



VISHWA BHARTI PUBLIC SCHOOL- DWARKA  
Term I Examination - 2024-25

Class: IX

Subject: Mathematics

Date: 18/09/2024

Time: 3hr

MM: 80

Suryansh

IX - Diamond

General Instructions:

1. This Question Paper has 5 Sections A-E.
2. Section A has 20 MCQs carrying 1 mark 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 integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, internal choices has been provided.
8. Draw neat figures wherever required.

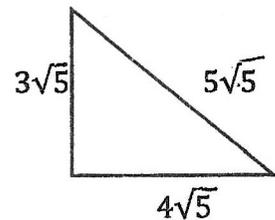
Section A [20 x 1 = 20 Marks]

Q-1 Which of the following is a rational number?

- a)  $\sqrt{4}/\sqrt{9}$       b)  $-1/\sqrt{5}$       c)  $3/\sqrt{5}$       d)  $\sqrt{2}/3$

Q-2 Perimeter of the given figure is

- a)  $60\sqrt{5}$       b)  $12\sqrt{5}$       c)  $27\sqrt{5}$       d)  $32\sqrt{5}$



Q-3  $(32)^{1/5} \times (125)^{-1/3}$  in its simplified form is equal to

- a)  $16/25$       b)  $4/5$       c)  $2/5$       d)  $2/25$

Q-4 The expanded form of  $(x + \frac{1}{3})^3$  is

- a)  $x^3 + \frac{1}{27} + 3x^2 + \frac{1}{3}x$       c)  $x^3 + \frac{1}{27} + x^2 + \frac{1}{3}x$

- b)  $x^3 + \frac{1}{9} + 3x^2 + 3x$       d)  $x^3 + \frac{1}{27} + 3x^2 + \frac{1}{3}x$

Q-5 The value of  $10^3 - 5^3 - 5^3$  is

- a) 750.      b) 1000.      c) 250      d) 500

Q-6 Value of  $300^2 - 299^2$  is

- a) 499      b) 12      c) 600      d) 599

Q-7 Coordinates of a point, which is 8 units away from the x-axis and lies on the negative direction of y-axis are

- a) (-8,0).      b) (8,0).      c) (0,-8).      d) (0,8)

Q-8 If two points have same abscissa but different ordinates, then the line joining them is parallel to

- a) y-axis.      c) x-axis  
b) Both x and y axis      d) neither x-axis nor y-axis.

Q-9 Coordinates of the point lying on the y-axis, satisfying the equation  $2x - 5y = 10$  are

- a) (2, 0).      b) (0,2).      c) (0,-2).      d) (-2,0)

Q-10 If  $x=2$  and  $y=2$  is a solution of the equation  $7x + py = 2$ , then value of  $p$  is

- a) (-5)      b) (5)      c) (6)      d) (-6)

Q-11 The linear equation  $2x - 5y = 7$  has

- a) a unique solution.      c) Two solutions  
b) One solution      d) Infinitely many solution

Q-12 Equation  $x = 7$ , in two variables can be written as

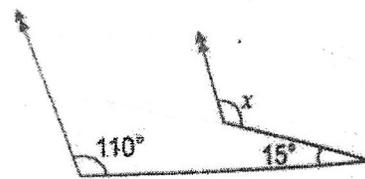
- a)  $1.x + 1.y = 7$ .      b)  $1.x + 0.y = 7$ .      c)  $0.x + 1.y = 7$ .      d)  $0.x + 0.y = 7$ .

Q-13 If two angles of a triangle are complimentary, then it is a

- a) Right angle triangle.      c) Equilateral, triangle  
b) acute angle triangle      d) an obtuse angle triangle

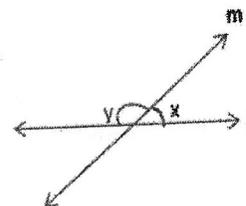
Q-14 The measure of  $x$  in the given figure is

- a)  $125^\circ$       b)  $70^\circ$   
c)  $105^\circ$       d)  $100^\circ$



Q-15 In the given figure, if  $x:y=1:4$ , then value of  $x$  and  $y$  respectively are

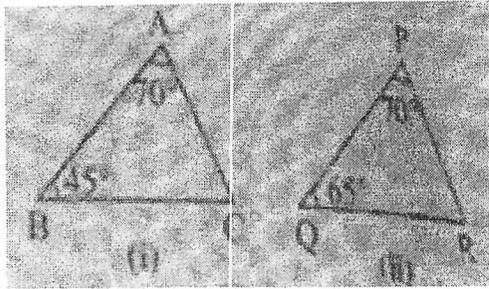
- a)  $36^\circ$  and  $144^\circ$       b)  $18^\circ$  and  $72^\circ$   
c)  $144^\circ$  and  $36^\circ$       d)  $72^\circ$  and  $18^\circ$



Q-16 Area of a triangle whose sides are 3cm, 4cm and 5 cm is

- a)  $42\text{cm}^2$       b)  $6\text{cm}^2$       c)  $84\text{cm}^2$       d)  $100\text{cm}^2$

Q-17 Observe the given triangles carefully and choose the correct answer from the given options.



- a)  $\triangle ABC \cong \triangle QPR$ .                      c)  $\triangle ABC \cong \triangle PQR$   
 b)  $\triangle ABC \cong \triangle PRQ$                       d) none of these

Q-18 The edges of a triangular board are 50 cm, 78cm and 112 cm. If the area of triangle is  $1680 \text{ cm}^2$ , then the length of its smallest altitude is  
 a) 20cm                      b) 30cm                      c) 40cm                      d) 50cm

**Assertion and Reasoning question(Q-19 & Q-20)**

**DIRECTION:** In the following questions, a statement of **assertion (A)** is followed by a statement of **Reason (R)**. Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)  
 (b) Both assertion(A)and reason (R)are true and reason(R)is not the correct explanation of assertion (A)  
 (c) Assertion(A) is true but reason(R) is false.  
 (d) Assertion(A) is false but reason(R) is true.

Q-19 **Assertion(A)** : If  $\triangle ABC \cong \triangle PQR$  then  $BC = PQ$   
**Reason(R)** : Corresponding parts of congruent triangles are equal

Q-20 **Assertion(A)** : Two lines AB and CD intersects at O. If  $\angle AOC = 50^\circ$ , then  $\angle BOC = 130^\circ$   
**Reason(R)** : When two straight lines intersect each other, then vertically opposite angles are equal

**Section B[5 x 2=10 Marks]**

Q-21 Express  $3\sqrt{2}$  in the form of  $p/q$  where p and q are integers and  $q \neq 0$ .

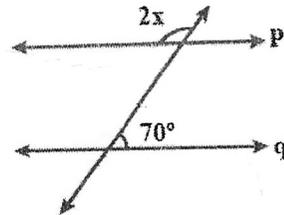
Q-22 Find the remainder when the polynomial  $2x^2 - x + 1$  is divided by  $2x + 1$

Q-23 Find the coordinates of the points where the graph of the equation

$3x+4y=12$  cuts i) x-axis ii) y-axis

- Q-24 Write the mirror image of  $\triangle ABC$  about x-axis where the coordinates of the vertices of the triangle are  $A(1,1)$ ,  $B(4,3)$  and  $C(7,2)$ .

Q-25 In the given fig. p is parallel to q, then find x.



Section C[6 x 3 = 18 Marks]

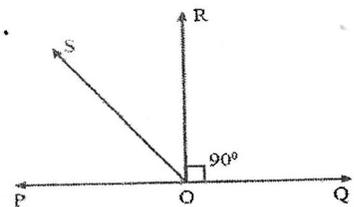
- Q-26 If  $x = \frac{\sqrt{5}+3}{2}$ , find  $x^2 + \frac{1}{x^2}$

Q-27 Find  $p^3-q^3$  if  $p - q = (-8)$  and  $pq = (-12)$

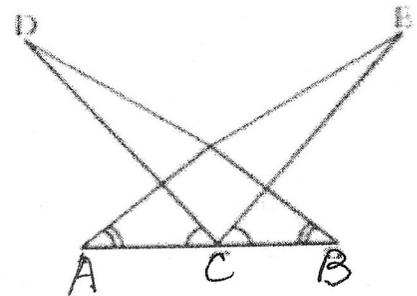
Q-28 Sides of a triangular plot are in the ratio of 3:5:7. Its perimeter is 300. Find its area.

Q-29 Find three solutions of the equation in two variable  $2x - 3y + 7 = 0$

- Q-30 It is given POQ is a line. OR is perpendicular to the line PQ. OS is another ray lying between rays OP and OR. Prove that  $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$



- Q-31 In the given figure, C is the mid point of AB,  $\angle DCA = \angle ECB$  and  $\angle DBC = \angle EAC$ . Show that  
i)  $DC=EC$  ii)  $BD=AE$



Section D[4 x 5 = 20 Marks]

Q-32 Find the value of 'a' and 'b' if

$$\frac{7+3\sqrt{5}}{2+\sqrt{5}} - \frac{7-3\sqrt{5}}{2-\sqrt{5}} = a + b\sqrt{5}$$

(OR)

Prove that

$$\frac{1}{2+\sqrt{3}} + \frac{2}{\sqrt{5}-\sqrt{3}} + \frac{1}{2-\sqrt{5}} = 0$$

Q-33 If  $x+y+z=9$  and  $x^2+y^2+z^2=35$ , find the value of  $x^3+y^3+z^3-3xyz$ .

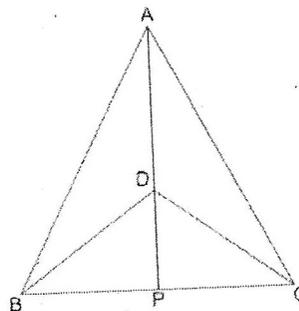
Q-34 Factorize the following polynomial  $y^3-23y^2+142y-120$

(OR)

Simplify the given expression:  $(2x-5y)^3 - (2x+5y)^3$

Q-35  $\triangle ABC$  and  $\triangle DBC$  are Isosceles triangles on the same base BC. Vertices A and D are on the same side of BC (see the given figure). If AD is extended to intersect BC at P, then show that

- i)  $\triangle ABD \cong \triangle ACD$
- ii)  $\triangle ABP \cong \triangle ACP$
- iii) AP is the bisector of  $\angle A$  as well as  $\angle D$
- iv) AP is the  $\perp$  bisector of BC.



(OR)

ABC is a right angled triangle in which  $\angle A = 90^\circ$  and  $AB = AC$ . By using suitable theorem find  $\angle B$  and  $\angle C$

### Section E [12 Marks]

Q-36 Anjali and Priti started a new business under EMC business blaster. The investment (in Rupees) made by both the partners is represented by a polynomial  $p(x) = 4x^2 + 12x + 5$ . The factors of the polynomial are the individual shares of both. Based on this information, answer the following questions:

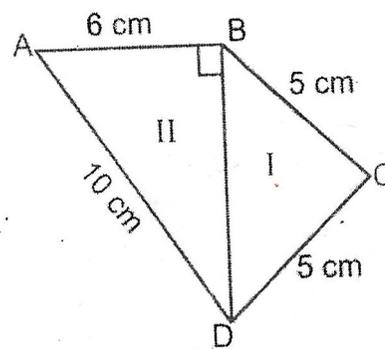
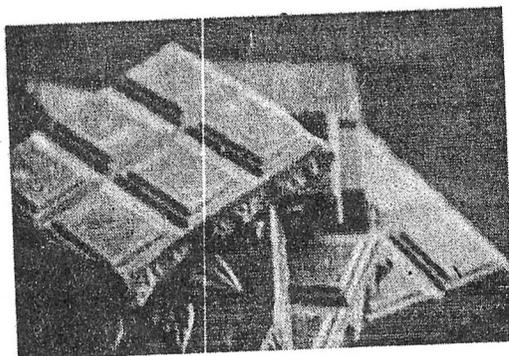
- i) If  $x=100$  then find the money invested. (1)
- ii) What is the degree of the money invested (1)
- iii) Find the shares invested by Anjali and Priti separately (2)

(OR)

Find the value of  $p(10) - p(0)$ .

Q-37

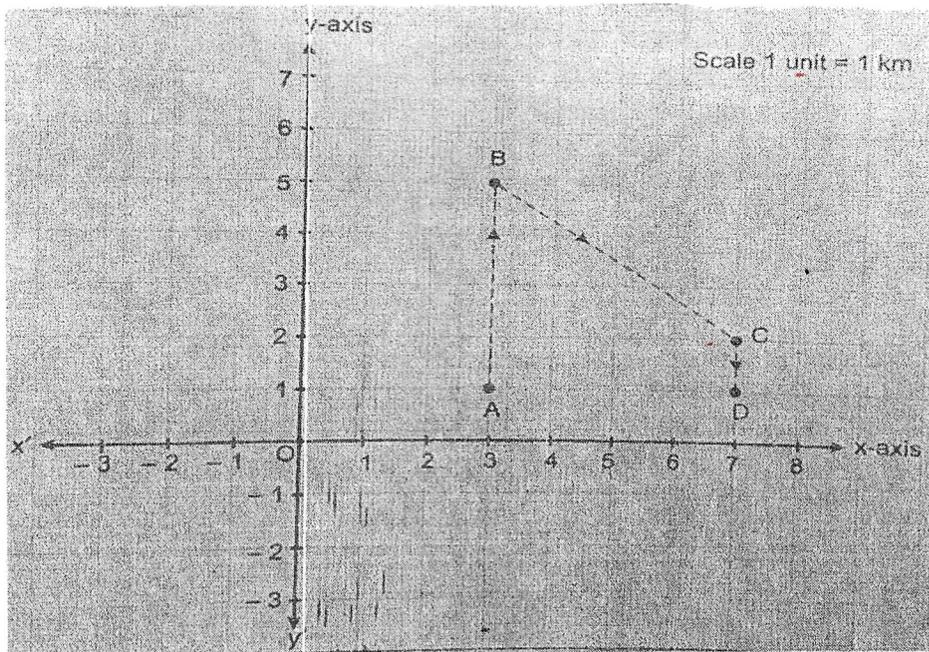
A chocolate is in the form of a quadrilateral with sides 6 cm, 10 cm, 5 cm and 5 cm (as shown in the figure) is cut into two parts on one of its diagonals by a lady. Part-I is given to her Maid and part-II is equally divided among a driver and gardener.



Based on the above information, answer the following questions

- i) Find the length of BD. (1)
- ii) Who got the larger share? (1)
- iii) Area of  $\triangle ABD$  (OR) Area of  $\triangle BCD$  (2)

Q-38 Arun is participating in 10 km walk. The organisers show the coordinates on graph. Arun started from point A(3,1) and at point B(3,5) there is a water station to make people hydrated. A garden is situated at point C and finally Arun reaches at final destination, marked at point D.



Based on the above information, answer the following questions

- i) Write the coordinates of point C (1)
- ii) Find the distance between A and B (1)
- iii) Write the coordinates of point D and the coordinates of its mirror image about x axis. (2)

(OR)

Find the distance of point D from A and from y axis.

.....Cl-9.....Term-1.....