CLASS-IX   **MAX.MARKS: 40**
SUBJECT: MATHEMATICS   **TIME: 90 MINUTES**

Note: Attempt all the questions.
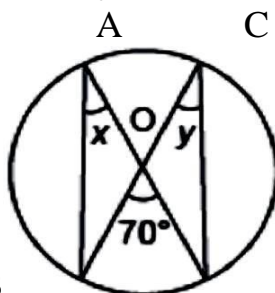
SECTION-A (01 mark each)

1:- Decimal expansion of $\dfrac{1}{7} =$

   a) 0.1438…   b) 0.142857..   c) 1.42857…   d) 0.142856..

2:- Find the value of the polynomial $p(y) = y^2 - 5y + 6$ at $Y = -2$

   a) -14   b) 0   c) 20   d) -20

3:- In the given figure, find the value of x and y where O is the centre of the circle.

   a) X=55⁰ Y= 55⁰   b) X=35⁰ Y=35⁰   c) X=140⁰ Y= 140⁰   d) X=70⁰ Y= 70⁰
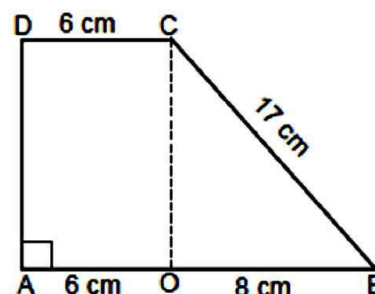
4:- Find the area of an equilateral triangle with side $2\sqrt{3}$cm.

   a) $3\sqrt{3}$ Sq.cm   b) 3 Sq.cm   c) $3+ \sqrt{3}$ Sq.cm   d) 9 Sq.cm

SECTION-B (02 marks each)

5:- Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm. Find the length of the common chord.

6:- Calculate the area of trapezium as shown in the figure:

7:- Simplify, $(125)^{2/3} - \sqrt{25} \; x \; 5^0 \; x \; (\dfrac{1}{125})^{-1/2}$

8:- Find the remainder when $4x^3 - 3x^2 + 4x - 2$ is divided by $x - 1$.

SECTION-C (03 marks each)

9:-

10:- Show that a median of a triangle divides it into two triangles of equal areas.

11:- An umbrella is made by stitching 10 triangular pieces of cloth of
two different colours, each piece measuring 20 cm, 50 cm and 50cm.
How much cloth of each colour is required for the umbrella?

12:- A small indoor greenhouse (herbarium) is made entirely of glass
panes (including base) held together with tape. It is 30 cm long,
25cm wide and 25 cm high.
(i) What is the area of the glass?
(ii) How much of tape is needed for all the 12 edges?

SECTION-D (04 marks each)

13:- A rhombus shaped field has green grass for 18 cows to graze .if each side of
the rhombus is 30m and its longer diagonal is 48m. how much area of grass field
will each cow be getting?

14 Construct an angle of 90^0 at the initial point of a given ray and draw the
bisector of it.

15:- Verify- $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

16:- GREAT MATHEMATICIAN (PISA QUESTION)

Brahmagupta gave four methods of multiplication and his main contribution was the introduction of
zero and the fact that zero (0) stood for 'nothing' in the world of mathematics.

Bhāskara I, contributions are mainly his proof of the fact that zero stood for 'nothing' (the idea
initially introduced by Bhramagupta). He made many calculations to prove so; division, permutation
and combination theories. He also proved how the earth appears to be flat even though it's a sphere.

Bhaskara II, He is most known for his work in calculus and how it is applied to astronomical
problems and computations. Not only did he deal with calculus but had vast knowledge over
arithmetic, algebra, mathematics of planets and spheres.

Hemachandra, His most significant contribution in mathematics was his initial version of the
Fibonacci sequence (1,1,2,3,5,8,13,21,.....). He was not only a mathematician but also a scholar,
polymath, poet who wrote on grammar, philosophy and contemporary history. Therefore his
contributions are not only restricted to math but over all the various different fields that he had
mastered over.

Shakuntala Devi is known for her extraordinary talents in solving complex mathematical problems
without any mechanical aid. She also found her place in the Guinness book of records as a result of
her extraordinary talents. Nowadays, apart from solving mathematical problems, she is utilizing her
amazing talent in the field of astrology. On 18 June 1980, Shakuntala Devi gave the product of two,
thirteen digit figures after multiplying them within 28 seconds.

Q1: Who contributed towards proof of zero?

Q2: Which of the above Mathematicians best known as Human Computer?

Q3: Who gave initially concept of Fibonacci sequence?

Q4: Who has mainly dealt with the astronomical work?