Deeksha

Sample Paper 2

Time: 3 Hours **MM: 80**

General Instructions

1. This question paper contains 4 printed pages.
2. This question paper consists of 30 questions in all. All questions are compulsory.
3. Section A comprises of 6 questions of 1 mark each. Section B comprises 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.

(Section – A)

Q 1: One card is drawn at random from a pack of cards. Find the probability of getting a diamond card.

Q 2: Divide $24x^2y^2 - 4xy$ by $2xy$.

Q 3: α and $\frac{1}{\alpha}$ are zeroes of polynomial $4x^2 - 2x + k + 7$. Find the value of k.

Q 4: A polygon of n sides has $\frac{n(n-3)}{2}$ diagonals. If a polygon has 9 diagonals, find the number of sides of the polygon.

Q 5: Simplify: $(1 + tan^2\theta)(1 - \sin\theta)(1 + \sin\theta)$

OR

Write the value of $\sin(45° + \theta) - \cos(45° - \theta)$.

Q 6: If ΔABC ~ ΔPQR ar(ΔABC) = 16 cm^2 and ar(ΔPQR) = 81 cm^2, AB = 2 cm find PQ.

(Section – B)

Q 7: Find the ratio in which the line segment joining the points A (3, –6) and B (5, 3) is divided by x-axis.

Q 8: Find HCF of 455 and 84 by Euclid's division lemma.

Q 9: Two dice are rolled simultaneously. Find the probability that the sum of the two numbers appearing on the top is more than and equal to 10.

Q 10: Construct a more than cumulative frequency distribution table:

C.I	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100	100 – 110
F	13	15	17	21	23	19

Q 11: If the 21st term of an A.P. is 25, find the sum of its first 41 terms.

Q 12: Three vertices of a parallelogram taken in order are (1, 2), (2, 4) and (3, 7). Find its fourth vertex.

(Section – C)

Q 13: Prove that: $2(\sin^6 A + \cos^6 A) - 3(\sin^4 A + \cos^4 A) + 1 = 0$.

OR

If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, show that $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$.

Q 14: If ABCD is a rhombus, then prove that $4AB^2 = AC^2 + BD^2$.

Q 15: The probability of a defective egg in a lot of 400 eggs is 0.035. Calculate the number of defective eggs in the lot. Also calculate the probability of taking out a non-defective egg from the lot.

Q 16: Three cubes of a metal whose edge are in the ratio 3:4:5 are melted and converted into a single cube whose diagonal is $12\sqrt{3}$ cm. Find the edge of three cubes.

Q 17: On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find $g(x)$.

Q 18: Solve the following system of linear equations graphically:
$2x + y + 6 = 0, 3x - 2y - 12 = 0$

Also find the vertices of the vertices of the triangle formed by the lines representing the above equations and x – axis.

OR

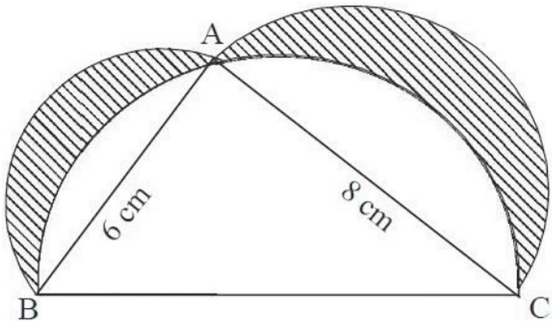
Two places A and B are 120 km apart from each other on highway. A car starts from A and another from B at the same time. If they move in the same direction, they meet in 6 hours and if they move in opposite directions, they meet in 1 hour and 12 minutes. Find the speed of cars.

Q 19: Find the sum of the first 25 terms of an A.P. whose n^{th} term is given by $t_n = 7 - 3n$.

OR

Which term of the Arithmetic Progression 3, 10, 17 … will be 84 more than its 13^{th} term?

Q 20: In figure, ABC is a triangle right angled at A. Semi circles are drawn on AB, AC and BC as diameters. Find the area of the shaded region.

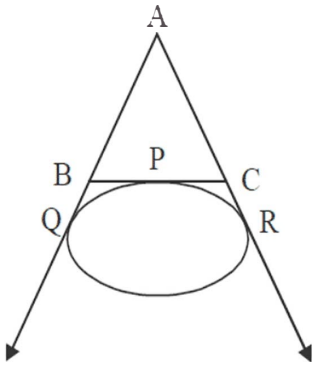


Q 21: If the distances of P(x, y) from A(5, 1) and B$(-1, 5)$ are equal, prove that $3x = 2y$.

OR

Find the distance of the point (1, 2) from the mid-point of the line segment joining the points (6, 8) and (2, 4).

Q 22: In the given figure, a circle touches the side BC of ΔABC at P and touches AB and AC produced at Q and R respectively. If AQ = 5 cm, find the perimeter of ΔABC.



(Section – D)

Q 23: Construct a circle of radius 3 cm. Take a point P on it. Construct a tangent to circle at P without using the centre of the circle.

Q 24: Prove:

$$\frac{\tan A}{(1+tan^2A)^2}+\frac{cot}{(1+cot^2A)^2}=\sin A\cos A$$

OR

If $\frac{\cos\alpha}{\cos\beta}=m$ and $\frac{\cos\alpha}{\sin\beta}=n$, then prove that $(m^2+n^2)\cos^2\beta=n^2$.

Q 25: A cone of radius 10 cm is divided into two parts by a plane parallel to its base through the mid-point of its height. Compare the volumes of the two parts.

Q 26: A train covered a certain distance at a uniform speed. If the train would have been 6 km/hr faster, it would have taken 4 hours less than the scheduled time and if the train was slower by 6 km/hr, it would have taken 6 hours more than the scheduled time. Find the length of the journey.

Q 27: A bird is sitting on the top of a tree, which is 80 m high. The angle of elevation of the bird, from a point on the ground is 45°. The bird flies away from the point of observation horizontally and remains at a constant height. After 2 seconds, the angle of elevation of the bird from the point of observation becomes 30°. Find the speed of flying of the bird.

Q 28: Prove that the ratio of the areas of similar triangles is equal to the ratio of the squares on the corresponding sides.

Using the above result, find the ratio of the areas of ΔADC and ΔABC when ABC is right-angled triangle at A with AD ⊥ BC, BC = 12 cm and AC = 5 cm.

OR

In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

From the above theorem, ABC is a triangle, right angled at C and AC = $\sqrt{3}$ BC. Prove that $\angle ABC = 60°$.

Q 29: circular cylinder, 14 cm long is $88cm^2$. If the volume of the metal used in making the cylinder is 176 cm^3. Find the outer and inner diameters of the cylinder.

OR

A well, of diameter 3m, is dug 14 m deep. The earth taken out of it has been spread evenly all around it to a width of 4 m, to form an embankment. Find the height of the embankment. (Use $\pi = 22/7$)

Q 30: The median of the following distribution is 35, find the value of *a* and *b*.

Class - Interval	**Number of Workers**
0 – 10	10
10 – 20	20
20 – 30	*a*
30 – 40	40
40 – 50	*b*
50 – 60	25
60 – 70	15
Total	170

Answers

Section A

2. $12xy - 2$ 3. $k = -3$ 4. Number of sides = 6

5. **OR** 0 6. PQ = $\frac{9}{2}$

Section B

7. 2: 1 8. HCF = 7 9. $\frac{1}{-}$ 11. 1025

12. $(2, 5)$

Section C

15. $14, 0.965$ 16. 6 cm, 8 cm, 10 cm 17. $x^2 - x + 1$

18. (– 3, 0), (9, – 6), (4, 0) **OR** 60 km/h, 40 km/h 19. – 800 **OR** 25th term 20. 24 cm²

21. OR 5 22. 10 cm

Section D

25. 1:14 26. 720 27. 29.28 m

29. 5 cm, 3 cm OR Height = 1.125 m 30. a = 35, b = 25.

All answers are done properly, if still there is any error, please inform us for corrections. Thanks.