Instructions :-

(1) This question paper consists 54 question in four section A, B, C & D.

(2) Questions consists general option.

(3) Number indicating on right side of section are marks of the questions.

(4) If required draw the figure.

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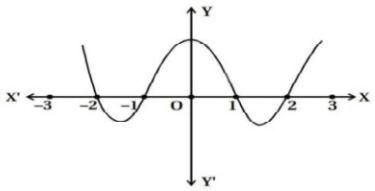
SECTION - A [24]

- **Answer the questions as indicated in instruction : (Question no. 1-24) (Each carries 1 mark)**
- **Following question are multiple choice question : (Question no. 1-6) (Each carries 1 mark)**

1. If HCF (65, 117) = 65m-117, then m = ...

A. 4 B. 2 C. 1 D. 3

2. Numbers at zeroes at the graph at p(x) between 0 and 4 are .....



A. 3 B. 6 C. 2 D. 4

3. The pair of linear equation $2x + 3y = 5$ and $4x+6y-100$ has ..... solutions.

A. infinitely many B. unique C. zero D. none of the given.

4. If $\frac{7}{2}$ is one of the roots of equation $2x^2 - 5x + k = 0$, then k = ...

A. 7 B.-7 C. 4 D. 2

5. For a given AP , $a_{18} - a_{14} = 32$. Then, the common difference of that AP is....

A. 8 B. -8 C. -4 D. 4

6. All the squares are ..... figures.

A. similar B. congruent C. equiareal D. coincidental

- **Fill in the blanks with approprite answes : (Question no. 7-12) (Each carries 1 mark)**

7. The distance of the point (-6, 8) from the origin is .....

8. $\tan^2\theta - \sec^2\theta =$ .....

9. If the radii of two concentric circles are 17 cm and 15 cm, then the length of each chord of one circle which is tangent to the other circle is..... cm.

10. The ratio of the radii of two circles is 3:5. Then, the ratio of their circumferences is .....

11. The formula to find the volume of a 5-rupee coin is V=.....

12. The class mark of the class 30 - 40 is .....

- **State whether the following statements are true or false : (Question no. 13-16) (Each carries 1 mark)**

13. The probability of having 53 Mondays in the year 2020 is $\frac{3}{7}$.

14. True or False : The multiplication of zero of cubic polynomial $p(x) = x^3 + 5x^2 - 2x - 24$ is –24.

15. The discriminant of the equation $5x^2 - 9x+5= 0$ is 181.

16. Points (8, 6), (6, 4) and (4, 2) cannot be the vertices of a triangle.

❍ **Answer the questions in one sentance : (Question no. 17-20) (Each carries 1 mark)**

17. If the radius of a circle is doubled. how many times is the area of the new circle as compared to the original circle ?

18. If the median of the observations 8, 12, 17, x, 25, 28 is 20, find x.

19. State the HCF of 91 and 143.

20. Find the discriminant of the equation $9x^2 - 16=0$.

❍ **Match the following with correct alternative : : (Question no. 21-24) (Each carries 1 mark)**

Part :- A	**Part :- B**
21. A quadratic equation has no any real zeroes. So, its graph	(a) intersects X-axis at two point
22. A quadratic equation has two real and distint zeroes. So, its graph	(b) does not intersect X-axis
	(c) touch X-axis

Part :- A	**Part :- B**
23. $\tan\theta$	(a) $\frac{1}{\cos\theta}$
24. $\sec\theta$	(b) $\frac{\sin\theta}{\cos\theta}$
	(c) $\frac{\cos\theta}{\sin\theta}$

SECTION - B [18]

❍ **Answer any 9 questions out of 13 questions (Question no. 25-37) (Each carries 2 mark)**

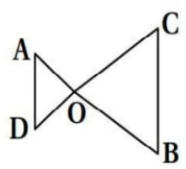
25. The HCF of two numbers is 85 and their LCM is 7735. If one of those numbers is 595, find the other number.

26. Solve $2x + 3y = 11$ and $2x - 4y = -24$ and hence find the value of "m" for which $y = mx + 3$.

27. The sum of the squares of two consecutive odd positive integers is 650. Find the numbers.

28. In an agriculture field, there are 23 cotton plants in the first row, 21 in the second row, 19 in the third row and so on. There are 5 cotton plants in the last row. How many rows are there in the agriculture field ?

29. In the given figure, $OA \times OB = OC \times OD$ then prove that $\angle A = \angle C$ and $\angle B = \angle D$



30. If A, B and C are interior angles of triangle ABC, then show that $\sin^2\frac{A}{2} + \sin^2\left(\frac{B+C}{2}\right) = 1$.

31. Prove that $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$ using the identity $\sec^2\theta = 1 + \tan^2\theta$

32. Two concentric circles are of radii 13 and 12 cm. Find the length of the chord of the larger circle which touches the smaller circle.

33. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread out to form a platform 22 m by 14 m. Find the height of the platform.

34. In a frequency distribution $l = 40$, $f_1 = 50$, $f_0 = 27$, $f_2 = 28$ and $h = 10$ then find mode.

35. Find the median of 0.05, 0.50, 0.055, 0.505 and 0.55.

36. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting a red colour card.

37. A lot of 20 bulbs contain 4 defective ones. One bulb is draw at random from the lot. What is the probability that is not defect.

SECTION - C [18]

Answer any 6 questions out of 9 questions (Question no. 38-46) (Each carries 3 mark)

38. Obtain the zeroes of $p(x) = x^2 + 9x + 14$. Also find the relation between the zeroes and coefficients.

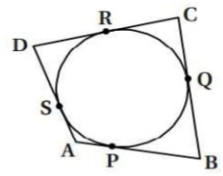
39. If 4 is the zero of the cubic polynomial $p(x) = x^3 - 3x^2 - 6x + 8$ then find the other zeroes of $p(x)$.

40. Under a project of 'one child one tree' undertaken by a school students plants the trees in a pattern of first row three plants, second row 5 plants and third row 7 plants and so on. The last row has 37 plants. Find the number of students in the school

41. Which term of the AP 3, 15, 27, 39, ... will be 132 more than its 54^{th} term.

42. Find a point on the Y-axis which is equidistant from the points P(6, 5) and Q(–4, 3).

43. A quadrilateral ABCD isdrawn to circumscribe a circle (see Figure). Prove that $AB + CD = AD + BC$



44. AB is a chord of the circle with centre O and radius 13 cm. AB = 24. The tangents drawn at the points A and B intersect each other at the point P. Find AP.

45. A car consists two wipers which doesnot overlap eachother. The length of each, wiper is 25 cm and it cleans the glass blade at 115°. Obtain the area of region cleaned by the wiper.

46. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting

(i) a king of red colour (ii) a red face card

SECTION - D [20]

Answer any 5 questions out of 8 questions (Question no. 47-54) (Each carries 4 mark)

47. Form the pair of linear equations in the following problems, and find their solutions (if they exist) by elimination method : Five years ago, Nuri was thrice as old as Sonu. Ten years later, Nuri will be twice as old as Sonu. How old are Nuri and Sonu ?

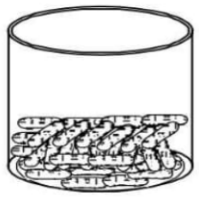
48. Sum of the areas of two squares is 468 m^2 . If the difference of their perimeters is 24m, find the sides of the two squares

49. Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that $\triangle ABC \sim \triangle PQR$.

50. A girl of height 90 cm is walking away from the base of a lamp-post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds.

51. From a point P on the ground the angle of elevation of the top of a 10 m tall building is 30°. A flag is hoisted at the top of the building and the angle of elevation of the top of the flagstaff from P is 45°. Find the length of the flagstaff and the distance of the building from the point P. (You may take $\sqrt{3} = 1.732$)

52. A gulab jamun, contains sugar syrup up to about 30% of its volume. Find approximately how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5 cm and diameter 2.8 cm (see Figure). (take $\pi = \frac{22}{7}$)



53. A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel.

54. Consider the following distribution of daily wages of 50 workers of a factory.

Daily wages (in Rs.)	500-520	520-540	540-560	560-680	580-600
Number of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory by using step deviation method.

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SECTION - A [24]

- **Answer the questions as indicated in instruction : (Question no. 1-24) (Each carries 1 mark)**
- **Following question are multiple choice question : (Question no. 1-6) (Each carries 1 mark)**

1. The HCF of 15 and 35 is.....

A. 5 B. 7 C. 105 D. 15

2. The maximum number of zero's that a cubic polynomial can have ?

A. 1 B. 2 C. 3 D. 0

3. The sum of the numerator and the denominator of a fraction is 16. If 5 is added to its denominator, it reduces to $\frac{1}{2}$. Then, that fraction is .....

A. $\frac{9}{7}$ B. $\frac{4}{12}$ C. $\frac{7}{9}$ D. $\frac{12}{4}$

4. If the roots of the equation $6x^2 - 13x + k = 0$ are reciprocal of each other, then k = ...

A. -13 B. -6 C. 6 D. 78

5. For a given AP, if a = 7, d = 3 and n = 8, then a_n = ...

A. 25 B. 2 6 C. 27 D. 28

6. $\Delta ABC \sim \Delta DEF$. If $\angle A = 45^o$ and $\angle E = 56^o$, then $\angle C$ =.....

A. 45^o B. 56^o C. 101^o D. 79^o

- **Fill in the blanks with approprite answes : (Question no. 7-12) (Each carries 1 mark)**

7. One end point of a diameter of a circle is (0, 0) and the centre of the circle is(-2, 4). Then, the other end point of the diameter is.....

8. $\sin^2\theta + \cos^2\theta$ = ...

9. ABCD is a cyclic quadrilateral. If $\angle$ B=60°, then $\angle$ D= .....

10. The area of a quadrant of a circle with radius 28 cm is ..... cm^2.

11. If the volume of a cube is 1728 cm^3. the length of its edge is..... cm.

12. The mean of first n natural numbers is .....

- **State whether the following statements are true or false : (Question no. 13-16) (Each carries 1 mark)**

13. In a class, there are 35 boys and 25 girls. The probability that a girl is elected as the monitor is $\frac{5}{12}$.

14. True or False : If the graph at polynomial intersects X-axis at only one point then polynomial can't be quadratic polynomial

15. A quadratic equation has at the most two real roots.

16. The distance between the points (8, 10) and (11, 14) is 5.

❍ **Answer the questions in one sentance : (Question no. 17-20) (Each carries 1 mark)**

17. Find the area of a semicircle with diameter 7 cm.

18. If the mean of 5, 12, 8, 15, 16, 21 and x is 13, find x.

19. State the LCM of 72 and 225.

20. Find the discriminant of the equation $5\sqrt{2}x^2+8x-3\sqrt{2}=0$.

❍ **Match the following with correct alternative : : (Question no. 21-24) (Each carries 1 mark)**

	Part :- A	**Part :- B**
21.	What is the graph of linear polynomial ?	(a) line
22.	What is the graph of quadratic polynomial ?	(b) Parabola
		(c) Ellipse

	Part :- A	**Part :- B**
23.	$\sin 30^o$	(a) 1
24.	$\tan 45^o$	(b) $\frac{\sqrt{3}}{2}$
		(c) $\frac{1}{2}$

SECTION - B [18]

❍ **Answer any 9 questions out of 13 questions (Question no. 25-37) (Each carries 2 mark)**

25. Prove that $\sqrt{5}$ is irrational

26. Solve the pair of equations : $\frac{2}{\sqrt{x}}+\frac{3}{\sqrt{y}}=2; \frac{4}{\sqrt{x}}-\frac{9}{\sqrt{y}}=-1$

27. Find the roots by factorisation : $\sqrt{2}x^2+7x+5\sqrt{2}=0$

28. Find the sum of first 20 multiples of 7.

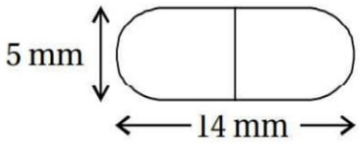
29. A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.

30. Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$.

31. If $\sin(A-B)=\frac{1}{2}, \cos(A+B)=\frac{1}{2}, 0^o < A+B \le 90^o, A > B$, find A and B.

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

33. A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends (see Fig.). The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.



34. The mean of following frequency distribution is 2.6 then find y

x	1	2	3	4	5
f	4	5	y	1	2

35. From the following grouped data find $\frac{n}{2} - cf$.

Class	0-10	10-20	20-30	30-40	40-50
Frequency	5	15	13	17	10

36. A die is tossed once. Find the probability of getting (i) an odd number (ii) Greater than 5.

37.

Marks scored	20	25	28	29	33	38	42	43
Frequency	6	20	24	28	15	4	2	1

a) Find the probability of the students getting more than 40 marks.

b) Find the probability of the students getting less than 30 marks.

SECTION - C [18]

Answer any 6 questions out of 9 questions (Question no. 38-46) (Each carries 3 mark)

38. Find the zeroes of the quadratic polynomial $x^2 + 7x + 10$ and verify the relationship between the zeroes and the coefficients.

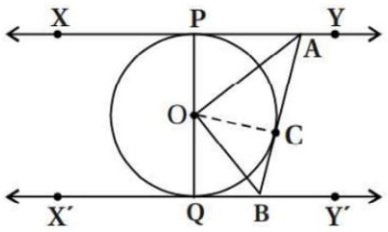
39. Find a and b if $a + b = 4$ and $x + 2$ is factor of polynomial $x^2 + ax + 2b$.

40. The sum of 4th and 8th terms of an AP is 24 and the sum of 6th and 10th terms is 44. Find the first three terms of the A. P.

41. Find the 31st term of an AP, whose 11th term is 88 and 16th term is 73. Which term of this series will be the 1st negative term ?

42. A(–4, 2) B(–2, 1) and C(4, –2) are collinear points. In which ratio does the point B divide AC from A's ?

43. In Figure, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB = 90°$.



44. A quadrilateral is drawn to circumscribe a circle, then prove that the sum of it's opposite sides are equal.

45. A chord of a circle of radius 10 cm makes a right angle at the centre. Find the areas of the minor and major segments of the circle. (Take $\pi = 3.14$)

46. Two dice are tossed together write all possible outcomes of this experiment. Find the probability of getting

(i) 7 as the sum

(ii) a sum greater than 10.

(iii) a sum less than 13.

SECTION - D [20]

O **Answer any 5 questions out of 8 questions (Question no. 47-54) (Each carries 4 mark)**

47. Form the pair of linear equations for the following problems and find their solution by substitution method. A fraction becomes $\frac{9}{11}$, if 2 is added to both the numerator and the denominator. If, 3 is added to both the numerator and the denominator it becomes $\frac{5}{6}$. Find the fraction.

48. A flight take off one hour late from Ahmedabad airport. It has to increase its speed 100 km/hr to reach 1200 km away at a time. Find is original speed.

49. ABCD is a trapezium in which AB || DC and its diagonals intersect each other at the point O. Show that

$$\frac{AO}{BO} = \frac{CO}{DO}$$

50. Two poles of length 6 m and 11 m are standing on plane ground. If distance between end points of poles is 12 m. Then find distance between upper ends of poles.

51. A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60°. After some time, the angle of elevation reduces to 30°. Find the distance travelled by the balloon during the interval.

52. A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel.

(take $\pi = \frac{22}{7}$)

53. A hemispherical depression is cut out from one face of a cubical wooden block such that the diameter l of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.

54. If the median of the following data is 28.5, then find the value of x and y.

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	Total
Frequency	5	x	20	15	y	5	60

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SECTION - A [24]

- **Answer the questions as indicated in instruction : (Question no. 1-24) (Each carries 1 mark)**
- **Following question are multiple choice question : (Question no. 1-6) (Each carries 1 mark)**

1. $\sqrt{9}+5$ is a/an .....

A. integer B. irrational C. fraction D. mixed fraction

2. If $2x^2 + 3x + 1 = (x + 2)(2x - 1) + m$ then m = ...

A. 3 B. -3 C. 2 D. 0

3. If the grpahs of equations x - ky = 2 and 3x + 2y = -5 are intersecting lines then.....

A. $k = \frac{2}{3}$ B. $k \neq -\frac{2}{3}$ C. $k = \frac{3}{2}$ D. $k \neq -\frac{3}{2}$

4. Among the following equations, equation ..... has no real roots.

A. $x^2 - 4x + 3\sqrt{2} = 0$ B. $x^2 + 4x - 3\sqrt{2} = 0$

C. $x^2 - 4x - 3\sqrt{2} = 0$ D. $3x^2 + 4\sqrt{3}x + 4 = 0$

5. For a given AP, if d = -4, n = 7 and $a_n = 4$, then a =

A. 6 B. 7 C. 20 D. 28

6. In ΔABC and ΔDEF, $\frac{AB}{DE} = \frac{BC}{FD}$. If ..... then the triangles are similar.

A. $\angle B = \angle E$ B. $\angle A = \angle D$ C. $\angle B = \angle D$ D. $\angle A = \angle F$

- **Fill in the blanks with approprite answes : (Question no. 7-12) (Each carries 1 mark)**

7. The distance between the points (6, 8) and (3, 4) is .....

8. If $\cos A = \frac{4}{5}$, then tan A = ...

9. A tangent to a circle touches the circle at ..... points.

10. If the radius of a circle is diminished by 10%, its area diminishes by.....%.

11. The surface areas of two spheres are in the ratio 1:4. Then, the ratio of their volumes is .....

12. If the mean of 6, 7, x, 8, y, 14 is 9, then x + y = ...

- **State whether the following statements are true or false : (Question no. 13-16) (Each carries 1 mark)**

13. $P(E) + P(\overline{E}) = -1$

14. True or False : 2 is one zero at $p(x) = x^2 - 6x + 8$ polynomial

15. The equation $x^2 - 3x + 5 = 0$ has no real roots.

16. Points (2, 4), (6, 4) and (4, 8) are collinear points.

❍ **Answer the questions in one sentance : (Question no. 17-20) (Each carries 1 mark)**

17. The radius of a circle is 8 cm. Find the area of a square inscribed in the circle.

18. If the mode of the data 16, 15, 17, 16, 15, x, 19, 17, 14 is 15, then find x.

19. State the smallest integer which is exactly divisible by 52 and 117 both.

20. State the nature of roots of the quadratic equation $ax^2 + bx + c = 0$. $(b^2 - 4ac > 0)$

❍ **Match the following with correct alternative : : (Question no. 21-24) (Each carries 1 mark)**

	Part :- A	**Part :- B**
21.	For a cubic polynomial $\alpha\beta\gamma = ...$	(a) $-\frac{b}{a}$
22.	For a cubic polynomial $\frac{1}{\alpha}+\frac{1}{\beta}+\frac{1}{\gamma}=.....$	(b) $-\frac{d}{a}$
		(c) $\frac{c}{a}$

	Part :- A	**Part :- B**
23.	$\sin 45^\circ$	(a) 1
24.	$\tan 30^\circ$	(b) $\frac{1}{\sqrt{2}}$
		(c) $\frac{1}{\sqrt{3}}$

SECTION - B [18]

❍ **Answer any 9 questions out of 13 questions (Question no. 25-37) (Each carries 2 mark)**

25. Pencils are sold in boxes containing 10 pencils each and notebooks are sold in packets containing 12 notebooks each. How many boxes of pencils and packets of notebooks at least should Ariv purchase so that he has equal number of pencils and notebooks?

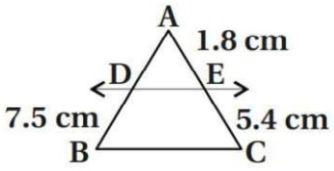
26. Find the value of k for the following equations having infinietly many solutions :

$3x - (k + 1)y = 20$ and $(k + 2)x - 10y = 40$

27. Find the roots : $3x^2 - 4\sqrt{3}x + 4 = 0$

28. How many three-digit numbers are divisible by 7 ?

29. In the given figure, DE || BC. Find AD.



30. Evaluate : $4(\sin^4 30^o + \cos^4 60^o) - \frac{2}{3}(\sin^2 60^o - \cos^2 45^o) + \frac{1}{2}\tan^2 60^o$

31. If $\sin 6\theta = \cos(2\theta + 10^o)$ where 6θ is an acute anlge, find the value of θ.

32. Two concentric circles are of radii 7 cm and 25 cm. Find the length of the chord of the larger circle which touches the smaller circle.

33. On his birthday Prakhar distributes cake of length 50 cm, width 25 cm and height 10 cm equally among his 50 friends, then how much cake each friend will get ?

34. If the mean of x, x + 3, x + 6, x + 9 and x + 12 is 10 then find x.

35. The following data gives the information on the observed life times (in hours) of 225 electrical components:

Life times (in hr.)	10-20	20-40	40-60	60-80	80-100	100-120
Frequency	10	35	52	61	38	29

Determine the modal lifetimes of the components.

36. There are 65 students in a class VIII. 20 students know drawing. One student is selected randomly. Find the probability that the selected student does not knows drawing ?

37. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting :

(i) a spade (ii) a red face card

SECTION - C [18]

Answer any 6 questions out of 9 questions (Question no. 38-46) (Each carries 3 mark)

38. If one of the zeroes of $p(x) = 3x^3 - x^2 - ax - 45$ is 3, then find a.

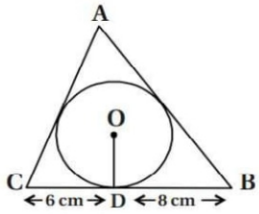
39. Find the cubic polynomial whose sum of the zeroes, the sum of the products of two zeroes and the products are 2, –7 and –14.

40. The first and last terms of an AP are 5 and 45 respectively. If the sum of all terms is 400, then find the number of the terms and the common difference.

41. Nitya has to send her daughter to school after 12 weeks. She requires Rs. 3,150 for the same. She saves Rs. 100 in the first week and then increased her weekly saving by Rs.30. Find whether Nitya will be able to fulfil her requirements.

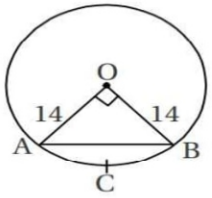
42. Find the coordinates of the points which divides the line segment joining A(–2, 2) and B(2, 8) into four equal parts.

43. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively (see Figure). Find the sides AB and AC.



44. Prove that "The lengths of tangents drawn from an external point to a circle are equal."

45. OA and OB are two radii of the circle with centre O having length 14 cm. Obtain the area of minor part of circle.



46. A box contains 100 boards which are numbered from 1 to 100. If one board is drawn at random from the box, find the probability that it bears,

(i) an even prime numbers. (ii) A number divisible by 7 (iii) A number with unit digit 9

SECTION - D [20]

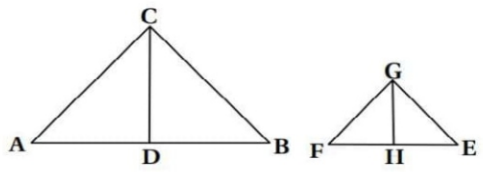
Answer any 5 questions out of 8 questions (Question no. 47-54) (Each carries 4 mark)

47. Form the pair of linear equations for the following problems and find their solution by substitution method. Five years hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages ?

48. The sum of the reciprocal of Rehman's age before 3 years and after 5 years is $\frac{1}{3}$ Find his present age.

49. CD and GH are respectively the bisectors of $\angle ACB$ and $\angle EGF$ such that D and H lie on sides AB and FE of ΔABC and ΔEFG respectively . If $\Delta ABC \sim \Delta EGF$, show that :

(i) $\frac{CD}{GH} = \frac{AC}{FG}$ (ii) $\triangle DCB \sim \triangle HGE$ (iii) $\triangle DCA \sim \triangle HGF$

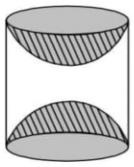


50. In $\triangle PQR$, $\angle Q = 90^o$ and PM is median. Prove that $PR^2 = PM^2 + 3RM^2$.

51. From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30° and 60° respectively. If the bridge is at a height of 3 m from the banks, find the width of the river.

52. A spherical glass vessel has a cylindrical neck 8 cm long, 2 cm in diameter; the diameter of the spherical part is 8.5 cm. By measuring the amount of water it holds, a child finds its volume to be 345 cm^3. Check whether she is correct, taking the above as the inside measurements, and $\pi = 3.14$.

53. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in Fig. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the total surface area of the article.



54. A life insurance agent found the following data for distribution of ages of 100 policy holders. Calculate the median age, if policies are given only to persons having age 18 years onwards but less than 60 year.

Age (in your)	Number of policy holders
Below 20	2
Below 25	6
Below 30	24
Below 35	45
Below 40	78
Below 45	89
Below 50	92
Below 55	98
Below 60	100

Paper No :- 01

SECTION :- A

(1) B	(2) C	(3) C	(4) B
(5) A	(6) A	(7) 10	(8) -1
(9) 16	(10) 3 : 5	(11) $\pi r^2 h$	(12) 10
(13) False	(14) False	(15) False	(16) True
(17) 4 times	(18) 23	(19) 13	(20) 0
(21) (b)	(22) (a)	(23) (b)	(24) (a)

Paper No :- 02

SECTION :- A

(1) A	(2) C	(3) C	(4) C
(5) D	(6) D	(7) (-4, 8)	(8) 1
(9) 120^o	(10) 616 cm^2	(11) 12 cm	(12) $\frac{n+1}{2}$
(13) True	(14) False	(15) True	(16) True
(17) 19.25 or $\frac{77}{4}$	(18) 14	(19) 1800	(20) 184
(21) (a)	(22) (b)	(23) (c)	(24) (a)

Paper No :- 03

SECTION :- A

(1) A	(2) A	(3) B	(4) D
(5) D	(6) C	(7) 5	(8) $\frac{3}{4}$
(9) one	(10) 19	(11) 1 : 8	(12) 19
(13) False	(14) True	(15) True	(16) False
(17) 28	(18) 15	(19) 468	(20) Real & distint
(21) (b)	(22) (c)	(23) (b)	(24) (c)