\circ$ and bisector of $\angle A$ meets BC at D such that CD=4cm

(OR)

2) Draw the two tangent from a point which is 5cm away from centre of circle of radius 3cm Also measures the length of tangents.

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