INDIAN SCHOOL SALALAH

ANNUAL EXAMINATION, 2018-19

Sub: Mathematics Max.Marks: 80

Class: IX Time Allowed: 3 Hours

General Instructions:

a. All the questions are compulsory.

b. The question paper consists of 30 questions divided into 4 sections A, B, C and D.

c. Section A comprises of 6 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 10 questions of 3 marks each. Section D comprises of 8 questions of 4 marks each.

d. There is no overall choice. However, an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each, four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.

e. Use of calculators is not permitted.

SECTION.A

Questions 1 to 6 carry 1 mark each:

1. Find the value of x if $x^{\frac{1}{12}} = 49^{\frac{1}{24}}$

2. Find the value of k if $(x-3)$ is a factor of $x^3 - 3x^2 + kx - 12$.

(Or)

If $x + y + 2 = 0$ then write the value of $x^3 + y^3 + 8$

3. Two supplementary angles are in the ratio $2:7$. Find the measures of angles

4. For what value of x, the points A, B, C, D taken in order to form a cyclic quadrilateral if $\angle B = (71 + x)^\circ$ and $\angle D = 73^\circ$

5. Find the total surface area of a cone of radius $2x$ and slant height $\frac{y}{2}$.

(Or)

If the volume of a sphere is numerically equal to its surface area, then find the radius of the sphere.

6. A letter is chosen at random from the word 'ASSASSINATION'. Find the probability that letter is a vowel.

SECTION.B

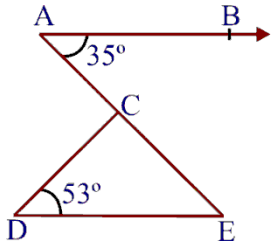
Questions 7 to 12 carry 2 marks each:

7. Express $0.\overline{35}$ as a rational number in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

8. Write the co-ordinates of a point:
   (i) above x-axis lying on y-axis at a distance of 5 units from origin.
   (ii) below x-axis lying on y-axis at a distance of 3 units from origin.
   (iii) lying on x-axis to the right of origin at a distance of 5 units.
   (iv) lying on x-axis to the left of origin at a distance of 2 units.

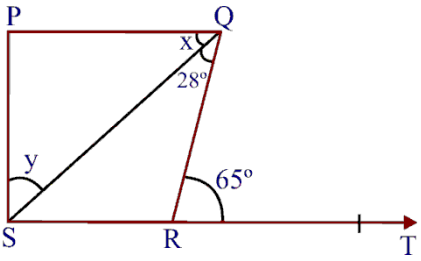
9. The perpendicular distance of a point from the x-axis is 4 units and the perpendicular distance from the y-axis is 5 units. Write the co-ordinates of such a point if it lies in:
   (i) I quadrant (ii) II quadrant (iii) III quadrant (iv) IV quadrant

10. In the given figure if AB || DE, $\angle BAC = 35^\circ$ and $\angle CDE = 53^\circ$, find $\angle DCE$.



(Or)

In the given figure if PQ ⊥ PS, PQ|| SR, $\angle SQR = 28^\circ$ and $\angle QRT = 65^\circ$, then find the values of x and y.



11. How many cubes of side 3 cm can be cut from a wooden solid cuboid with dimensions 12 cm × 12 cm × 9 cm?

12. Find the median of first 11 multiples of 3.

(Or)

Mean of 50 observations was found to be 80.4. But later on, it was discovered that 96 was misread as 69 at one place. Find the correct mean.

SECTION.C

Questions 13 to 22 carry 3 marks each:

13. If $p(x) = x^3 - 3x^2 + 4x - 5$ and $s(x) = x - 2$, find the quotient and remainder when $p(x)$ is divided by $s(x)$.

14. Using suitable identity evaluate: 104^3

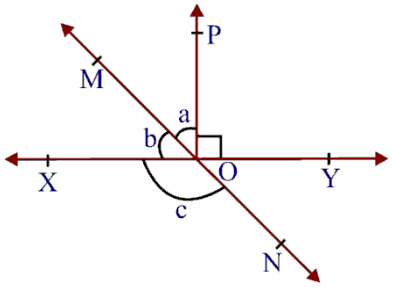
15. Write $\sqrt[3]{4}, \sqrt{3}, \sqrt[4]{6}$ in ascending order.

(Or)

If $x = \frac{\sqrt{7}}{5}$ and $\frac{5}{x} = p\sqrt{7}$ then find the value of the rational number p.

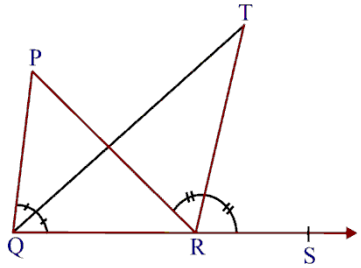
16. Write any three Euclid's postulates.

17. In the figure, lines XY and MN intersect at O. If $\angle POY = 90°$ and $a : b = 2 : 3$, find c.



(Or)

In the figure, the side QR of Δ PQR is produced to a point S. If the bisectors of $\angle$PQR and $\angle$PRS meet at point T, then prove that $\angle QTR = \frac{1}{2}\angle QPR$.

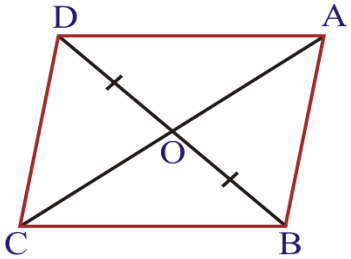


18. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively. Show that the line segments AF and EC trisect the diagonal BD.

(Or)

Show that the bisectors of angles of a parallelogram form a rectangle.

19. In the figure, diagonals AC and BD of quadrilateral ABCD intersect at O such that OB = OD. If AB = CD, then show that ar(DOC) = ar(AOB).



20. A triangle and a parallelogram have the same base and same area. If the sides of the triangle are 26 cm, 28 cm and 30 cm and the parallelogram stands on the base 28 cm, find the height of the parallelogram.

21. A heap of wheat is in the form of a cone, the diameter of whose base is 14 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.

(Or)

A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14 cm, find the volume of the wood. (Use $\pi = \frac{22}{7}$)

22. On a busy road, following data was observed about cars passing through it and number of occupants:

No. of occupants	1	2	3	4	5
No. of cars	39	36	33	27	15

Find the probability that it has

(i) exactly 5 occupants

(ii) more than 2 occupants

(iii) less than 5 occupants

SECTION.D

Questions 23 to 30 carry 4 marks each:

23. If $x = 2 - \sqrt{3}$, find the value of $\left(x + \frac{1}{x}\right)^3 + 2\left(x + \frac{1}{x}\right)^2 + \left(x + \frac{1}{x}\right) - 100$

24. Using factor theorem, factorise the polynomial $x^3 - 6x^2 + 11x - 6$.

(Or)

(a) Without actually calculating the cubes, find the value of $55^3 - 25^3 - 30^3$

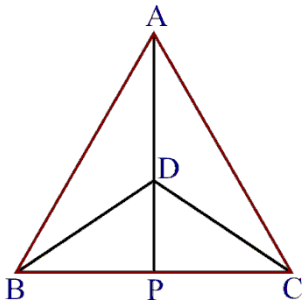
(b) If $(x + a)$ is a factor of $ma - nx - 3x^2$, then prove that $a = \frac{m+n}{3}$

25. Draw the graph of linear equation $2x - 3y - 12 = 0$ and find the point where the graph meets the axes.

26. In the figure, ABC and DBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that

(i) $\Delta ABD \cong \Delta ACD$

(ii) $\Delta ABP \cong \Delta ACP$



27. If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

(Or)

If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

28. Construct a triangle ABC in which BC = 8 cm, $\angle B = 45°$ and AB – AC = 3.5 cm.

29. The circumference of the base of a cone is $\frac{220}{7}$ cm and its slant height is 13cm. Find the volume of the cone. (Use $\pi = \frac{22}{7}$)

(Or)

A dome of a building is in the form of a hemisphere. From inside it was white washed at the cost of ₹ 498.96. If the cost of white washing is ₹ 2 per square metre, then find the

a) inside surface area of the dome b) volume of the air inside the dome.

30. Draw a histogram and frequency polygon on the same graph for the following frequency distribution:

Weight (in kg)	40-45	45-50	50-55	55-60	60-65	65-70
Number of persons	15	25	28	15	12	5

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