

**GENERAL INSTRUCTIONS:**

- This question paper contains 38 questions. All questions are compulsory.
- This Question Paper is divided into FIVE Sections –Section A, B, C, D and E.
- In Section-A question number 1 to 18 are Multiple Choice Questions (MCQs) and question number 19 and 20 are Assertion- reason based questions of 1 mark each.
- In Section-B question number 21 to 25 are Very Short Answer – I (SA-I) type questions of 2 marks each.
- In Section-C question number 26 to 31 are Short Answer – II (SA-II) type questions carrying 3 marks each.
- In Section-D question number 32 to 35 are Long Answer (I.A) type questions of 5 marks each.
- In Section-E question number 36 to 38 are Case Study / Passage based integrated units of assessment questions carrying 4 marks each. Internal choice is provided in 2 marks questions in each case-study.
- There is no overall choice. However, an internal choice has been provided in 2 Questions in Section-B, 2 Questions in Section-C and 2 Questions in Section-D.
- Draw neat figures whenever required. Take  $\pi = \frac{22}{7}$  wherever required if not stated.

**SECTION-A**

- Q1.  $x=2$  and  $y= -1$  is a solution of the linear equation  
 (a)  $x+2y=4$       (b)  $2x+y=0$       (c)  $x+2y=0$       (d)  $2x+y=5$
- Q2. If the volume and the surface area of the sphere are numerically equal then its radius is  
 (a) 1 unit      (b) 2 units      (c) 3 units      (d) 4 units
- Q3. If slant height of the cone is 14cm and the diameter of the base is 18 cm. The curved surface area of a cone is  
 (a) 396      (b) 296      (c) 638      (d) 792
- Q4. The number of dimension(s), a point has  
 (a) 0      (b) 1      (c) 2      (d) 3
- Q5.  $x+1$  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)  $x^3+2x^2+x+2$
- Q6. The taxi fare in a city is as follows: For the first kilometer, the fare is Rs. 3 and for the subsequent distance it is Rs. 5 per km. taking the distance covered as  $x$  km and total fare as Rs.  $y$ , Write a linear equation for this information



- (a)  $y=5x+3$       (b)  $y=5x-3$       (c)  $x=5y-3$       (d)  $x=5y+3$

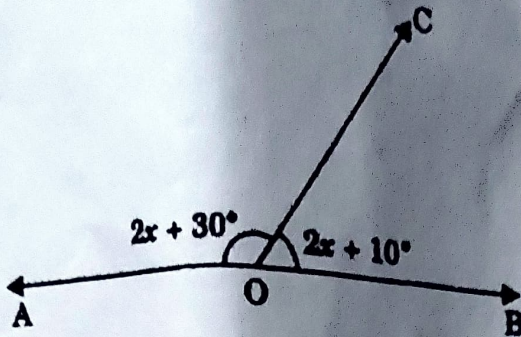
Q7. The class mark of the class 90-110 is

- (a) 90      (b) 95      (c) 100      (d) 105

Q8. A right cylinder and a right circular cone have the same radius and same volumes. The ratio of the height of the cylinder to that of the cone is

- (a) 3:5      (b) 2:5      (c) 1:3      (d) 3:1

Q9. Find the value of x

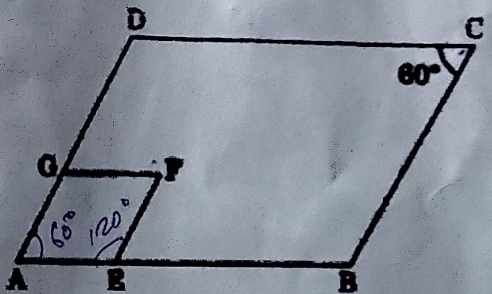


- (a)  $25^\circ$       (b)  $35^\circ$       (c)  $360^\circ$       (d)  $45^\circ$

Q10. The value of  $300^2 - 299^2$  is

- (a) 399      (b) 499      (c) 600      (d) 599

Q11. In the following figure ABCD and AEFG are two parallelograms. If  $\angle C = 60^\circ$ , then  $\angle AEF$  is:



- (a)  $60^\circ$       (b)  $90^\circ$       (c)  $120^\circ$       (d)  $150^\circ$

Q12. Which of the following is irrational?

- (a)  $\sqrt{\frac{4}{9}}$       (b)  $\frac{\sqrt{12}}{\sqrt{3}}$       (c)  $\sqrt{7}$       (d)  $\sqrt{81}$

Q13. The perimeter of a triangle is 60 cm. If its sides are in the ratio 1:3:2, then its smallest side is

- (a) 5      (b) 9      (c) 10      (d) 20

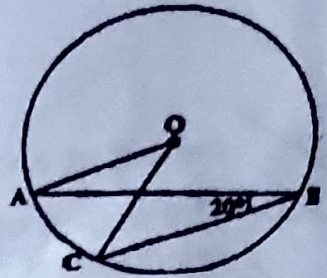
Q14. Sum of two Irrational number is always a

- (a) Rational number      (b) Irrational number  
(c) Natural number      (d) Integers

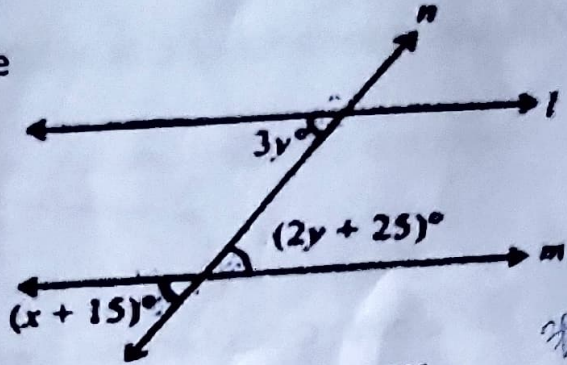


Q15. In figure, If  $\angle ABC = 20^\circ$  then find  $\angle AOC$

- (a)  $40^\circ$                       (b)  $90^\circ$
- (c)  $150^\circ$                     (d)  $180^\circ$



Q16. In the given figure, if  $l \parallel m$ , what is the value of  $x$ ?



- (a)  $30^\circ$                       (b)  $45^\circ$
- (c)  $50^\circ$                       (d)  $60^\circ$

Q17. In a triangle ABC, it is given that base = 12cm and height = 5cm. Its area is

- (a)  $60\text{cm}^2$                     (b)  $30\text{cm}^2$
- (c)  $15\sqrt{3}\text{cm}^2$             (d)  $45\text{cm}^2$

Q18. For two triangles, if two angles and the included side of one triangle are equal to two angles and the included side of another triangle, then the congruence rule is

- (a) SAS                      (b) AAS
- (c) ASA                      (d) AAA

In the question number 19 and 20, a statement of assertion (A) is followed by a statement of reason (R).

Choose the correct option.

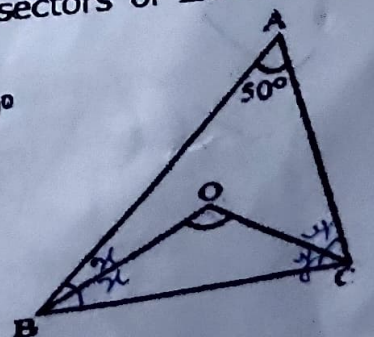
- (a) Both assertion(A) and reason (R) are true and reason (R) is correct explanation of assertion (A).
- (b) Both assertion(A) and reason (R) are true but reason (R) is not correct explanation of assertion (A).
- (c) Assertion (A) is true but reason(R) is false.
- (d) Assertion (A) is false but reason(R)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

Q19. Assertion: The side of an equilateral triangle is 6 cm, then the area of the triangle is  $9\text{cm}^2$  (b) (d)

Reason: All the sides of an equilateral triangle are equal.

Q20. Assertion (A): In the given figure, BO and CO are the bisectors of  $\angle B$  and  $\angle C$  respectively. If  $\angle A = 50^\circ$  then  $\angle BOC = 115^\circ$

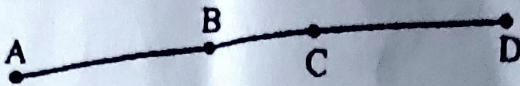
Reason: The sum of all the interior angles of a triangle is  $180^\circ$  (a)





**SECTION-B**

- Q21. Prove that a cyclic parallelogram is a rectangle.
- Q22. The angles of a quadrilateral are in the ratio 3:3:5:7. Find all the angles of the quadrilateral.
- Q23. In the given figure if  $AC = BD$ , then prove that  $AB = CD$ .



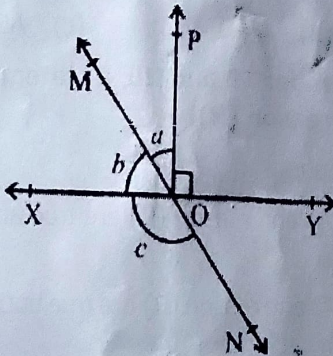
Or

If a point C lies between two points A and B such that  $AC = BC$ , then prove that  $AC = \frac{1}{2} AB$ .

- Q24. The angles of a triangle are in the ratio 2 : 3 : 4. Find the angles of the triangle.

OR

In Fig, lines XY and MN intersect at O. If  $\angle POY = 90^\circ$  and  $a : b = 2 : 3$ , find c.



- Q25. The following table gives the frequencies of most commonly used letters a, e, i, o, r, t, u from a page of a book

Letters	a	e	i	o	r	t	u
Frequency	75	125	80	70	80	95	75

Represent the information above by a bar graph.

**SECTION-C**

- Q26. Write three solutions for the given linear equation :  $2x + y = 7$

- Q27. Factorise  $(a-b)^3 + (b-c)^3 + (c-a)^3$

Or

Simplify  $(x+y+z)^2 - (x-y-z)^2$



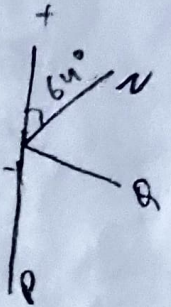
Q28. Find the value of

$$\left\{ 5 \left( 8^{\frac{1}{3}} + 27^{\frac{1}{3}} \right)^3 \right\}^{\frac{1}{4}}$$

Q29. Sides of a triangle are in the ratio of 12: 17 : 25 and its perimeter is 540cm. Find its area.

Q30. Draw a histogram to represent the following grouped frequency distribution

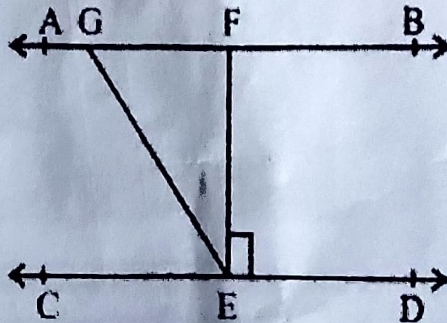
Length (in mm)	Number of leaves
118-126	5
127-135	3
136-144	9
145-153	12
154-162	5
163-171	4
172-180	2



Q31. It is given that  $\angle XYZ = 64^\circ$  and XY is produced to point P. Draw a figure from the given information. If ray YQ bisects  $\angle ZYP$ , find  $\angle XYQ$  and reflex  $\angle QYP$ .

OR

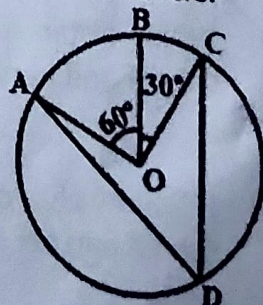
In Figure, if  $AB \parallel CD$ ,  $EF \perp CD$  and  $\angle GED = 126^\circ$ , find  $\angle AGE$ ,  $\angle GEF$  and  $\angle FGE$ .



**SECTION-D**

Q32. (i) 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.

(ii) In the given figure A, B and C are three points on a circle with centre O such that  $\angle BOC = 30^\circ$  and  $\angle AOB = 60^\circ$ . If D is a point on the circle other than the arc ABC, find  $\angle ADC$ .





Q33. Factorise :  $x^3 - 3x^2 - 9x - 5$

Q34. If  $a=5+2\sqrt{6}$  and  $b=\frac{1}{a}$  then what will be the value of  $a^2+b^2$ ?

OR

If  $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a+b\sqrt{3}$ , find the value of a and b.

Q35. Sarika distributes chocolates on the occasion of children's Day. She gives 5 chocolates to each child and 20 chocolates to adults. If number of children is represented by 'x' and total distributed chocolates as 'y'.

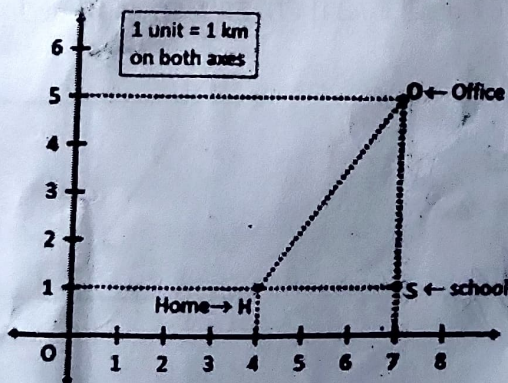
- (a) Write it in the form of linear equation in two variables.
- (b) If she distributed 145 chocolates in total, find number of children.

OR

Write  $5y = 8x$  in the form of  $ax+by+c=0$ . Also find the values of a, b and c and two solutions of the equation. How many solutions of this equation can you find out?

### SECTION-E

Q36. Saumya has to reach her office every day at 10:00 am. On the way to her office, she drops her son at school. Now, the location of Saumya's house, her son's school and her office are represented by the map below. Using the details given, answer the following questions.



- (i) Find the coordinates of Saumya's home.
- (ii) Name the figure formed by joining the coordinates of Saumya's house, her son's school and her office.
- (iii) Which distance is shorter : Saumya's house and her son's school? Or Her son's school and her office?

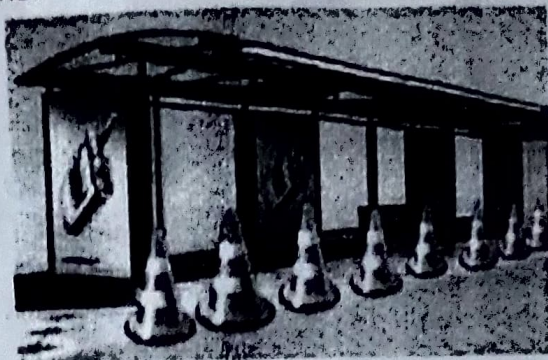
OR

(iii) If Saumya has changed her office to a new location that is exactly mid-way of the school and her home, then what are the co-ordinates of her new office location.



37. Read the text carefully and answer the questions:

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.



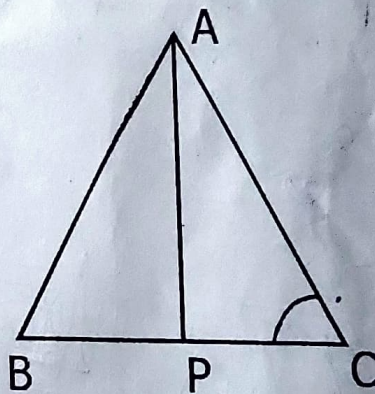
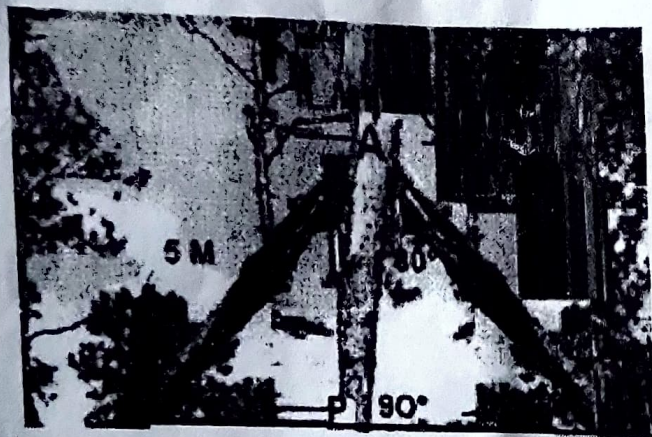
(Use  $\pi=3.14$  and take  $\sqrt{1.04} = 1.02$ )

- (i) Find the Curved surface area of cone.
- (ii) If the cost of cardboard is Rs. 100 per  $m^2$ , then what will be the cost of 50 such cones?
- (iii) What is the volume of cone?

OR

- (iii) If the outer side of each cone is to be painted and the cost of painting is 12 per  $m^2$ , What will be the cost of painting all these cones?

Q38. In a forest a big tree got broken due to heavy rain and wind. Due to this rain, big branches AB and AC with length 5 metre fell down on the ground. Branch AC makes an angle of 30 degree with the ground. The distance of point B from P is 4 metre. You can observe that triangle ABP is congruent to triangle ACP.



- (i) Show that  $\Delta APC$  and  $\Delta APB$  are congruent
- (ii) Find the value of  $\angle CAB$
- (iii) Find the total height of tree.

or

- (iii) Find the perimeter of  $\Delta ACP$