CLASS 9TH

FULL SYLLABUS TEST - 02

GENERAL INSTRUCTION

Maximum Marks = 80 Marks

Maximum Time = 180 minutes

Syllabus Covered : Full Syllabus of Class 9 Mathematics NCERT

1. This question paper has 5 sections A – E.
2. Section A has 20 MCQs carrying 1 marks each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based question 04 marks each.
7. All questions are compulsory.
8. Draw neat figures wherever required. Take $\pi = 22/7$ whereever required if not stated.

Section A

1. The point (0, 9) lies

    a) on the positive direction of y-axis   b) in quadrant III

    c) on the positive direction of x-axis   d) in quadrant IV

2. If the length of a median of an equilateral triangle is x cm, then its area, is

    a) $\frac{x^2}{\sqrt{3}}$ b) x^2

    c) $\frac{\sqrt{3}}{2}x^2$ d) $\frac{x^2}{2}$

3. In the given figure, O is the centre of a circle. If $\angle OAC = 50°$, then $\angle ODB = ?$

    a) 50º   b) 60º

    c) 75º   d) 40º
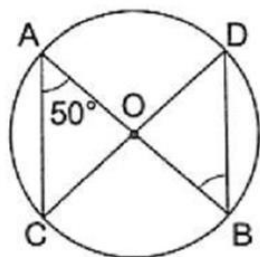
4. The graph given below shows the frequency distribution of the age of 22 teachers in a school. The number of teachers whose age is less than 40 years is

Number of teachers
8
7
6
5
4
3
2
1
O   20 25 30 35 40 45 50
Age in years →
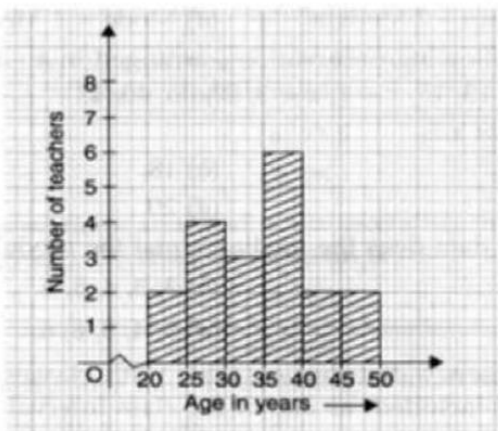
a) 17

b) 16

c) 15

d) 14

5. The value of $\dfrac{x^{a(b-c)}}{x^{b(a-c)}} \div \left(\dfrac{x^b}{x^a}\right)^c$ is

a) 1

b) 3

c) 4

d) 2

6. An exterior angle of a triangle is equal to 100° and two interior opposite angles are equal. Each of these angles is equal to

a) 40°

b) 80°

c) 75°

d) 50°

7. For what value of 'k', x = 2 and y = -1 is a solution of x + 3y – k = 0?

a) 2

b) -2

c) -1

d) 1

8. $x + 1$ is a factor of the polynomial

a) $x^3 + 2x^2 - x - 2$

b) $x^3 + 2x^2 - x + 2$

c) $x^3 - 2x^2 + x + 2$

d) $x^3 + 2x^2 + x - 2$

P.T.O

9. The value of $\sqrt[4]{\sqrt[3]{2^2}}$ is

    a) 2^6

                                                                 b) $2^{\frac{-1}{6}}$
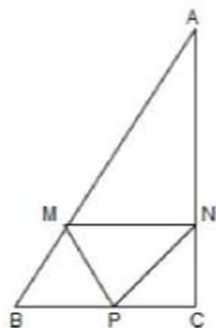
    c) $2^{\frac{1}{6}}$

                                                                 d) 2^{-6}

10. M,N and P are the mid-points of AB, AC and BC res. If MN = 3 cm, NP = 3.5 cm and MP = 2.5 cm, calculate BC, AB and AC

    a) 2cm, 3cm, 11cm

                                                b) 5cm, 6cm, 7cm

    c) 5cm, 6cm, 8cm

                                                d) 9cm, 8cm, 11cm

11. If $x^{\frac{1}{12}} = 49^{\frac{1}{24}}$, then the value of x is

    a) 7

                                                  b) 12

    c) 49

                                                  d) 2

12. Any solution of the linear equation 2x + 0y + 9 = 0 in two variables is of the form

    a) $\left(-\frac{9}{2}, m\right)$

                                                b) (-9 , 0)

    c) $\left(0, -\frac{9}{2}\right)$

                                                d) $\left(n, -\frac{9}{2}\right)$

13. The angles of a triangle are in the ratio 5 : 3 : 7, the triangle is

    a) An isosceles triangle.

                                                b) An obtuse angled triangle

    c) A right triangle

                                                d) An acute angled triangle

14. If $\sqrt{13 - a\sqrt{10}} = \sqrt{8} + \sqrt{5}$, then a =

    a) -5

                                                b) -2

    c) -4

                                                    d) -6

15. In the given figure, ABCD is a cyclic quadrilateral, $\angle CBQ = 48^{o}$ and a = 2b. Then, b is equal to

<div style="display:flex">

a) 48°

b) 18°

c) 38°

d) 28°

</div>

16. The perpendicular distance of the point P (3, 4) from the y-axis is

a) 7

b) 4

c) 3

d) 5

17. The taxi fare in a city is as follows: For the first kilometer, the fare is ₹8 and for the subsequent distance it is ₹5 per kilometer. Taking the distance covered as x km and total fare as ₹y, write a linear equation for this information.

a) y = 5x + 3

b) y = 5x – 3

c) x = 5y – 3

d) x = 5y + 3

18. The possible expressions for the length and breadth of the rectangle whose area is given by $4a^2 + 4a$ - 3 is

a) (2a - 1) and (2a - 3)

b) None of these

c) (2a + 1) and (2a + 3)

d) (2a - 1) and (2a + 3)

19. **Assertion (A):** The angles of a quadrilateral are xº, (x - 10)º, (x + 30)º and (2x)º, the smallest angle is equal to 58º.

Reason (R): Sum of the angles of a quadrilateral is 360º.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** $\sqrt{3}$ is an irrational number.

Reason (R): The sum of a rational number and an irrational number is an irrational number.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section B

21. In the given figure, we have $\angle 1 = \angle 3$ and $\angle 2 = \angle 4$. Show that $\angle A = \angle C$.
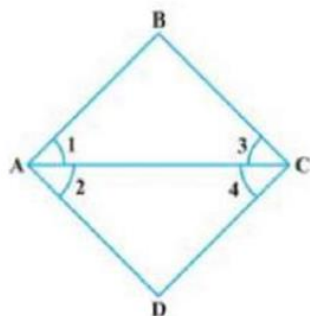
22. Does Euclid's fifth postulate imply the existence of parallel lines ? Explain.

23. Write the co-ordinates of each of the following points marked in the graph paper.
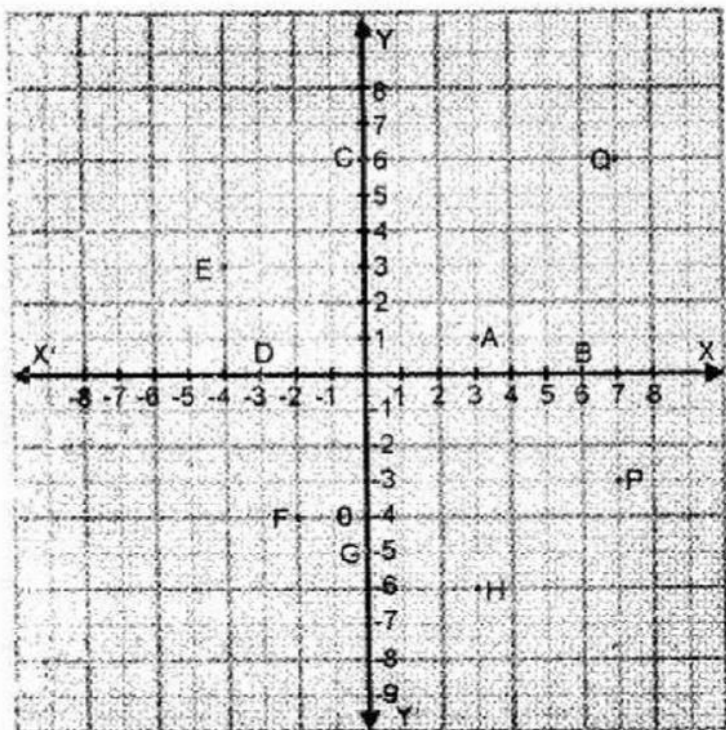
24. Simplify: $\dfrac{2\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \dfrac{6\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \dfrac{8\sqrt{3}}{\sqrt{6}+\sqrt{2}}$.

<div align="center">OR</div>

Express $1.\overline{4}$ as a fraction in simplest form.

25. Find the volume and the total surface area of a hemisphere of radius 3.5 cm. (Use $\pi = 22/7$).

<div align="center">OR</div>

If the radius and slant height of a cone are in the ratio 7 : 13 and its curved surface area is 286 cm^2, find its radius.

<div align="center">Section C</div>

26. Represent $\sqrt{4.5}$ on the number line.

27. Draw a histogram to represent the following grouped frequency distribution:

Ages (in years)	Number of teacher
20 - 24	10
25 - 29	28
30 - 34	32
35 - 39	48
40 - 44	50
45 - 49	35
50 - 54	12

28. Show that the quadrilateral formed by joining the mid-points the sides of a rhombus, taken in order, form a rectangle.

29. Find solutions of the form x = a, y = 0 and x = 0, y = b for the following pairs of equations. Do they have any common such solution?

5x + 3y = 15 and 5x + 2y = 10

P.T.O

30. The following data on the number of girls (to the nearest ten) per thousand boys in different sections of the society is given below :

Section	Number of girls per thousand boys
Scheduled caste	940
scheduled tribe	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

  i. Represent the information above by a bar graph.

  ii. In the classroom discuss what conclusion can be arrived at from the graph.

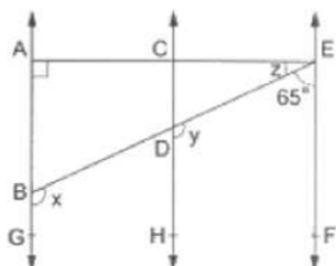**31.** Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by

$5 + 2x$

Section D

32. In the given figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$.
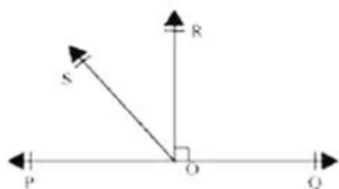
OR

In the given figure, AB || CD || EF, $\angle DBG = x, \angle EDH = y, \angle AEB = z, \angle EAB = 90°$ and $\angle BEF = 65°$. Find the values of x, y and z.

33. A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and height 1 m. If the outer side of each of the cones is to be painted and the cost of painting is ₹ 12 per m², what will be the cost of painting all these cones? (Use $\pi = 3.14$ and take $\sqrt{1.04} = 1.02$)

34. The perimeter of a triangle is 50 cm. One side of a triangle is 4 cm longer than the smaller side and the third side is 6 cm less than twice the smaller side. Find the area of the triangle.

<div align="center">OR</div>

Two sides of a triangular field are 85 m and 154 m in length and its perimeter is 324 m. Find the area of the field.

35. If both x + 1 and x - 1 and factors of $ax^3 + x^2 - 2x + b$, find the values of a and b.

<div align="center">

Section E

</div>

36. **Read the text carefully and answer the questions:**

In a forest, a big tree got broken due to heavy rain and wind. Due to this rain the big branches AB and AC with lengths 5m fell down on the ground. Branch AC makes an angle of 30° with the main tree AP. The distance of Point B from P is 4 m. You can observe that $\triangle ABP$ is congruent to $\triangle ACP$.
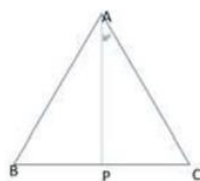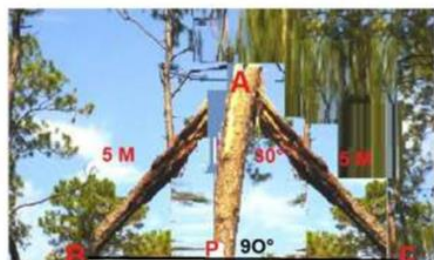
    (i)   Show that $\triangle ACP$ and $\triangle ABP$ are congruent.

    (ii)   Find the value of $\angle ACP$?

<div align="center">OR</div>

           What is the total height of the tree?

    (iii)   Find the value of $\angle BAP$?

37. **Read the text carefully and answer the questions:**

There is a race competition between all students of a sports academy, so that the sports committee can choose better students for a marathon. The race track in the academy is in the form of a ring whose inner most circumference is 264 m and the outer most circumference is 308 m.

(i)   Find the radius of the outer most circle.

(ii)   Find the radius of the inner most circle.

<div align="center">**OR**</div>

Find the area of the racetrack.

(iii)   Find the width of the track.

38.   **Read the text carefully and answer the questions:**

In Agra in a grinding mill, there were installed 5 types of mills. These mills used steel balls of radius 5 mm, 7 mm, 10 mm, 14 mm and 16 mm respectively. All the balls were in the spherical shape.

For repairing purpose mills need 10 balls of 7 mm radius and 20 balls of 3.5 mm radius. The workshop was having 20000 mm^3 steel.

This 20000 mm^3 steel was melted and 10 balls of 7 mm radius and 20 balls of 3.5 mm radius were made and the remaining steel was stored for future use.
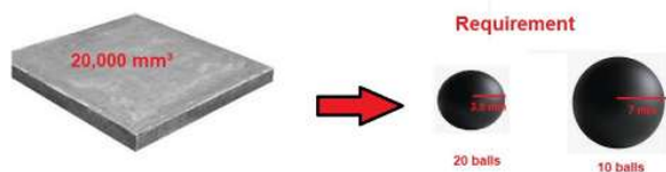
(i)   What was the volume of one ball of 3.5 mm radius?

(ii)   What was the surface area of one ball of 3.5 mm radius?

<div align="center">**OR**</div>

How much steel was kept for future use?

(iii)   What was the volume of 10 balls of radius 7 mm?

--ALL THE BEST--