CLASS-IX

# SUBJECT : MATHEMATICS

Time : 3 Hrs. M.M. 80

General Instruction:

1 . All questions are compulsory.

1. The paper consists of 30 questions divided into four section A, B, C, D. Section A comprises of 6 questions of 1 mark each. Section B compmrises 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.
2. There is no over all choice in this question paper. Although internal choices has been provided in some questions.

## SECTION-A

1. If the two interior angles of the same side of a transversal intersecting two parallel lines are in the ratio 2:3 , find the angles.
2. Find the value of 8 $\sqrt{15 }$ $÷$2 $\sqrt{3 }$

3 Find the value of a for which the polynomial 2x2+ax+2 has 1 as its zero.

1. If a point is on negative side of x-axis at a distance of 5 units from origin then find the coordinates of the point.
2. Express x = 3y in the form of ax + by + c = 0 and write the values of a , b and c.
3. Find the capacity in litres of a conical vessel with base radius 7cm and slant height 25cm.

# SECTION-B

7. Factorise 64x3 + 125y3 using suitable identity.

8. A conical tent is 10 m high and radius of its base is 24cm. Find the cost of canvas required to make the tent if cost of 1 sqm canvas is Rs 70.

9. 1500 families with 2 children were selected randomly and the following data was recorded

|  |  |  |  |
| --- | --- | --- | --- |
| No. of girls | 0 | 1 | 2 |
| No. of families | 211 | 814 | 475 |

If a family was chosen at random, find the probability that it has

1. at most one girl
2. at least one girl

10. In the given figure, if = 690 , = 310 , find 



1 1. In the given figure if QT PR , = 400 , = 300 , find x and y.



1 2. In the given Figure if AC =BD , show that AB = CD



 SECTION C

Q 13. Represent  on the number line.

Q 14. Factorise x3 + y3 +27z3-9xyz

Q15. Factorise Using factor theorem x3-3x2-9x-5

Q16. Solve the equation 2x+1 = x- 3 , and represent the solution graphically

 a) in one variable

 b) in two variable

 OR

 Write three solutions for the equation πx + y=9

Q17. Find the coordinates of the point which

1. Lie on x-axis at a distance of 3 units to the left of origin.
2. Lie on y- axis at a distance of 5 units below origin
3. Lie in the second quadrant at a distance of 3 units from x-axis and 2 units from y axis

 0R

Plot the points (-3,0) , (5,0) , AND ( 0,4) on Cartesian plane . Name the figure formed by joining these point and find its area

Q18 . A field is in the shape of trapezium whose parallel sides are 25 m and 10 m . the non parallel sides are 14m and 13m . Find the area of the field

 OR

The length of two adjacent sides of parallelogram are 17cm and 12cm . one of its diagonal is 25 cm long . find the area of parallelogram also find the length of altitude from vertex on the side of length 12 cm.

Q19. It cost Rs 2200 to paint the inner curved surface area of the cylindrical vessel 10 m deep . if the cost of painting is at the rate of Rs. 20 per m2 , find

1. Inner curved surface area
2. Radius of the base
3. Capacity of the vessel.

 OR

A river 3m deep and 40m wide is flowing at the rate of 2km per hour . how much water will fall into the sea in a minute

Q20. The side QR of triangle PQR is produced to a point S . If the bisectors of angle PQR and angle PRS meet at a point T. then prove that

 ∟QTR = $\frac{1}{2}$ ∟QPR

Q21. The side AB of a parallelogram ABCD is produced to any point P . A line through A and parallel to CP meets CB produced at Q and then parallelogram PBQR is completed . then show that

area (ABCD)= area (PBQR)



Q22. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle .

 SECTION -D

Q23:-If $\frac{7+\sqrt{5}}{7-√5}$ - $\frac{7-\sqrt{5}}{7+√5}$= a+b √5 then find the value of a and b.

 OR

Find the value of a if :- $\frac{5+2\sqrt{3}}{7+4√3}$ =a-6√3

Q24:- On her birthday, Amisha donated two toffees to each children of an orphanage and 15 chocolates to adults working there taking the total items distributed as x and the number of children y write a linear equation in two variables for the above situation ,

1. Write the equation in standard form.
2. How many children are there if total 61 items were distributed?

Q25:- In Fig. 7.21, AC = AE, AB = AD and ∠ BAD = ∠ EAC. Show that BC = DE.



Q26:- Show that the bisectors of angles of a parallelogram form a rectangle.

 OR

Prove that the line segment joining the mid-points of two sides of a triangle is parallel to the third side.

Q27:- Construct a triangle XYZ in which ∠Y = 30°, ∠Z = 90° and XY + YZ + ZX = 11 cm.

Q28:- draw a frequency polygon for the following data

|  |  |
| --- | --- |
| Class interval | Frequency |
| 25-29 | 5 |
| 30-34 | 15 |
| 35-39 | 23 |
| 40-44 | 20 |
| 45-49 | 10 |
| 50-54 | 7 |

Q29:- Two coins are tossed simultaneously 500 times, and we get

Two heads : 105 times

One head : 275 times

No head : 120 times

Find the probability of occurrence of each of these events.

Q30\_: Monica has a piece of canvas whose area is 551 m2. She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m2, find the volume of the tent that can be made with it?