Time Allowed: 3 Hours   Maximum Marks: 80
Note: All questions are compulsory. Section A carries 1 mark each, Section B carries 2 marks each , Section C carries 3 marks each, Section D carries 5 marks each & Section E carries 4 marks each.

Section-A

Choose the correct option:

Q1) A rational number equivalent to 5/7 is

    a) 15/17   b) 25/27   c) 10/14   d) None of these

Q2) The rational number $0.\overline{3}$ can also be written as

    a) 3   b) 3/10   c) 0.33   d) None of these

Q3) A rational number between 1/7 and 2/7 is

    a) 1/14   b) 5/21   c) 2/21   d) None of these

Q4) The polynomial $2x-x^2+5$ is

    a) An equation   b) A trinomial   c) A binomial   d) None of these

Q5) Given a polynomial $p(t)=t^4-t^3+t^2+6$ then $p(-1)$ is

    a) 6   b) 3   c) 9   d) None of these

Q6) The value of the polynomial y^2-5y+6 at $y=0$ is

    a) 6   b) -6   c) 1   d) None of these

Q7) The equation of x-axis is

    a) X=0   b) Y=0   c) X=0 , y=0   d) None of these

Q8) The ordinate of the point (4,-5) is

    a) 4   b) 5   c) -5   d) None of these

Q9) x=5, y=-2 is a solution of the linear equation

    a) 2x+y=9   b) 2x-y=12   c) X+3y=1   d) None of these

Q10) Let y varies directly as x. If y=24, when x=8, then the linear equation is

    a) 3y=x   b) Y=x   c) Y=4x   d) None of these

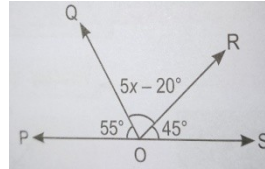Q11) If point (3,0) lies on the graph of the equation 2x+3y=k, then the value of k is

    a) 6   b) 3   c) 2   d) None of these

Q12) If the difference between two complementary angles is 10º, then the angles are

    a) 50º,60º   b) 50º,40º   c) 80º,10º   d) None of these

Q13) In the given figure POS is a line then $\angle QOR$ is

a) 60º

b) 40º

c) 80º

d) None of these

Q14) Diagonals of a rhombus ABCD intersect each other at O, then what are the measurements of vertically opposite angle $\angle AOB$ and $\angle COD$?

a) $\angle ABO = \angle CDO$

b) $\angle ADO = \angle BCO$

c) 60º, 60º

d) None of these

Q15) Two sides of a triangle are 8 cm and 11 cm and perimeter of triangle is 32 cm, then value of S is

a) 19 cm

b) 20 cm

c) 21.5 cm

d) None of these

Q16) The area of a triangle ABC, in which AB=AC=4cm and $\angle A=90º$ in cm² is

a) 16

b) 8

c) 4

d) None of these

Q17) Two sides of a triangle are 13 cm and 14 cm and its semi perimeter is 18 cm. Then the third side of the triangle will be

a) 9 cm

b) 18 cm

c) 8 cm

d) None of these

Q18) Class mark of the class 70-80 is

a) 65

b) 85

c) 75

d) None of these

Q19) For a given data the difference between the maximum and minimum observation is known as its

a) Class

b) Range

c) Class mark

d) None of these

Q20) Mode of the data 3,5,7,3,7,5,3,4,3

a) 5

b) 3

c) 7

d) None of these

Section-B

Q21) Construct $\sqrt{7.8}$ on the number line.
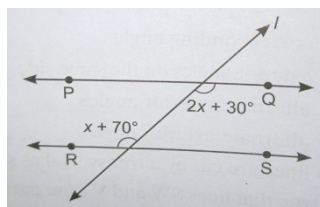
Q22) Expand $(2a+3b-2c)^2$ using identity

OR

Expand $(2a-3b)^3$ by using identity.

Q23) In which quadrant or axis does the following point line?

a) (1,-2)

b) (4,0)

c) (-3,-2)

d) (0,-3)

Q24) In the figure PQ||RS and l is transversal then what will be the value of x?

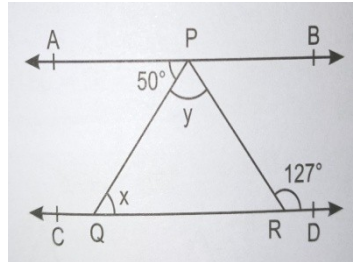Q25) The perimeter of an equilateral triangle is 60 cm. Find its area. (Use $\sqrt{3}=1.73$)

Section-C

Q26) If x+y+z=0 prove that $x^3+y^3+z^3=3xyz$

Q27) If the point (4,3) lies on the linear equation 3x-ay=6, find whether (-2,-6) also lies on the same line.

Q28) If two lines intersect each other then prove that vertically opposite angle are equal.

Q29) In the figure if AB∥CD, ∠APQ=50º and ∠PRD=127º, find x and y.

Q30) Find the area of triangle whose sides are 13 cm, 14 cm and 15 cm.

OR

The length of sides of triangle are 10 cm, 24 cm, and 26 cm. Find the perpendicular length from the opposite vertex to the side whose length is 26 cm.

Q31) Draw a Histogram for the following data on the graph paper

Class Interval	Frequency
150-200	5
200-250	3
250-300	5
300-350	6
350-400	8
400-450	7
450-500	1

Section-D

Q32) If $x=3+2\sqrt{2}$, find the value of $x+\dfrac{1}{x}$.

OR

If $a=\sqrt{2}+1$, find the value of ¿

Q33) Factorise the polynomial $x^3+13x^2+32x+20$

Q34) Find the mean of the following data:

Class Interval	Frequency
0-10	8
10-20	15
20-30	27
30-40	16
40-50	24
50-60	10

Q35) In $\triangle ABC$, side AB and AC are produced to point D and E respectively. If the external bisectors of $\angle DBC$ and $\angle ECB$ intersect at point O then prove that $\angle BOC = 90^0 - \frac{1}{2} \angle A$.

## Section-E

Q36) Ram a student of class 9th is residing in a village. One day he went to metro mall along with his brother. From there he visited three places library, temple and grocery shop. After returning to his village he plotted a graph by taking the metro mall as origin and marked three places on the graph as per his direction of movement and distance.
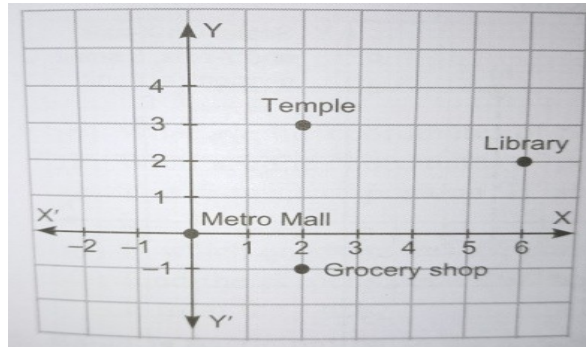
a) What are the coordinates of the temple?   b) What is the abscissa point of the library?

c) What are the points of grocery shop?   d) What is the distance between temple and grocery shop?

Q37) Two parallel roads PQ and RS are at the center of the city. It was decided to put two huge lamp post a at point X and Y and a statue of Mahatma Gandhi to be placed at point M with lots of palm trees to be planted along the line AB which is parallel to both PQ and RS. The area around M is to be decorated with flowering plants and greenery. The angle $\angle PXY$ is of $50°$ and angle $\angle MYS$ is of $120°$.
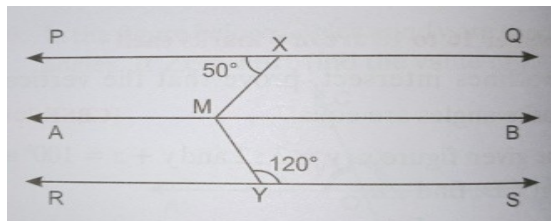
   a) What is the measure of $\angle XMB$?
   b) What is the measure of $\angle YMB$?
   c) What is the measure of reflex angle $\angle XMY$?
   d) What is the ratio between the angle $\angle XMB$ and $\angle YMB$?

Q38) Blossom public school has a piece of land outside their school which is not used for many years. Eco club incharge has given suggestion to head of school that they can utilize that barren land for gardening purpose and for conducting Eco club activities of school. Students of class 9C were divided into three groups A,B,C and were asked to maintain their gardening area in different Geometrical shapes. Group C has developed the garden in the shape of equilateral triangle of side 20 m.

   a) Write the formula to find the perimeter of triangle.
   b) What is the area of triangle?
   c) What is the perimeter of the triangle?
   d) Find the cost of fencing the triangle if its cost is Rs 14.75 per metre.

Group A   Group B   Group C