DIET MALAPPURAM & VIJAYABHERI MALAPPRAM

SSLC MODEL EXAMINATION , MARCH 2022

SET-2

Mathematics

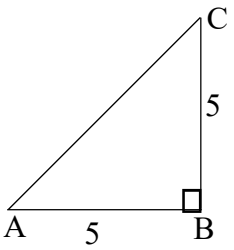
Time : $2\frac{1}{2}$ hours Total score : 80

PART-1

Section A

Answer any 4 of the questions from 1 to 6 [each carries 1 score (4x1=4)]

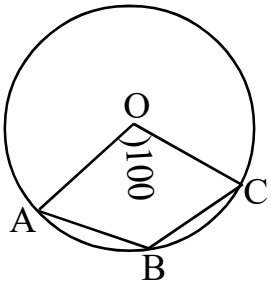
1. In the figure, $\angle B=90^0$, AB=BC=5cm. Find $\angle A$.



2. Write the coordinates of the Origin.
3. What is the 6^{th} term of the arithmetic sequence 5, 7, 9, . . .?
4. Write a first degree factor of the polynomial $P(x)=x^2-9$

   [9, 3, x-3, x-9]

5. O is the centre of the circle. $\angle AOC=100^0$



   What is $\angle ABC$?

   [100, 50, 260, 130]

6. 'x' is a positive number. Which of the following is a solution of the equation $(x-3)^2=0$?

   [3, -3, 0, 9]

Section B

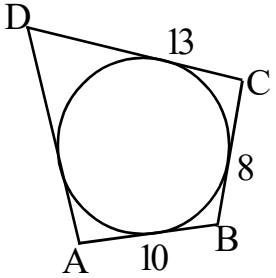
Answer all questions from 7 to 10. [each carries 1 score (4x1=4)]

7. The weight of a wooden square prism is 30 kilograms. What is the weight of the largest square pyramid that can be carved out of this prism ?

   (5 , 10, 15, 20)

8. In the figure, the circle is the incircle of the quadrilateral ABCD. AB = 10 cm, BC = 8 cm, CD=13 cm. What is the length of AD ?

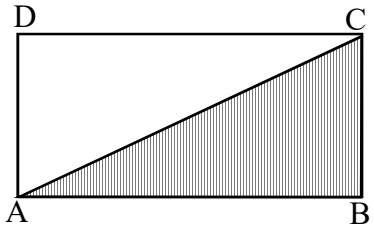
   (15 cm, 13 cm, 12 cm, 11 cm)



9. What is the common difference of the arithmetic sequence with algebra of its sum $4n^2$?

   (4, 2, 0, 8)

10. In the figure, ABCD is a rectangle.
If a dot is marked in the figure, without looking,|
What is the probability of the dot to be inside the shaded region ?

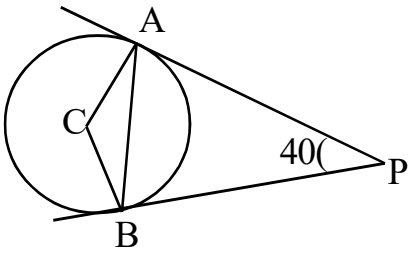


[1, $\frac{1}{2}$, $\frac{2}{1}$, $\frac{1}{4}$]

PART-2
Section A

Answer any three from questions from 11 to 15. [each carries 2 scores (3x2=6)]

11. PA, PB are tangents to the cirlce.
If $\angle P=40^0$ find the measures of the following angles.
a) $\angle ABP$, b) $\angle ABC$

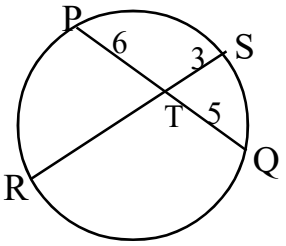


12. a) what is the sum of first 10 odd numbers ?
b) find the mean and median of first 10 odd numbers.

13. When the sides of a square are increased by 5 cm, its area became 225 sq.cm.
a) What is the side of the new square ?
b) What is the side of the first square ?

14. A sector of radius 10 cm is bent to form a cone of radius 4 cm.
a) What is the slant height of the cone ?
b) Find its curved surface area .

15. In the figure, PT = 6 cm, QT = 5 cm, ST = 3 cm.
Find RT.



Section : B

Answer any two from questions 16 to 18. [each carries 2 score (2x2=4)]

16. $x^2+y^2=64$ is the equation of a circle.
a) What is the radius of the circle ?
b) Write the coordinates of the centre of the circle.

17. a) What is the algebraic form of sum of the arithmetic sequence 1, 3, 5, . . . ?
b) What is the sum of first n terms of the arithmetic sequence n,3n,5n,.... ?

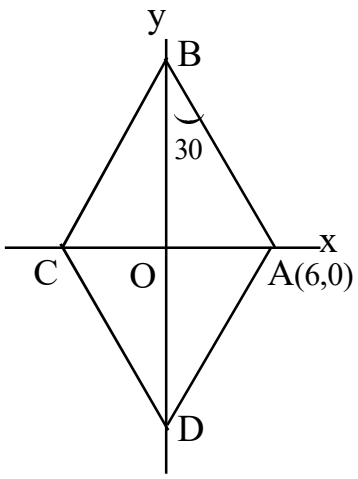
18. A box contains 10 white balls and some blue balls. If a ball is taken from the box, the probability to get a white ball is 1/3.
a) What is the total number of balls in the box ?
b) What is the probability to get a blue ball from the box ?

PART-3

Section: A

Answer any three from questions 19 to 23. [each carries 4 score (3x4=12)]

19. In the figure, ABCD is a rhombus.
A(6,0), $\angle ABO = 30^0$.



a) What is the length of OA ?

b) What are the coordinate of C ?

c) Write the coordinate of B, D,

20. Consider the arithmetic sequence 10, 18, 26 , ...

a) What is the common difference ?

b) Find the 11^{th} term.

c) What is the sum of first 21 terms ?

21. Draw a triangle with circumradius 4 cm and two angles $32\frac{1}{2}^0$, 40^0.

22. Draw a circle of radius 3 cm. Mark a point P at a distance of 7 cm from the centre. Draw tangents from this point.

23. A bag contains paper slips numbered from 1 to 10. Another bag contains paper slips numbered from 1 to 15. One slip each from both the bags are taken and numbers on the slips are written as pairs.

a) What is the maximum number of pairs ?

b) What is probability of both numbers being prime ?

c) What is the probabilty to get both even numbers ?

d) What is the probabilty to get atleast one odd number ?

Section: B

Answer any one of the question from 24 and 25 [4 scores (1x4=4)]

24. Consider the points A(4, 5), B(10, 13). A circle is drawn with AB as diameter.

a) Write the coordinates of the centre of the circle.

b) Find the radius of the circle.

c) What is the equation of this circle ?

25. The base edge of a square pyramid is 18 cm. The height of its lateral face is 15 cm.

a) What is its slant height ?

b) Find its height.

c) Calculate its volume.

PART-4

Section : A

Answer any three from question 26 to 29 [each carries 6 score (3x6=18)]

26. Consider the polynomial $P(x)=x^2-8x+16$

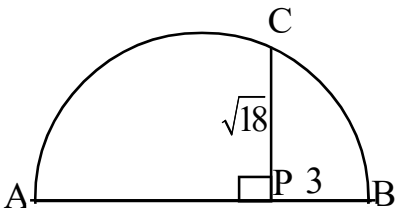
a) Find P(3) and P(5)

b) Find P(x) - P(3)

c) Write P(x) - P(3) as the product of two first degree polynomials.

d) Find the solutions of the equation P(x) - P(3)=0 .

27. a) In the figure, AB is the diameter of the semicircle. CP is perpendicular to AB. PB=3 cm, CP=$\sqrt{18}$ cm .



Find the length of AB .

b) Draw a rectangle of sides 6 cm, 3 cm.
Draw a square with same area of this rectangle .

28. The sum of perpendicular sides of a right angled triangle is 14 cm. Its area is 24 square cm.
a) If length of one perpendicular side is taken as *x*, what is the length of the other perpendicular side ?
b) Find the lengths of these sides .
c) What is the length of its hypotenuse ?
d) If the sum of the lengths of perpendicular sides of a right angled triangle is 14 cm, can we draw triangle with area 50 sq.cm ? Justify.

29. a) Find the volume of a cone of radius 10 cm and height 15 cm.

b) What is the volume of a sphere of radius 5 cm?

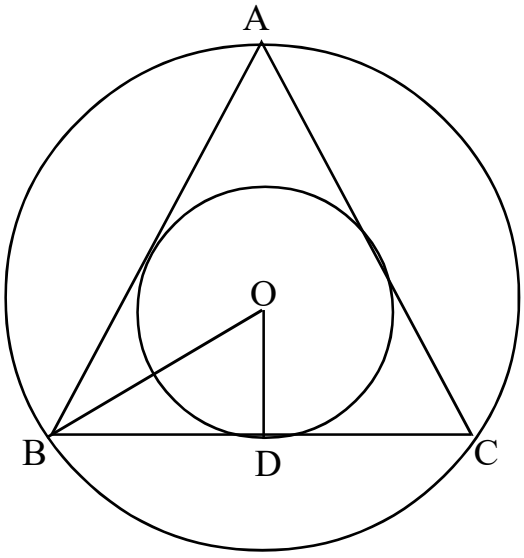
c) If 10 solid metal cones of radius 10 cm and height 15 cm are melted and recast into spheres of radius 5 cm, how many spheres can be made ?

Section : B

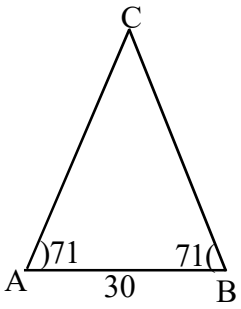
Answer any two questions from 30 to 32 [each carries 6 scores (2x6=12)]

30. a) Draw an equilateral triangle of sides 6 cm. Draw its incircle .

b) O is the common centre of incircle and circumcircle of the equilateral triangle ABC. Prove that the circumradius is twice its inradius.



31. In the figure, $\angle A=\angle B=71^0$, AB=30cm.



a) What is the measure of $\angle C$?

b) What is the length of the perpendicular from C to AB ?

c) Find the circum radius of this triangle.

d) Calculate the length of AC.

[sin71=0.94, cos71=0.32, tan71=2.9, sin38=0.6,cos38=0.78, tan38=0.78]

32. The following table shows some workers sorted according to their daily wages.

Daily wages	No. of workers
400 - 500	8
500 - 600	9
600 - 700	10
700 - 800	7
800 - 900	8
900 - 1000	3

a) What is the total number of workers ?

b) According to the assumption, in which class will the median wage will occur ?

c) If the workers are arranged according to their wages, what is assumed as the wage of the 18^{th} worker ?

d) Find the median wage.

e) If the wages of all the workers are increased by 50 rupees, what will be the median wage ?

PART-5

Section :A

Answer any two from questions 33 to 35 [each carries 8 scores (2x8=16)]

33. Observe the following number pattern.

1

2 3

4 5 6

7 8 9 10

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a) Write the next line of this pattern.

b) What is the last number in the 10^{th} line ?

c) Find the sum of all numbers in the 10th line.

d) If such a patters is made using the numbers in the arithmetic sequence 4, 8, 12, . . . what will be the first number in the 10th line of that pattern ?

34. a) Consider the points A(4, -3), B(-4, 3). Find the radius and coordinates of the centre of the circle with AB as diameter.

b) A circle with origin as the centre passes through the point (3,4). Draw the axes and this circle.

c) Write the coordinates of all the points, where this circle meets the axes.

d) Write the coordinates of two other points on this circle.

35. Two men are standing in a straigt line with a tree, on the same side. They see the top of the tree at elevations 30^{O}, 60^{O}. The distance between the men is 20 m.

a) Draw a rough figure.

b) Find the height of the tree.

c) If the men were standing on either side of the tree such that they are 20 m apart, draw a rough figure.

d) Find the height of the tree .