Nayak's Tutorials

Way to Excellence

Year:- 2024 - 25　　　　　**Practice Paper - 2**　　　　　**Marks :- 80**
Std:-X ICSE　　　　　　　　**Mathematics**　　　　　　**Duration :- 3Hrs.**

General Instructions:

1. Attempt all questions from section A
2. Attempt any 4 compete questions from section B
3. All working, including rough work, must be clearly shown and must be done on the
   same sheet as the rest of the answer.
4. Omission of essential working will result in loss of marks.
5. Use graph sheet wherever necessary.

Section – A

Attempt all questions from this section

**Q1.Multipe choice Questions:–**　　　　　　　　　　　　　　　　　　　　　　**[15]**

1. Rekha opened a recurring deposit account for 20 months. The rate of interest is 9% per
   annum and Rekha receives ₹ 441 as interest at the time of maturity. Find the amount Rekha
   deposited each month.
   a) ₹ 275　　　　　b) ₹ 295　　　　　c) ₹ 280　　　　　d) ₹180

2. A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm.
   If the total height of the toy is 31cm, then the height of the cone is:
   a) 31cm　　　　　b) 38cm　　　　　c) 7cm　　　　　d) 24cm

3. If $\sin\theta + \cos\theta = \sqrt{2}$, $\tan\theta + \cot\theta$=?
   a) 1　　　　　b)2　　　　　c) 3　　　　　d) 4

4. In what ratio does the line x– y–2 = 0 divides the line segment joining (3,–1) and (8,9)?
   a) 3:3　　　　　b) 2:3　　　　　c) 3:2　　　　　d) 3:4

5. For what value of k , are the roots of the quadratic equation kx(x–2)+ 6=0 are equal?
   a) 6　　　　　b) 9　　　　　c) 7　　　　　d) 8

6. The sum of the length, breadth and height of a cuboid is $6\sqrt{3}$ cm and the length of
   its diagonal is $2\sqrt{3}$ cm. The total surface area of the cuboid is
   a) 48cm²　　　　　b) 72cm²　　　　　c) 96cm²　　　　　d)108 cm²

7. Mr. Raj gets 7,688 at the end of one year at the rate of 12% per annum in a recurring
   deposit account Find the monthly instalment.
   a) ₹ 500　　　　　b) ₹ 600　　　　　c) ₹ 700　　　　　d) ₹ 800

8. If A = $\begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix}$ and B = $\begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix}$, then find AB.
   a) $\begin{bmatrix} 6 & 5 \\ 14 & 14 \end{bmatrix}$　　　b) $\begin{bmatrix} 7 & 11 \\ 7 & 13 \end{bmatrix}$　　　c) $\begin{bmatrix} 7 & 13 \\ 11 & 7 \end{bmatrix}$　　　d) $\begin{bmatrix} 8 & 11 \\ 12 & 13 \end{bmatrix}$

9. The compounded ratio of 2 : 3 and 5 : 7 is:
   a) 7 : 10　　　　　b) 9 : 8　　　　　c) 10 : 21　　　　　d) 14 : 15

10. If (x – 1) is a factor of x³ – kx² +11x – 6, then the value of k should be:
    a) 1　　　　　b) –6　　　　　c) 6　　　　　d) 5

11. If $\frac{1}{2}$ is a root of the quadratic equation $x^2 - mx - \frac{5}{4} = 0$, then the value of m is :
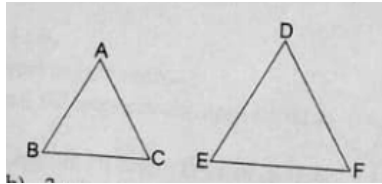
    a) 2   b) –2   c) –3   d) 3

12. The solution set representing the following number line is :
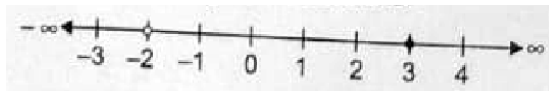
    a) $\{x : x \in R, -2 < x < 3\}$ b) $\{x : x \in R, -2 \le x \le 3\}$

    c) $\{x : x \in R, -2 < x \le 3\}$ d) $\{x : x \in R, -2 \le x \le 3\}$

13. In the given figure, $\triangle ABC$ is similar to $\triangle DEF$, AB = (x – 0.5) cm, AC = 1.5 x cm, DE = 9 cm, and DF cm, Find the length of AB.

    a) 4 cm   b) 3 cm   c) 4.5 cm   d) 3.5 cm

14. Find the curved surface area of the solid cylinder of diameter 21 cm and height 15 cm.

    a) 345 cm²   b) 315 cm²   c) 630 cm²   d) 990 cm²

15. The reflection of the point A(5, –3) in the point P(3, –2) is:

    a) (–5, 3)   b) (–3, 2)   c) (1, –1)   d) (4, 0)

Question 2 [12]

    1) Solve the following equation and give your answer correct to 3 significant figures: [4]

        $5x^2 - 3x - 4 = 0$.

    2) Find 'a' if the two polynomials $ax^3+3x^2 -9$ and $2x^3+4x+a$, leaves the same remainder [4] when divided by $x + 3$.

    3) If A(–1, 3), B(1, –1) and C(5, 1) are the vertices of a triangle ABC, find the length of the [4] median through A.

Question 3 13

    1)   Solve for x: $\dfrac{x+3}{x+2} = \dfrac{3x-7}{2x-3}$ [4]

    2)   Dinesh has a Recurring Deposit Account in a bank for 3½ years at 9½ % p.a. If he gets [4] ₹ 78,638 at the time of maturity, find the monthly installment.

    3)   The angle of elevation of the bottom of a window 10 m above the ground level from a [5] point on the ground is 30°. A pole projecting outwards from the bottom of the window makes an angle of 30° with the wall. If the angle of elevation of the top of the pole observed from the same point on the ground is 60°, find the length of the pole.

Attempt any 4 out 7 Questions

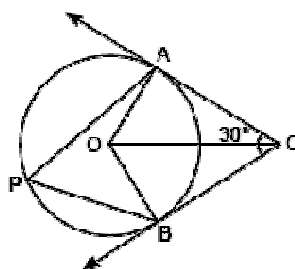## Question 4 [10]

1) In the given figure, O is the centre of the circle. [3]

Tangents at A and B meet at C. If ∠ACO=30°, find (i) ∠BCO (ii) ∠AOB (iii) ∠APB

2) 1500 families with 2 children were selected randomly, and the following data were recorded: [3]

Number of boys in a family	0	1	2
Number of families	475	814	211

Compute the probability of a family chosen at random having:

(i) no boy (ii) 1 boy (iii) 2 boys

3) Rohit invested ₹ 9600 on ₹ 100 shares at ₹ 20 premium paying 8 % dividend. [4]
Rohit sold the shares when the price rose to ₹ 160. He invested the proceeds
(excluding dividend) in 10 %, ₹ 50 shares at ₹ 40. Find the:

Question 5 [10]

1) A dealer sells an electric kettle for ₹ 2150. For a particular customer he reduced the price
ofthe kettle in such a way that the customer has to pay only ₹ 2124 including GST. If the
rate of GST is 18%, calculate the amount of reduction allowed by the dealer. [3]

2) Find the G.P. whose 4th and 7th terms are $\frac{1}{18}$ and $\frac{-1}{486}$ respectively. [3]

3) Let X be any point on the side BC of a ABC. XM, XN are drawn parallel to BA and CA

meeting CA, BA in M, N respectively; MN meets BC produced in T. Prove that
$TX^2 = TB \times TC$ [4]
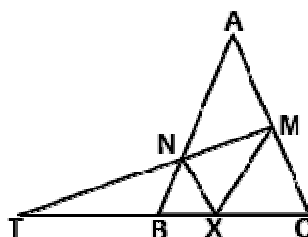
Question 6 [10]

1) Using the properties of proportion solve the expression: $\dfrac{\sqrt{a+x}+\sqrt{a-x}}{\sqrt{a+x}-\sqrt{a-x}}=b$ [3]

2) Find P and Q, if $2P + 3Q = \begin{bmatrix} 1 & 17 \\ 10 & -2 \end{bmatrix}$ and $3P + 4Q = \begin{bmatrix} 3 & 25 \\ 13 & -2 \end{bmatrix}$ [3]

3) In the given figure, $\angle ACE = 43°$ and $\angle CAF = 62°$. If $\angle AEC = x$, find the values of a, b and c. [4]
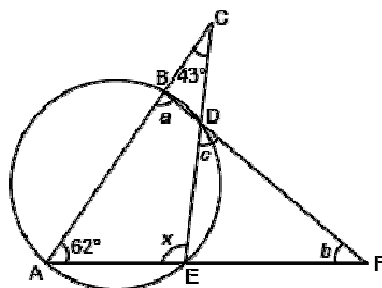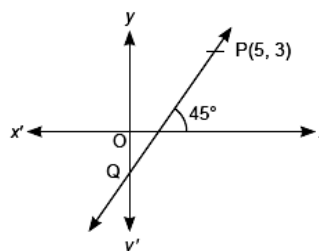

Question 7 [10]

1) Find the 8th term from the end of the A.P. 7, 10, 13, ..., 184 [3]

2) A triangle ABC with vertices A(-3 , 2), B(2, -10) and C(- 2, 0) is reflected in

   (i) the *x*–axis *(ii)* the *y*–axis *(iii)* the origin. Find the coordinates of the vertices of Δ in

   each case. [3]

3) ABCD is a cyclic quadrilateral in which AB || DC and AB is a diameter. [4]

   If $\angle BED = 65°$, find: *(i)* $\angle DAB$ *(ii)* $\angle BDC$
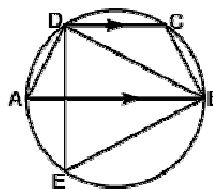
Question 8 [10]

1) The line through P(5, 3) intersects *y*–axis at Q. [3]
   (i) Write the slope of the line.
   (ii) Write the equation of the line.
   (iii) Find the coordinates of Q.

2) Prove the identity: $\dfrac{\sec A - 1}{\sec A + 1} = \dfrac{1 - \cos A}{1 + \cos A}$ [3]

3) Calculate the mean of the following frequency distribution by step–deviation method: [4]

C.I.	F
25–35	6
35–45	10
45–55	8
55–65	12
65–75	4

Question 9 [10]

1) It is required to make a hollow cone 24 cm high whose base radius is 7 cm. Find the area of the sheet metal required including the base. Also, find the capacity of this cone. [5]

2) The marks obtained by 100 students in a Mathematics test are given below: [5]

Marks	No.of students
0–10	3
10–20	7
20–30	12
30–40	17
40–50	23
50–60	14
60–70	9
70–80	6
80–90	5
90–100	4

Draw an ogive for the given distribution on a graph sheet.

(Use a scale of 2 cm = 10 units on both axes).

Use the ogive to estimate the:

(i) median.

(ii) lower quartile.

(iii) number of students who obtained more than 85% marks in the test.

(iv) number of students who did not pass in the test if the pass percentage was 35.

Question 10 [10]

1) The sum of 5th and 9th terms of an A.P. is 30. If its 25th term is 3 times its 8th term, find the A.P. [3]

2) In a GST chain, a dealer X purchases an article for ₹ 8000 and supplies it to another dealer Y (in the same state) at a profit of ₹ 1000. The dealer Y sells it to a consumer Z at a profit of ₹ 2000. If the rate of GST is 12% and if all transactions were intrastate, calculate. [3]

(i) ITC for dealer X

(ii) Input Tax payable by dealer Y

(iii) Total cost price of the article for consumer Z

(iv) Output GST for consumer Z

3) Draw histogram of the following frequency distribution and using it, calculate the mode. [4]

C.I.	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	5	15	10	5	12	8