

Exercise : 1.1 & 1.2 + Parapola

X-CT

M-1

Cyclic Test - 1

Standard X

MATHEMATICS

Time: 45 mins

Marks: 25

I. Choose the correct answer:

4x1=4

- If $n(A \times B) = 6$, $A = \{1, 3\}$, then $n(B)$ is
a) 1 b) 2 c) 3 d) 6
- 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) $(3, -2)$
- $A = \{a, b, p\}$, $B = \{2, 3\}$, $C = \{p, q, r, s\}$ then $n[(A \cup C) \times B]$ is
a) 8 b) 20 c) 12 d) 16
- If $n(A) = p$, $n(B) = q$, then the total number of relations that exist from A to B is
a) 2^{pq-1} b) 2^{p+q} c) 2^{pq} d) 2^{pq+1}

II. Answer any three questions. Q.No. 8 is compulsory: $3 \times 2 = 6$

- Let $A = \{1, 2, 3\}$, $B = \{x \mid x \text{ is a prime number less than } 10\}$. Find $A \times B$ and $B \times A$.
- Let $A = \{1, 2, 3, 4, \dots, 45\}$ and R be the relation defined as "is square of a number" on A. Write R as a subset of $A \times A$. Find the domain and range.
- Let $f(x) = 2x + 5$. If $x \neq 0$ then find $\frac{f(x+2) - f(2)}{x}$.
- Let $A = \{3, 4, 7, 8\}$, $B = \{1, 7, 10\}$ which sets are relations from A to B?
i) $R_1 = \{(3, 7), (4, 7), (7, 10), (8, 1)\}$
ii) $R_2 = \{(3, 1), (4, 12)\}$

X-CT

2

M-1

III. Answer any two questions. Q.No. 11 is compulsory: $2 \times 5 = 10$

- Let $A = \{x \in \mathbb{N} \mid 1 < x < 4\}$, $B = \{x \in \mathbb{W} \mid 0 \leq x < 2\}$, $C = \{x \in \mathbb{N} \mid x < 3\}$. Show that $A \times (B \cup C) = (A \times B) \cup (A \times C)$.
- A function f is defined by $f(x) = 3 - 2x$. Find x such that $f(x^2) = (f(x))^2$.
- Represent the relations by (i) arrow diagram (ii) graph (iii) set Roster form.
 $\{x, y \mid x = 2y, x \in \{2, 3, 4, 5\}, y \in \{1, 2, 3, 4\}\}$

IV. Answer the following:

1x5=5

- Discuss the nature of solutions $x^2 + x - 12 = 0$.

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X-CT

M-2

Cyclic Test - 2

Standard X

MATHEMATICS

Time: 45 mins

Marks: 25

I. Choose the correct answer:

4x1=4

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

- a) $\frac{3}{2x^2}$ b) $\frac{2}{3x^2}$ c) $\frac{2}{9x^2}$ d) $\frac{1}{6x^2}$

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

- a) linear b) cubic c) reciprocal d) quadratic

3. Is an identity function one-one function?

- a) true b) false c) both A & B d) none

4. Composition of functions is always associative.

- a) one b) two c) three d) zero

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

5. If $A = \{-2, -1, 0, 1, 2\}$ and $f: A \rightarrow B$ is an onto function

defined by $f(x) = x^2 + x + 1$, then find B.

6. Show that the function $f: N \rightarrow N$ defined by $f(x) = 2x - 1$ is one-one but not onto.

7. Find k if $f \circ f(k) = 5$ where $f(k) = 2k - 1$.

8. Let $f(x) = x^2 - 1$. Find $f \circ f \circ f$.

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

9. If the function $f: R \rightarrow R$ is defined by

$$f(x) = \begin{cases} 2x+7, & x < -2 \\ x^2-2, & -2 \leq x < 3 \\ 3x-2, & x \geq 3 \end{cases}$$

then find the values of
(i) $f(4)$ (ii) $f(-2)$ (iii) $f(4) + 2f(1)$ (iv) $\frac{f(1) - 3f(4)}{f(-3)}$

X-CT

2

M-2

10. Find x if $gff(x) = fgg(x)$, given $f(x) = 3x + 1$ and $g(x) = x + 3$.

11. Let $f: A \rightarrow B$ be a function defined by $f(x) = \frac{x}{2} - 1$, where $A = \{2, 4, 6, 10, 12\}$, $B = \{0, 1, 2, 4, 5, 9\}$ given the representation of functions.

IV. Answer the following:

1x5=5

12. Discuss the nature of solutions of $x^2 - 8x + 16 = 0$.

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Cyclic Test - 3**Standard X
MATHEMATICS**

Time: 45 mins

Marks: 25

I. Choose the correct answer:

4x1=4

- When a positive integer is divided by 2 then remainder is either or
a) 2, 0 b) 0, 1 c) (-1, 1) d) (2, 1)
- HCF is expressible in the form $55x - 325 = 5$, then value of x
a) 6 b) 5 c) 330 d) 25
- $7^{4k} \equiv (\text{mod } 100)$
a) 2 b) 1 c) 3 d) 4
- The sum of the exponents of the prime factors in the prime factorization of the 1729 is
a) 1 b) 2 c) 3 d) 4

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- Show that the square of an odd integer is of the form $4q + 1$, for some integer q.
- If $13824 = 2^a \times 3^b$. Find a and b
- Find the least positive value of x such that, $96 \equiv \frac{x}{7} (\text{mod } 5)$
- Find the HCF of 252525 & 363636

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

- Find the greatest numbers of 6 digits which is exactly divided by 24, 15, 36?
- Find the remainders when 70004 & 778 is divided by 7.
- Find the HCF of 396, 504, 636.

IV. Answer the following:

1x5=5

- Discuss the nature of solutions of $x^2 + 2x + 5 = 0$.

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Cyclic Test - 6

Standard X MATHEMATICS

Time: 45 mts

Marks: 25

I Choose the correct answer:

4x1=4

- A system of three linear equations in three variables is inconsistent if their planes.
 - intersect only at a point
 - intersect in a line
 - coincides with each other
 - do not intersect
- If $(x-6)$ is the HCF of $x^2-2x-24$ and x^2-kx-6 then the value of k is
 - 3
 - 5
 - 6
 - 8
- $(x-3)(x^2+3x+9)$ is equal to
 - x^3-3^3
 - x^3+3^3
 - $(x-3)^3$
 - $(x+3)^3$
- LCM of $(5x-10)$, $(5x^2-20)$ is
 - $5(x^2-4)$
 - $5x^3-20x$
 - x^2-2^2
 - $5(x-2)^2$

II Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- Solve: $2x-3y=6$, $x+y=1$
- Find the LCM of $+9a^3b^2$ and $12a^2b^2c$.
- Find the LCM of $4x^2y$ and $8x^3y^2$.
- Find the LCM of (x^4-1) and x^2-2x+1 .

III Answer any two questions. Q.No. 11 is compulsory: 2x5=10

- Solve: $x+y+z=5$; $2x-y+z=9$; $x-2y+3z=16$
- Find the GCD of the polynomials x^3+x^2-x+2 and $2x^3-5x^2+5x-3$.

- There are 12 pieces of five, ten and twenty rupee currencies whose total value is ₹105, when first 2 sorts are interchanged in their numbers its value will be increased by ₹20. Find the number of currencies in each sort.

IV Answer the following:

1x5=5

- Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

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X-CT

Exercise : 3.3 to 3.5 + parabola with straight line

Cyclic Test - 7

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

1. Let the two numbers $f(x) = 12$, $g(x) = 18$ then LCM is

- a) 6 b) 36 c) 12 d) 18

2. $\frac{x+10}{8x}$ then the excluded value is

- a) 0 b) 8 c) 10 d) 8x

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

- a) $\frac{9y}{7}$ b) $\frac{9y^2}{21y-21}$
 c) $\frac{21y^2-42y+21}{3y^2}$ d) $\frac{7(y^2-2y+1)}{y^2}$

4. Graph of linear equation

- a) straight line b) circle c) parabola d) hyperbola

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

5. Find the LCM of $x^4 - 27a^3x$, $(x-3a)^2$, whose GCD is $(x-3a)$.6. Reduce the rational expression $\frac{p^2-3p-40}{2p^3-24p^2+64p}$ 7. Simplify: $\frac{5t^3}{4t-8} \times \frac{6t-12}{10t}$ 8. Find the excluded value $\frac{7p+2}{8p^2+13p+5}$

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X-CT

2

M-7

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

9. Given the LCM $(x^4-y^4)(x^4+x^2y^2+y^4)$ and GCD is (x^2-y^2) one polynomial $q(x)$ is $(x^4-y^4)(x^2+x^2-xy)$. Find $p(x)$.10. Simplify: $\frac{16x^2-2x-3}{3x^2-2x-1} \div \frac{8x^2+11x+3}{3x^2-11x-4}$ 11. If $x = \frac{a^2+3a-4}{3a^2-3}$, $y = \frac{a^2+2a-8}{2a^2-2a-4}$. Find the value of x^2y^{-2} .

IV. Answer the following:

1x5=5

12. Draw the graph of $y = 2x^2$ and hence solve $2x^2 - x - 6 = 0$.

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X-CT

Exercise : 3.6 to 3.8 + parabola with straight line M-8

Cyclic Test - 8

Standard X

MATHEMATICS

Time: 45 mts

Marks: 25

I Choose the correct answer:

4x1=4

1. 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) $\frac{16}{5} \left| \frac{xz^2}{y} \right|$

2. Which of the following should be added to make $x^4 + 64$ a perfect square?

- a) $4x^2$ b) $16x^2$ c) $8x^2$ d) $-8x^2$

3. The square root of $361x^4y^2$ is

- a) $18x^2y$ b) $19x^2y$ c) $91x^2y$ d) $81x^2y$

4. $\frac{x^3}{9y^2} \times \frac{27y}{x^5}$ is equal to

- a) $\frac{3}{x^2y}$ b) $\frac{3}{xy}$ c) $\frac{xy}{3}$ d) 1

II Answer any three questions. Q.No. 8 is compulsory: 3x2=65. Subtract $\frac{1}{x^2+2}$ from $\frac{2x^3+x^2+3}{(x^2+2)^2}$ 6. Find the square root of $\frac{144a^8b^{12}c^{16}}{81f^{12}g^4h^{14}}$ 7. Find the square root of $\frac{121(a+b)^8(x+y)^8(b-c)^8}{81(b-c)^4(a-b)^{12}(b-c)^4}$

X-CT

2

M-8

8. If $P = \frac{x}{x+y}$, $Q = \frac{y}{x+y}$ then find $\frac{1}{P^2 - Q^2}$.**III Answer any two questions. Q.No. 11 is compulsory: 2x5=10**

9. Pari needs 4 hours to complete a work. His friend Yuvan needs 6 hours to complete the same work. How long will it take to complete if they work together?

10. Find the square root of

$$\left(2x^2 + \frac{17}{6}x + 1\right) \left(\frac{3}{2}x^2 + 4x + 2\right) \left(\frac{4}{3}x^2 + \frac{11}{3}x + 2\right)$$

11. If $9x^4 + 12x^3 + 28x^2 + ax + b$ is a perfect square, find the values of a and b.**IV Answer the following:**

1x5=5

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

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X-CT

Exercise: 3.9 to 3.11 + parabola with straight line.

Cyclic Test - 9

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

- General form of the quadratic equation is
 a) $x^2 - (\alpha + \beta)x + \alpha\beta = 0$ b) $x^2 + (\alpha + \beta)x + \alpha\beta = 0$
 c) $x^2 - \alpha\beta + \alpha + \beta = 0$ d) $x^2 + \alpha\beta x + \alpha + \beta = 0$
- LCM $p(x) = x^2 + 8x + 12$ then zero of $p(x)$
 a) -2, -6 b) 2, 6 c) -2, 6 d) 2, -6
- Let the quadratic equation $2x^2 - x - 1 = 0$ then the value of x
 a) $1, -\frac{1}{2}$ b) $-\frac{1}{2}, -1$ c) $1, \frac{1}{2}$ d) None of these
- Let the quadratic equation $kx^2 - k^2x - 2k^3 = 0$ then $\alpha + \beta$ and $\alpha\beta$ is
 a) $k, 2k^3$ b) $+k, -2k^2$ c) $-k^2, -2k^3$ d) $k^2, -2k^2$

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- Find the sum and product of the quadratic equation

$$3 + \frac{1}{a} = \frac{10}{a^2}$$

- Solve: $2m^2 + 19m + 30 = 0$
- Solve $9x^2 - 12x + 4 = 0$ by completing the square method.
- Solve $x^2 + 2x - 2 = 0$ by formula method.

X-CT

2

M-9

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

$$9. \text{ Solve: } \frac{x}{x-1} + \frac{x-1}{x} = 2\frac{1}{2}$$

- Solve $36y^2 - 12ay + (a^2 - b^2) = 0$ by formula method.

$$11. \text{ Solve: } pqx^2 - (p+q)^2x + (p+q)^2 = 0$$

IV. Answer the following:

1x5=5

- Draw the graph of $y = x^2 + x - 2$ and hence solve $x^2 + x - 2 = 0$.

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Exercise: 3.12 to 3.14 + parabola with straight line.

M-10

X-CT

Cyclic Test - 10

Standard X MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

- Graph of a linear polynomial is a
a) straight line b) circle c) parabola d) hyperbola
- Determine the nature of roots for the following quadratic equation $9x^2 - 24x + 16 = 0$.
a) real and equal b) real and unequal
c) no real d) real
- Which is called as the discriminant $\Delta = ?$
a) $b^2 + 4ac$ b) $b^2 - 4ac$ c) $b^2 + 4bc$ d) $\frac{4bc}{2a}$
- The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the x-axis is
a) 0 b) 1 c) 0 or 1 d) 2

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- The product of Kumaran's age (in years) two years ago and his age four years from now is one more than twice his present age. What is his present age?
- If the difference between a number and its reciprocal is $\frac{24}{5}$, find the number.
- Determine the nature of the roots for the following quadratic equation $15x^2 + 11x + 2 = 0$.
- If the difference between the roots of the equation $x^2 - 13x + k = 0$ is 17 find k.

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X-CT

2

M-10

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

- If a, b are real then show that the roots of the equation $(a-b)x^2 - 6(a+b)x - 9(a-b) = 0$ are real and unequal.
- The hypotenuse of a right angled triangle is 25 cm and its perimeter 56 cm. Find the length of the smallest side.
- If α, β are the roots of $7x^2 + ax + 2 = 0$ and if $\beta - \alpha = -\frac{13}{7}$. Find the values of a.

IV. Answer the following:

1x5=5

- Draw the graph of $y = x^2 - 4x + 3$ and use it to solve $x^2 - 6x + 9 = 0$.

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X-CT

Cyclic Test - 11

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

1. Let the matrix $\begin{bmatrix} \sin \theta & -\cos \theta \\ \cos \theta & \sin \theta \end{bmatrix}$ then order of the matrix

- a) 3×3 b) 2×2
c) $|x|$ d) $\sin^2 \theta + \cos^2 \theta$

2. For the given matrix $A = \begin{bmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{bmatrix}$ the order of thematrix $A^T = \dots\dots\dots$

- a) 2×3 b) 3×2 c) 3×4 d) 4×3
3. If A is a 2×3 matrix and B is a 3×4 matrix, how many columns does AB have
a) 3 b) 4 c) 2 d) 5
4. If A be any given matrix then, $-A$ is the of A.
a) Identity b) Additive inverse
c) Diagonals d) Column matrix

II. Answer any three questions. Q.No. 8 is compulsory: $3 \times 2 = 6$ 5. Construct 3×3 matrix whose elements are $a_{ij} = \frac{(i+j)^3}{3}$ 6. If $A = \begin{bmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{bmatrix}$ find $B - 5A$.

X-CT

2

M-11

7. Verify that $A^2 = I$ when $A = \begin{bmatrix} 5 & -4 \\ 6 & -5 \end{bmatrix}$.8. Show that the matrices $A = \begin{bmatrix} 1 & 2 \\ 3 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -2 \\ -3 & 1 \end{bmatrix}$ satisfy the commutative property $AB = BA$.III. Answer any two questions. Q.No. 11 is compulsory: $2 \times 5 = 10$ 9. Find x and y if $x \begin{pmatrix} 4 \\ -3 \end{pmatrix} + y \begin{pmatrix} -2 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$.10. If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ show that $A^2 - 5A + 7I_2 = 0$.11. If $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & -1 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & -1 \\ -1 & 4 \\ 0 & 2 \end{bmatrix}$ show that

$$(AB)^T = B^T A^T$$

IV. Answer the following:

1x5=5

12. Construct a ΔPQR in which $PQ = 8$ cm, $\angle R = 60^\circ$ and the median RG from R to PQ is 5.8 cm. Find the length of the altitude from R to PQ .M. Vijayakumar
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Exercise: 4.1 & 4.2 + Types of triangles.

X-CT

Cyclic Test - 12

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

- If in triangles ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when
a) $\angle B = \angle E$ b) $\angle A = \angle D$ c) $\angle B = \angle D$ d) $\angle A = \angle F$
- If $\triangle ABC$ is an isosceles triangle with $\angle C = 90^\circ$ and $AC = 5$ cm, then AB is
a) 2.5 cm b) 5 cm c) 10 cm d) $5\sqrt{2}$ cm
- If in $\triangle ABC$, $DE \parallel BC$, $AB = 3.6$ cm, $AC = 2.4$ cm and $AD = 2.1$ cm then the length of AE is
a) 1.4 cm b) 1.8 cm c) 1.2 cm d) 1.05 cm
- In $\triangle ABC$, AD is the internal bisector, then $\frac{AB}{AC} = ?$
a) $\frac{BD}{CD}$ b) $\frac{CD}{BD}$ c) $\frac{AB}{BD}$ d) $\frac{AC}{CD}$

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- A vertical stick of length 6 cm casts a shadow 400 cm long on the ground and at the same time a tower casts a shadow 28 m long. Using similarity, find the height of the tower.
- If $\triangle ABC$ is similar to $\triangle DEF$ such that $BC = 3$ cm, $EF = 4$ cm and area of $\triangle ABC = 54 \text{ cm}^2$. Find the area of $\triangle DEF$.

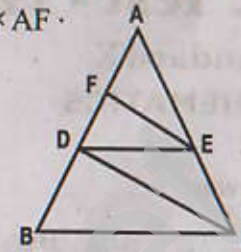
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X-CT

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M-12

7. In figure $DE \parallel BC$ and $CD \parallel EF$. Prove that $AD^2 = AB \times AF$.

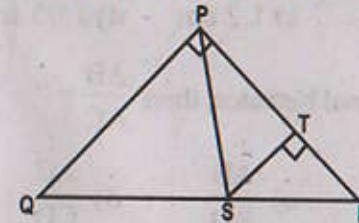


8. In the figure, AD is the bisector of $\angle A$. If $BD = 4$ cm, $DC = 3$ cm and $AB = 6$ cm, find $AC = ?$



III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

9. In figure $\angle QPR = 90^\circ$, PS is its bisector. If $ST \perp PR$, prove that $ST \times (PQ + PR) = PQ \times PR$.



- Two triangles QPR and QSR, right angled at P and S respectively are drawn on the same base QR and on the same side of QR. If PR and SQ intersect at T. Prove that $PT \times TR = ST \times TQ$.
 - State and prove BPT.
- IV. Answer the following: 1x5=5
- Construct a triangle $\triangle PQR$ such that $QR = 5$ cm, $\angle P = 30^\circ$ and the altitude from P to QR is of length 4.2 cm.

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X-CT

Exercise : 4.3 & 4.4 + Types of triangle. M-13

Cyclic Test - 13

Standard X
MATHEMATICS

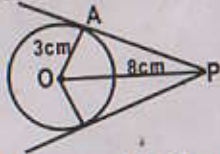
Time: 45 mts

Marks: 25

4x1=4

I. Choose the correct answer:

- is the longest side of the right angled triangle.
 - Opposite side
 - Hypotenuse
 - Pythagoras
 - None of these
- tangents can be drawn to the circle from an exterior point.
 - One
 - Zero
 - Two
 - No
- Let diameter 6 cm from a point P which is 8 cm away from its centre measure the length of tangent PA



- 7.4 cm
 - 64 cm
 - 36 cm
 - 6.4 cm
- is a cevian that divides the opposite side into two congruent lengths.
 - Median
 - Altitude
 - Angle bisector
 - Perpendicular

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- A man goes 18 m due east and then 24 m due north. Find the distance of his current position from the starting point.
- What length of ladder is needed to reach a height of 7 ft along the wall when the base of the ladder is 4 ft from the wall?
- If radii of two concentric circles are 4 cm and 5 cm. Find the length of the chord which is a tangent to the other circle?
- The length of the tangent to a circle from a point P, which is 25 cm away from the centre is 24 cm. What is the radius of the circle?

X-CT

2

M-13

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

- ABC is a right angled triangle with right angle at B and Point D, E trisect BC. Prove that $8AE^2 = 3AC^2 + 5AD^2$.
- PQ is a chord of length 8 cm to a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length of the tangent TP.

11. State and prove Pythagoras theorem.

IV. Answer the following:

1x5=5

- Draw a triangle ABC of base BC = 8 cm, $\angle A = 60^\circ$ and the bisector of $\angle A$ meets BC at D such that BD = 6 cm.

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X-CT

Cyclic Test - 14

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

- Let the points A(3,4), B(5,5), then the mid point of AB is
a) (8,9) b) (4,4.5) c) (1,1) d) (-2,-1)
- Area of triangle formed by the points (-5,0), (0,-5) and (5,0) is
a) 0 sq. unit b) 25 sq. units c) 5 sq. units d) 15 sq. units
- The points (-2,5), (6,-1), (2,p) are collinear, then the value of P
a) 2 b) -2 c) 6 d) -6
- If the slopes of both the pairs of opposite sides are equal then the quadrilateral is a
a) rhombus b) square c) parallelogram d) rectangle

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- Let vertices (-10,-4), (-8,-1) and (-3,-5). Find the area of the triangle.
- If the area of the triangle formed by the vertices (-1,2), (k,-2) and (7,4) (taken in order) is 22 sq. units. Find the value of K?
- The line p passes through the points (3,-2), (12,4) and the line q passes through the points (6,-2) and (12,2). Is p parallel to q?
- What is the slope of a line perpendicular to the line joining A(5,1) and P, where P is the mid point of the segment joining (4,2) and (-6,4)

X-CT

2

M-14

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

- Find the area of the quadrilateral whose vertices are at (-9,-2), (-8,-4), (2,2) and (1,-3).
- A quadrilateral has vertices at A(-4,-2), B(5,-1), C(6,5), D(-7,6). Show that the mid points of its sides form a parallelogram.
- Prove analytically that the line segment joining the mid points of two sides of a triangle is parallel to the third side and is equal to half of its length.

IV. Answer the following:

1x5=5

- Varshika drew 6 circles with different sizes. Draw a graph for the relationship between the diameter and circumference of each circle as shown in the table and use it to find the circumference of a circle when its diameter is 6 cm.

Diameter (x) cm	1	2	3	4	5
Circumference (y) cm	3.1	6.2	9.3	12.4	15.5

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Exercise : 5.3 & 5.4 + Time & distance.

X-CT

M-15

Cyclic Test - 15**Standard X
MATHEMATICS**

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

- The straight line given by the equation $x = 11$ is
 a) parallel to x axis
 b) parallel to y axis
 c) passing through the origin
 d) passing through the point (0, 11)
- The equation of a line passing through the origin and perpendicular to the line $7x - 3y + 4 = 0$ is
 a) $7x - 3y + 4 = 0$ b) $3x - 7y + 4 = 0$
 c) $3x + 7y = 0$ d) $7x - 3y = 0$
- 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)
- 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

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

- The equation of a straight line is $2(x - y) + 5 = 0$. Find its slope, inclination and intercept on the y-axis.
- Find the intercept whose straight lines are $3x - 2y - 6 = 0$.
- Find the slope of the straight line $5y - 3 = 0$.
- Find the equation of a straight line which is parallel to the line $3x - 7y = 12$ and passing through the point (6, 4).

X-CT

2

M-15

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

- Find the equation of the median and altitude of $\triangle ABC$ through A where the vertices are A(6, 2), B(-5, -1), C(1, 9).
- Find the equation of a straight line through the intersection of lines $5x - 6y = 2$, $3x + 2y = 10$ and perpendicular to the line $4x - 7y + 13 = 0$.
- A line makes positive intercepts on coordinate axes whose sum is 7 and it passes through (-3, 8). Find its equation.

IV. Answer the following:

1x5=5

- A bus is travelling at a uniform speed of 50 km/hr. Draw the distance-time graph. Find (i) constant of variation (ii) how far will it travel in $1\frac{1}{2}$ hr. (iii) the time required to cover a distance of 300 km from the graph.

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Exercise : 6.1 + Time & distance.

X-CT

M-16

Cyclic Test - 16

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

4x1=4

I. Choose the correct answer:

1. $\cot \theta \sec^2 \theta - \cot \theta$
a) $\sec \theta$ 2) $\tan^2 \theta$ c) $\tan \theta$ d) $\cot \theta$
2. If $\sin \theta = \cos \theta$, then $2 \tan^2 \theta + \sin^2 \theta - 1$ is equal to
a) $-\frac{3}{2}$ b) $\frac{3}{2}$ c) $\frac{2}{3}$ d) $-\frac{2}{3}$
3. $a \cot \theta + b \operatorname{cosec} \theta = p$ 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) $b - a$
4. $\frac{\sin^2 \theta + \cos^2 \theta}{1 + \tan^2 \theta} =$
a) $\frac{1}{\operatorname{cosec}^2 \theta}$ b) $\frac{1}{\sec^2 \theta}$ c) $\frac{1}{\sec \theta}$ d) $\cos^2 \theta$

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

5. Prove that $\tan^2 \theta - \sin^2 \theta = \tan^2 \theta \sin^2 \theta$.6. Prove that $\sqrt{\frac{1+\sin \theta}{1-\sin \theta}} = \sec \theta + \tan \theta$.7. Prove that $\sec^6 \theta = \tan^6 \theta + 3 \tan^2 \theta \sec^2 \theta + 1$.8. Prove that $\frac{\cot \theta - \cos \theta}{\cot \theta + \cos \theta} = \frac{\operatorname{cosec} \theta - 1}{\operatorname{cosec} \theta + 1}$.

X-CT

2

M-16

III. Answer any two questions. Q.No. 11 is compulsory 2x5=10

9. Prove that $\frac{\sin A}{\sec A + \tan A - 1} + \frac{\cos A}{\operatorname{cosec} A + \cot A - 1} = 1$.10. If $\frac{\cos \alpha}{\cos \beta} = m$ and $\frac{\cos \alpha}{\sin \beta} = n$, then prove that

$$(m^2 + n^2) \cos^2 \beta = n^2.$$

11. If $\frac{\cos \theta}{1 + \sin \theta} = \frac{1}{a}$, then prove that $\frac{a^2 - 1}{a^2 + 1} = \sin \theta$.

IV. Answer the following:

1x5=5

12. A company initially started with 40 workers to complete the work by 150 days. Later, it decided to fasten up the work increasing the number of workers as shown below.

No. of workers (x)	40	50	60	75
No. of days (y)	150	120	100	80

- i) Graph the above data and identify the type of variation.
- ii) From the graph, find the number of days required to complete the work if the company decides to opt for 120 workers?
- iii) If the work has to be completed by 200 days. How many worker's are required?

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Exercise: 6.2 & 6.3 + similar triangle.

X-CT

M-17

Cyclic Test - 17

Standard X

MATHEMATICS

Time: 45 mts

Marks: 25

I. Choose the correct answer:

4x1=4

1. A tower of height 40 m casts a shadow of $40\sqrt{3}$ cm when Sun's elevation is θ , then θ

a) 30° b) 60° c) 45° d) 90°

2. If a ladder 10 m long is touching the top of a wall makes an angle of 60° , then height of the wall

a) $5\sqrt{3}$ b) 5 c) $5\sqrt{2}$ d) $\frac{5}{\sqrt{2}}$

3. The angle of depression of a car parked on the road from the top of 150 m high tower is 30° . The distance of the car from the tower is

a) $50\sqrt{3}$ m b) $150\sqrt{3}$ m c) $150\sqrt{2}$ m d) 75 m

4. If the height and length of the shadow of a man are the same, then angle of elevation of Sun is

a) 30° b) 60° c) 45° d) 90°

II. Answer any three questions. Q.No. 8 is compulsory: 3x2=6

5. A tower stands vertically on the ground. From a point on the ground, which is 48 m away from the foot of the tower, the angle of elevation of the top of the tower is 30° . Find the height of the tower.

6. From the top of a rock $50\sqrt{3}$ m high, the angle of depression of a car on the ground is observed to be 30° . Find the distance of the car from the rock.

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X-CT

2

M-17

7. A player sitting on the top of a tower of height 20 m, observes the angle of depression of a ball lying on the ground as 60° . Find the distance between the foot of the tower and the ball.
8. A kite is flying at a height of 75 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60° . Find the length of the string.

III. Answer any two questions. Q.No. 11 is compulsory: 2x5=10

9. An aeroplane at an altitude of 1800 m. Find that two boats are sailing towards it in the same direction. The angles of depression of the boats observed from the aeroplane are 60° and 30° . Find the distance between the two boats.

10. The top of a 15 m high tower makes an angle of elevation of 60° with the bottom of an electronic pole and angle of elevation of 30° with the top of the pole. What is the height of the electric pole?

11. Two ships are sailing in the sea on the either sides of a lighthouse. The angle of elevation of the top of the lighthouse as observed from the ships are 30° and 45° , height of the lighthouse is 200 m. Find the distance between the two ships. ($\sqrt{3} = 1.732$)

IV. Answer the following:

1x5=5

12. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle ΔPQR .

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Exercise : 6.4 + similar triangle.

X-CT

M-18

CYCLIC TEST - 18

Standard X

MATHEMATICS

Time : 45 mts

Marks:25

I. Choose the correct answer:

4x1=4

1. A tower is 60m high. Its shadow is x metres shorter when the sun's altitude is 45° than when it has been 30° , then x is equal to

a) 41.92 m b) 43.92 m c) 43 m d) 45.6 m

2. The angle of depression of the top and bottom of 20m 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, $10\sqrt{3}$

3. Two persons are standing ' x ' metres apart from each other and the height of the first person is double that of the other. If from the middle point of the line joining their feet an observer finds the angular elevations of their tops to be complementary, then the height of the shorter person (in metre) is _____

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

4. The angle of elevation of a cloud from a point ' h ' metre above a lake is β . 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) $h \tan (45^\circ - \beta)$ d) none of these

II. Answer any three questions. Q.No:8 is compulsory: 3x2=6

5. From the top of a tree of height 13m the angle of elevation and depression of the top and bottom of another tree are 45° and 30° respectively. Find the height of the second tree.

X-CT

2

M-18

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6. The angles of elevation and depression of the top and bottom of a lamp post from the top of a 66m high apartment are 60° and 30° respectively. Find the height of the lamp post.

7. A building and a statue are in opposite side of a street from each other 35m apart. From a point on the roof of building the angle of elevation of the top of the statue is 24° and the angle of depression of base of the statue is 34° . Find the height of the statue. ($\tan 24^\circ = 0.4452$, $\tan 34^\circ = 0.6745$)

8. A pendulum of length 40cm subtends 60° at the vertex in one full oscillation. What will be the shortest distance between the initial position and the final position of the bob?

III. Answer any two questions. Q.No: 11 is compulsory: 2x5=10

9. From the top of 12m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 30° . Determine the height of the tower.

10. A man is standing on the deck of a ship, which is 40m above water level. He observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30° . Calculate the distance of the hill from the ship and the height of the hill. ($\sqrt{3} = 1.732$)

11. If the angle of elevation of a cloud from a point ' h ' metres above a lake is θ_1 and the angle of depression of its reflection in the lake is θ_2 . Prove that the height that the cloud is located from the ground is $\frac{h(\tan \theta_1 + \tan \theta_2)}{\tan \theta_2 - \tan \theta_1}$.

IV. Answer the following:

1x5=5

12. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{4}$ of the corresponding sides of the triangle PQR, (scale factor $\frac{7}{4} > 1$).

factor $\frac{7}{4} > 1$.

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B.Sc, M.Ed

X-CT

Exercise: 7.1 + parabola with straight line

M-19

CYCLIC TEST - 19

Standard X
MATHEMATICS

Time : 45 mts

Marks:25

I. Choose the correct answer:

4x1=4

- The curved surface area of a right circular cone of height 15cm and base diameter 16cm is _____
 a) $60\pi \text{ cm}^2$ b) $68\pi \text{ cm}^2$
 c) $120\pi \text{ cm}^2$ d) $136\pi \text{ cm}^2$
- If two solid hemispheres of same base radius r units are joined together along their bases, then curved surface area of this new solid is _____
 a) $4\pi r^2$ sq.units b) $6\pi r^2$ sq.units
 c) $3\pi r^2$ sq.units d) $8\pi r^2$ sq.units
- The height of a right circular cone whose radius is 5 cm and slant height is 13cm will be _____
 a) 12cm b) 10cm c) 13cm d) 5cm
- The total surface area of a cylinder whose radius is $\frac{1}{3}$ of its height is _____
 a) $\frac{9\pi h^2}{8}$ sq.units b) $24\pi h^2$ sq.units
 c) $\frac{8\pi h^2}{9}$ sq.units d) $\frac{56\pi h^2}{9}$ sq.units

II. Answer any three questions. Q.No:8 is compulsory: 3x2=6

- A cylindrical drum has a height of 20cm and base radius of 14cm. Find its curved surface area and the total surface area.
- The curved surface area of a right circular cylinder of height 14cm is 88cm^2 . Find the diameter of the cylinder.
- If the total surface area of a cone of radius 7cm is 704cm^2 , then find its slant height.

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X-CT

2

M-19

- A sphere, a cylinder and a cone are of the same height which is equal to its radius, where as cone and cylinder are of same height. Find the ratio of their curved surface areas.

III. Answer any two questions. Q.No: 11 is compulsory: 2x5=10

- If one litre of paint covers 10m^2 , how many litres of paint is required to paint the internal and external surface areas of a cylindrical tunnel whose thickness is 2m, internal radius is 6m and height is 25m.
- An industrial metallic bucket is in the shape of the frustum of a right circular cone whose top and bottom diameters are 10m and 4m and whose height is 4m. Find the curved and total surface area of the bucket.
- 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 5720cm^2 , how many caps can be made with radius 5cm and height 12cm?

IV. Answer the following:

1x5=5

- Draw the graph of $y = x^2 - 4$ and hence solve $x^2 - x - 12 = 0$.

♦♦♦♦

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X-CT

CYCLIC TEST - 20 line M-20

Standard X
MATHEMATICS

Time : 45 mts

Marks:25

I. Choose the correct answer:

4x1=4

- 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
- The total surface area of a hemi-sphere is how much times the square of its radius _____.
a) π b) 4π c) 3π d) 2π
- A solid sphere of radius x cm is melted and cast into a shape of a solid cone of same radius. The height of the cone is _____.
a) $3x$ cm b) x cm c) $4x$ cm d) $2x$ cm
- A frustum of a right circular cone is of height 16cm with radii of its ends as 8cm and 20cm. Then, the volume of the frustum is _____.
a) 3328π cm³ b) 3228π cm³
c) 3240π cm³ d) 3340π cm³

II. Answer any three questions. Q.No:8 is compulsory: 3x2=6

- A cylindrical glass with diameter 20cm has water to a height of 9cm. A small cylindrical metal of radius 5cm and height 4cm is immersed completely. Calculate the raise of the water in the glass?
- The volumes of two cones of same base radius are 3600cm³ and 5040cm³. Find the ratio of heights.
- If the radii of the circular ends of a frustum which is 45cm high are 28cm and 7cm, find the volume of the frustum.
- Find the volume of the iron used to make a hollow cylinder of height 9cm and whose internal and external radii are 21cm and 28cm respectively.

X-CT

2

M-20

III. Answer any two questions. Q.No: 11 is compulsory: 2x5=10

- A 14m deep well with inner diameter 10m is dug and the earth taken out is evenly spread all around the well to form an embankment of width 5m. Find the height of the embankment.
- The volume of a solid hemisphere is 29106 cm³. Another hemisphere whose volume is two-third of the above is carved out. Find the radius of the new hemisphere.
- Calculate the mass of a hollow brass sphere if the inner diameter is 14cm and thickness is 1mm, and whose density is 17.3g/cm³.

IV. Answer the following:

1x5=5

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

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X-CT

Exercise : 7.3+ parabola with straight line M-21

CYCLIC TEST - 21

Standard X
MATHEMATICS

Time : 45 mts

Marks:25

I. Choose the correct answer:

4x1=4

- A shuttle cock used for playing badminton has the shape of the combination of _____
a) a cylinder and a sphere
b) a hemisphere and a cone
c) a sphere and a cone
d) frustum of a cone and a hemisphere
- 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 _____
a) 2 : 1 b) 1 : 2 c) 4 : 1 d) 1 : 4
- The volume (in cm^3) of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5cm is _____
a) $\frac{4}{3}\pi$ b) $\frac{10}{3}\pi$ c) 5π d) $\frac{20}{3}\pi$
- If the total surface area of a solid hemisphere is $12\pi \text{ cm}^2$, then its curved surface area is equal to _____
a) $6\pi \text{ cm}^2$ b) $24\pi \text{ cm}^2$ c) $36\pi \text{ cm}^2$ d) $8\pi \text{ cm}^2$

II. Answer any three questions. Q.No:8 is compulsory: $3 \times 2 = 6$

- A vessel is in the form of a hemispherical bowl mounted by a hollow cylinder. The diameter is 14cm and the height of the vessel is 13cm. Find the capacity of the vessel.
- A right circular cylinder just enclose a sphere of radius r units. Calculate the surface area of the sphere.
- A cricket stump is in the shape of a cylinder surmounted by a cone. The diameter and the total height of the stump are 10cm and 80cm respectively. If the height of the conical part is 12cm, then find its total surface area.

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X-CT

2

M-21

- The largest sphere (sphere with maximum volume) is carved out of a cube of sides 14 cm. Find the volume of the sphere.
- Answer any two questions. Q.No: 11 is compulsory: $2 \times 5 = 10$
- A toy is in the shape of a cylinder surmounted by a hemisphere. The height of the toy is 25cm. Find the total surface area of the toy if its common diameter is 12cm.
- Arul has to make arrangements for the accommodation of 150 persons for his family function. For this purpose, he plans to build a tent which is in the shape of cylinder surmounted by a cone. Each person occupies 4 sq.m of the space on ground and 40 cu.meter of air to breathe. What should be the height of the conical part of the tent if the height of cylindrical part is 8m?
- A capsule is in the shape of a cylinder with two hemisphere stuck to each of its ends. If the length of the entire capsule is 12mm and the diameter of the capsule is 3mm, how much medicine it can hold?
- Answer the following: $1 \times 5 = 5$
- Draw the graph of $y = x^2 + 3x + 2$ and use it to solve $x^2 + 2x + 1 = 0$.

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B.Sc, M.Ed.

X-CT

CYCLIC TEST - 22

Standard X
MATHEMATICS

Time : 45 mts

Marks:25

I. Choose the correct answer:

4x1=4

- 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
- The ratio of the volumes of a cylinder, a cone and a sphere, if each has the same diameter and same height is _____
a) 1 : 2 : 3 b) 2 : 1 : 3 c) 1 : 3 : 2 d) 3 : 1 : 2
- If the total surface area of a solid hemisphere is $12\pi \text{ cm}^2$, then its curved surface area is equal to _____
a) $6\pi \text{ cm}^2$ b) $24\pi \text{ cm}^2$ c) $36\pi \text{ cm}^2$ d) $8\pi \text{ cm}^2$
- If the radius of a sphere is half of the radius of another sphere, then their respective volumes are in the ratio _____
a) 1 : 8 b) 2 : 1 c) 1 : 2 d) 8 : 1

II. Answer any three questions. Q.No:8 is compulsory: 3x2=6

- A cone of height 24cm is made up of modeling clay. A child reshapes it in the form of a cylinder of same radius as cone. Find the height of the cylinder.
- An aluminium sphere of radius 12cm is melted to make a cylinder of radius 8cm. Find the height of the cylinder.
- Water is flowing at the rate of 15 km per hour through a pipe of diameter 14cm into a rectangular tank which is 50m long and 44m wide. Find the time in which the level of water in the tanks will rise by 21cm.

X-CT

2

M-22

- A metallic sphere of radius 16cm is melted and recast into small spheres each of radius 2cm. How many small spheres can be obtained?
- III. Answer any two questions. Q.No: 11 is compulsory: 2x5=10
- A right circular cylindrical container of base radius 6cm and height 15cm is full of ice cream. The ice cream is to be filled in cones of height 9cm and base radius 3cm, having a hemispherical cap. Find the number of cones needed to empty the container.
 - A solid right circular cone of diameter 14cm and height 8cm is melted to form a hollow sphere. If the external diameter of the sphere is 10cm, find the internal diameter.
 - A solid sphere of radius 6cm is melted into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 5cm and its height is 32cm, then find the thickness of the cylinder.
- IV. Answer the following: 1x5=5
- A garment shop announces a flat 50% discount on every purchase of items for their customers. Draw the graph for the relation between the Marked price and the Discount. Hence find,
(i) the marked price when a customer gets a discount of ₹ 3250 (from graph)
(ii) the discount when the marked price is ₹ 2500.

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X-CT

2

M-23

10. The mean and S.D of 15 observations are found to be 10 and 5 respectively. On rechecking it was found that one on the observation with value 8 was incorrect. Calculate the correct mean and S.D if correct observation value was 23?

11. Which of the three subjects shows more consistent and shows less consistent in marks?

Subject	Mean	S.D
Maths	56	12
Science	65	14
Social science	60	10

IV. Answer the following:

1x5=5

12. The following table shows the data about the number of pipes and time taken to till the same tank.

No. of pipes (x)	2	3	6	9
Time taken (in min (y)	45	30	15	10

Draw the graph (i) Find the time taken to fill the tank when five pipes are used. (ii) Find the number of pipes when the time is 9 minutes?

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X-CT

Exercise : 8.1 & 8.2 + Time and distance. M-23

CYCLIC TEST - 23

Standard X
MATHEMATICS

Time : 45 mts

Marks:25

I. Choose the correct answer:

4x1=4

- Given data 25, 67, 48, 58, 18 then range _____
a) 18 b) 49 c) 67 d) 85
- Variance of first 20 natural numbers _____
a) 32.25 b) 44.25 c) 33.25 d) 30
- If the standard deviation of x, y, z is p then standard deviation of $3x + 5$, $3y + 5$, $3z + 5$ is _____
a) $3p + 5$ b) $3p$ c) $p + 5$ d) $9p + 15$
- If the mean and coefficient of variation of a data 4 and 87.5 % then the standard deviation is _____
a) 3.5 b) 3 c) 4.5 d) 2.5

II. Answer any three questions. Q.No:8 is compulsory: $3 \times 2 = 6$

- Find the smallest value, the range of a set of data is 13.67 and largest value is 70.08.
- Find the new variance and new standard deviation. If the S.D of a data is 3.6 and each value of the data is divided by 3.
- The mean of a data is 25.6 and its coefficient of variation is 18.75. Find the standard deviation.
- The S.D and mean of a data are 6.5 and 12.5. Find the coefficient of variation.

III. Answer any two questions. Q.No: 11 is compulsory: $2 \times 5 = 10$

9. Find the standard deviations.

x	4	6	8	10	12
(f)	7	3	5	9	5

X-CT

Exercise: 8.3 & 8.4 + Time and distance
CYCLIC TEST - 24 M-24

Standard X
MATHEMATICS

Time: 45 mts

Marks: 25

4x1=4

I. Choose the correct answer:

- Which of the following is incorrect?
 - $P(A) > 1$
 - $0 \leq P(A) \leq 1$
 - $P(\phi) = 0$
 - $P(A) + P(\bar{A}) = 1$
- A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

- $\frac{3}{10}$
- $\frac{7}{10}$
- $\frac{3}{9}$
- $\frac{7}{9}$

- The probability of getting a job for a person is $\frac{x}{3}$. If the probability

of not getting the job is $\frac{2}{3}$ then the value of x is _____

- 2
- 1
- 3
- 1.5

- If a letter chosen at random from the English alphabets $\{a, b, c, \dots, z\}$ then the probability that the letter chosen precedes x _____

- $\frac{12}{13}$
- $\frac{1}{13}$
- $\frac{23}{26}$
- $\frac{3}{26}$

II. Answer any three questions. Q.No: 8 is compulsory: $3 \times 2 = 6$

- What is the probability that a leap year selected at random will contain 53 Saturdays?
- A die is rolled and a coin is tossed simultaneously. Find the probability that the die shows an odd number and the coin shows a head.
- If A and B are two mutually exclusive events of a random experiment and $P(\text{not } A) = 0.45$, $P(A \cup B) = 0.65$, then find $P(B)$.

X-CT

- Three unbiased coins are tossed once. Find the probability of getting atmost 2 tails or atleast 2 heads.

III. Answer any two questions. Q.No: 11 is compulsory: $2 \times 5 = 10$

- Two dice are rolled. Find the probability that the sum of outcomes is (i) equal to 4 (ii) greater than 10 (iii) less than 13.
- Two customes Divya and Lokesh are visiting a particular shop in the same week (Monday to Saturday). Each is equally likely to visit the shop on any oneday as on another day. What is the probability that both will visit the shop on
 - the same day
 - different days
 - consecutive days?
- In a class of 50 students, 28 opted for NCC, 30 opted for NSS and 18 opted both NCC and NSS. One of the students is selected at random. Find the probability that
 - The student opted for NCC but not NSS
 - The student opted for NSS but not NCC
 - The student opted for exactly one of them.

IV. Answer the following:

1x5=5

- A two wheeler parking zone near bus stand charges as below.

Time (in hours) (x)	4	8	12	24
Amount ₹ (y)	60	120	180	360

Check if the amount charged are in direct variation or in inverse variation to the parking time. Graph the data. Also

- Find the amount to be paid when parking time is 6 hr
- Find the parking duration when the amount paid is ₹ 150.

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