

1. What is the largest number that divides 245 and 1029, leaving the remainder 5 in each?
 - a. 15
 - b. 16
 - c. 9
 - d. 5
2. Consider the following distribution:

Class	0-5	5-10	10-15	15-20	20-25
Frequency	10	15	12	20	9

3. The sum of lower limits of the median class and the modal class is
 - a. 15
 - b. 25
 - c. 30
 - d. 35
4. If the two tangents inclined at an angle of 60° are drawn to a circle of radius 3 cm, then the length of each tangent is:
 - a. 3 cm
 - b. $3\sqrt{2}$
 - c. $3\sqrt{3}$
 - d. 6 cm
5. The simplest form of $\frac{1095116810951168}{1095116810951168}$ is:
 - a. $\frac{17261726}{17261726}$
 - b. $\frac{25262526}{25262526}$
 - c. $\frac{13161316}{13161316}$
 - d. $\frac{15161516}{15161516}$
6. One card is drawn at random from a well-shuffled deck of 52 cards. What is the probability of getting a Jack?
 - a. $\frac{326326}{326326}$
 - b. $\frac{152152}{152152}$
 - c. $\frac{113113}{113113}$
 - d. $\frac{352352}{352352}$

7. If one zero of the quadratic polynomial, $(k - 1)x^2 + kx + 1$ is -4 then the value of k is:
- $-54-54$
 - 5454
 - $-43-43$
 - 4343
8. Which of the following rational numbers is expressible as a terminating decimal?
- 124165124165
 - 1313013130
 - 20276252027625
 - 16254621625462
9. If α and β are the zeros of $(2x^2 + 5x - 9)$, then the value of $\alpha\beta$ is:
- $-52-52$
 - 5252
 - $-92-92$
 - 9292
10. The perimeter of a triangle with vertices $(0, 4)$, $(0, 0)$ and $(3, 0)$ is:
- $7+5-\sqrt{7+5}$
 - 5
 - 10
 - 12
11. If $P(-1, 1)$ is the midpoint of the line segment joining $A(-3, b)$ and $B(1, b + 4)$, then b is equal to:
- 1
 - -1
 - 2
 - 0

In Question numbers 11 to 15, fill in the blanks:

- Distance between $(a, -b)$ and (a, b) is _____.
- The value of k for which system of equations $x + 2y = 3$ and $5x + ky = 7$ has no solution is _____.
- The value of $(\cos^2 45^\circ + \cot^2 45^\circ)$ is _____.

14. The value of $(\tan 27^\circ - \cot 63^\circ)$ is _____.
15. If the ratio of the corresponding sides of two similar triangles is 2 : 3, then the ratio of their perimeters is _____.

Answer the following questions, Question numbers 16 to 20.

16. If $\sec \theta = \frac{257}{257}$, then find the value of $\cot \theta$.

OR

If $3 \tan \theta = 4$, then find the value

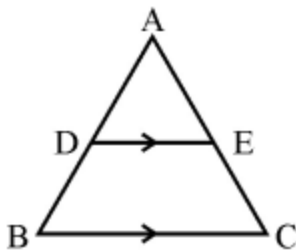
of $(3 \sin \theta + 2 \cos \theta)(3 \sin \theta - 2 \cos \theta)$

17. The perimeter of a sector of a circle of radius 14 cm is 68 cm. Find the area of the sector.

OR

The circumference of a circle is 39.6 cm. Find its area.

18. A letter of the English alphabet is chosen at random. Determine the probability that the chosen letter is a consonant.
19. In the figure, D and E are points on sides AB and AC respectively of a $\triangle ABC$ such that $DE \parallel BC$. If $AD = 3.6$ cm, $AB = 10$ cm and $AE = 4.5$ cm, find EC and AC.



20. If $3y - 1$, $3y + 5$, and $5y + 1$ are three consecutive terms of an A.P., then find the value of y .

Section – B

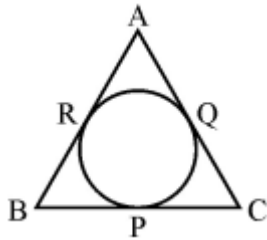
Question numbers 21 to 26 carry 2 marks each

21. A bag contains 5 red, 8 white, and 7 black balls. A ball is drawn at random from the bag. Find the probability that the drawn ball is
- red or white
 - not a white ball
22. Two dice are thrown at the same time. Find the probability of getting different numbers on the two dice.

OR

Two dice are thrown at the same time. Find the probability that the sum of the two numbers appearing on the top of the dice is more than 9.

23. In Fig., a circle is inscribed in a $\triangle ABC$, touching BC, CA and AB at P, Q and R respectively. If AB = 10 cm, AQ = 7 cm and CQ = 5 cm then find the length of BC.



24. Prove that
- $$\sec^2\theta + \operatorname{cosec}^2\theta = \sqrt{\sec^2\theta + \operatorname{cosec}^2\theta} = \tan\theta + \cot\theta$$

OR

Prove that: $\sin\theta - \cos\theta \sin\theta - \cos\theta = (\operatorname{cosec}\theta + \cot\theta)$

25. Three cubes each of volume 216 cm^3 are joined end to end to form a cuboid. Find the total surface area of the resulting cuboid.
26. Find the values of p for which the quadratic equation $x^2 - 2px + 1 = 0$ has no real roots.

Section – C

Question numbers 27 to 34 carry 3 marks each.

27. If 1 and -2 are the zeroes of the polynomial $(x^3 - 4x^2 - 7x + 10)$, find its third zero.
28. Draw a circle of radius 3 cm. From a point 7 cm away from its centre, construct a pair of tangents to the circle.

OR

Draw a line segment of 8 cm and divide it in the ratio 3 : 4.

29. A wire when bent in the form of an equilateral triangle encloses an area of $1213 - \sqrt{1213}$ cm². If the same wire is bent into the form of a circle, what will be the radius of the circle?
30. Prove
that $\cos\theta(1-\tan\theta) + \sin\theta(1-\cot\theta) = (\cos\theta + \sin\theta)\cos\theta(1-\tan\theta) + \sin\theta(1-\cot\theta) = (\cos\theta + \sin\theta)$

OR

Prove that $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$.

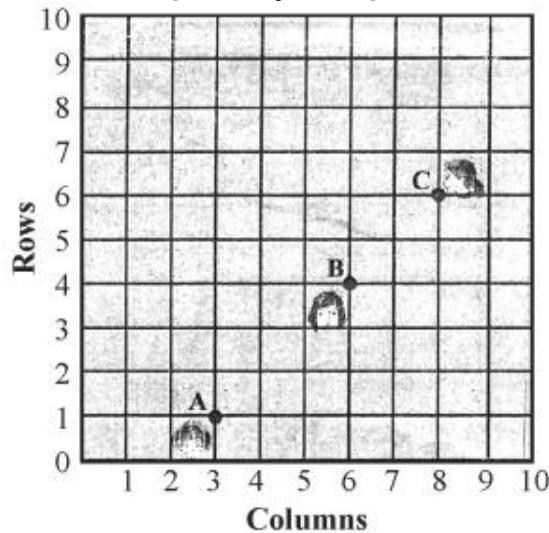
31. If $2 - \sqrt{2}$ is given as an irrational number, then prove that $(7 - 2 - \sqrt{2})$ is an irrational number.

OR

Find HCF of 44, 96, and 404 by prime factorization method. Hence find their LCM.

32. Prove that the parallelogram circumscribing a circle is a rhombus.

33. In the figure, the arrangement of desks in a classroom is shown. Ashima, Bharti, and Asha are seated at A, B, and C respectively. Answer the following :
- Find whether the girls are sitting in a line.
 - If A, B, and C are collinear, find the ratio in which point B divides the line segment joining A and C.



34. A number consists of two digits whose sum is 10. If 18 is subtracted from the number, its digit is reversed. Find the number.

Section – D

Question Nos. 35 to 40 carry 4 marks each.

35. Some students planned a picnic. The total budget for food was ₹ 2,000 but 5 students failed to attend the picnic and thus the cost for food for each member increased by ₹ 20. How many students attended the picnic and how much did each student pay for the food?
36. The sum of the first 6 terms of an A.P. is 42. The ratio of its 10th term to the 30th term is 1:3. Find the first and the 13th term of the A.P.

OR

Find the sum of all odd numbers between 100 and 300.

37. From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° , and the angle of depression of its foot is 45° . Find the height of the tower. Given that $3 - \sqrt{3} = 1.732$.

38. In a right triangle, prove that the square of the hypotenuse is equal to the sum of squares of the other two sides.

OR

Prove that the tangents drawn from an external point to a circle are equal in length.

39. A hemispherical depression is cut out from one face of a cubical wooden block of edge 21 cm, such that the diameter of the hemisphere is equal to the edge of the cube. Determine the volume of the remaining block.

OR

A solid metallic cylinder of diameter 12 cm and height 15 cm is melted and recast into 12 toys in the shape of a right circular cone mounted on a hemisphere of the same radius. Find the radius of the hemisphere and total height of the toy, if the height of the cone is 3 times the radius.

40. Find the mean of the following data:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	10	18	30	20	12	5