(Pages:5)

KANNUR DISTRICT PANCHAYATH

DIET KANNUR

SSLC MUKULAM MODEL EXAMINATION-2019

MATHEMATICS

TIME:2½ hours Total Score:80

Instructions

- Read questions carefully before writing the answer
- Give explanations wherever necessary
- First 15 minutes is cool off time
- Simplification using $\sqrt{2},\sqrt{3},\pi$ etc with their approximate value is not required if not specified in the question.

Answer any three from questions 1 to 4. Each question carries 2 scores

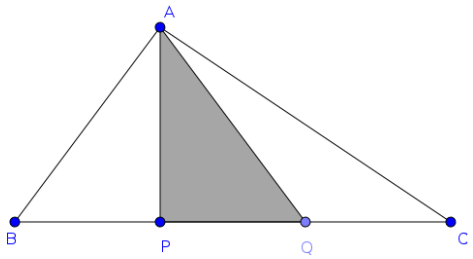
1) a)Write the arithmatic sequence with first term 2 and common difference 5?

b)What is the position of term obtained when 500 is added to first term?

2) In the figure BP=PQ=QC. A point is marked in △ABC without looking into it.

a) What is the probability that the point is inside shaded portion?

b) Find the probability that the point is outside the shaded region?



3)The scores of 8 students in an examination are given below

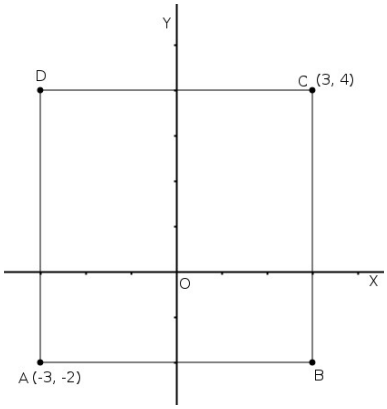
46, 23, 12, 63, 17, 28, 72, 65

Find the median of scores?

4) Sides of quadrilateral ABCD are parallel to the axes. A(-3,2) and C(3,4) are two vertices.

a) Find the coordinates of B and D

b) Write the coordinates of any two points where the sides cuts the axes



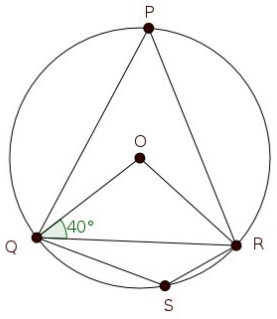
Answer any five questions from 5 to 11. Each question carries 3 scores

5) In the figure, C is the centre of the circle and $\angle OQR=40^0$

a) Find the measure of $\angle QOR$?

b) Find $\angle P$?

c) Calculate $\angle QSR$?



6) Base edge of a square pyramid is 24cm and its slant height is20 cm.

a) What is the height?

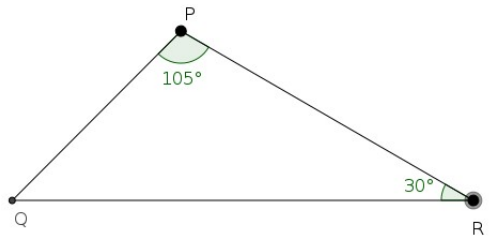
b) Find its volume?

7) How many consecutive terms starting from the first term of the arithmetic sequence 6,10,14……. must be added to get 880?

8) Draw a circle of radius 3cm. Mark a point 8cm away from its centre. Draw the tangents to the circle from that point ?

9) In figure PR=20cm, $\angle P=105^0$, $\angle R=30^0$,

Find the length of PQ and QR?

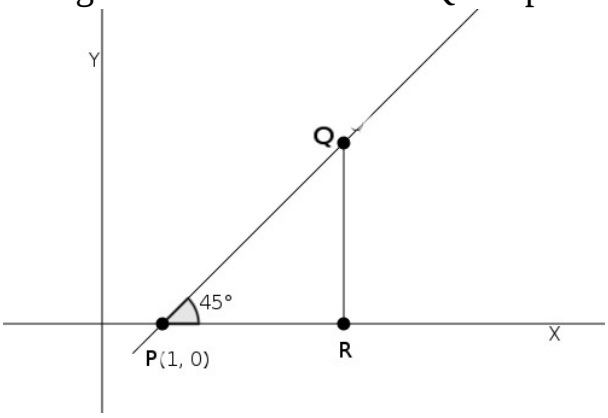


10) In the figure a line passing through P(1,0) makes an angle 45^0 with the x-axis. Q is a point on this line.

a) Find $\frac{QR}{PR}$

b) Write equation of thel ine.

c) Write the coordinate of points at which the line cuts y-axis.



11) The remainder obtained on dividing $\mathbf{x^3-x^2-kx+6}$ by **x-1** and **x-2** are equal.Find the value of **k**?

Answer any 7 from Questions 12 to 21 . Each question carries 4 scores

12) The algebraic form of an arithmetic sequence is 3n+2

a) Find the sum of first 20 terms of this sequence

b) Find the sum of 20 terms from the second term to the 21^{st} term?

c) Is it possible that the sum of any consecutive 20 terms of this sequence is 1000? Why?

13) The table below shows daily income of 35 families in a locality.

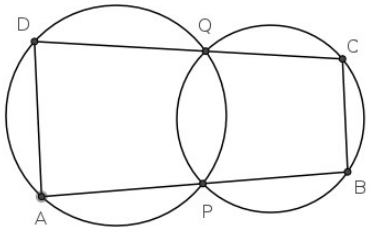
Daily income	No. of families
300-400	3
400-500	7
500-600	10
600-700	8
700-800	4
800-900	3

a) If the families are arranged according to their incomes, the income of the family at what position is taken as the median?

b) What is assumed to be the daily income of the family at 11^{th} position?

c) Find the median income?

14) Two circles intersect at the points P and Q. AB and CD are two lines passing through the points P and Q respectively.



i) If $\angle$ P=**x** What is the measure of $\angle$PQC?
ii) Show that the quadrilateral ABCD is a trapezium
iii) If quadrilateral ABCD is cyclic then prove that AB=CD.

15) A sector of angle 120 is bent to form a cone.

a) what is the ratio of radius to the slant height of the cone?

b) The curved surface area of such a cone is 108π square centimetres, what are its slant height and base radius?

16) Draw a triangle of sides 7 cm, 6.5cm, 5cm and construct its in circle. Measure it's in radius?

17) In class 10 A, there are 30 boys and 20 girls. In 10B, there as 15 boys and 25 girls. One student is to be selected from each class.

i) What is the total number of possible selections?

ii) What is the probability of both being girls?

iii) What is probability of one boy and one girl?

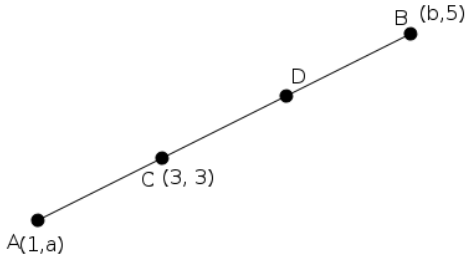
iv)What is the probability of at least one boy?

18) AB is the chord of length of 12 cm in circle. This chord makes an angle of 120^0 at a point P on the circle

a) What is the radius of the circle

b) What should be length of AP and PB such that $\triangle$ APB has maximum area.

19) In the figure the coordinates of A and B are A(1, a) and B(b,5). The points C and D divide AB into three equal parts .The coordinate of C is(3,3)



a) Find a and b

b) Find the coordinate of D

20) **$p(x)=(x^2-5x+6)(x+1)+1$**

a) What is the remainder on dividing the polynomial by x+1

b) If $x^2-5x+6=(x-a)(x-b)$ then find (a+b) and ab

c) Write x^2-5x+6 as the product of two first degree polynomials .

d) What number should be added to p(x) for which (x-2) is a factor.

21) If (x,y) be a point equidistant from the points (7,5) and (4,3)

a) What is the distance between (x,y) and (7,5)?

b) What is the distance between (x,y) and (4,3)?

c) Show that 6x+4y=49?

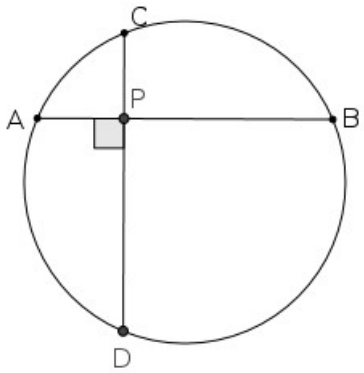
Answer any 5 questions from 22 to 28. Each question carries 5 scores

22) A journey of 192 km from a town A to town B takes 2 hours more by an ordinary passenger train than a super-fast train. The speed of the faster train is 16km/hour more than local train.

a) If the speed of the local train taken as x what is speed of the faster train?

b) Find the speed of both trains?

23) a) In figure chord AB and CD intersect at P . PA=4cm, PB=6cm, PD=7cm. Find PC



b) Draw a rectangle of length 7cm and area 24 square centimetres.

24) Consider the following number pattern.

3

10 17

24 31 38

42 52 59 66

.....

.....

a) Write next two lines of this sequence?

b) What is the sum of first 20 natural numbers?

c) What is the last term of 20^{th} line of this sequence?

d) Find the sum of all terms in the 20thline

25) A boy 1.6 metres tall, standing at the edge of a river bank, sees the top of a tree on the edge of the other bank at an elevation of 50^0. Standing back by 10 metres, he sees it at an elevation 25^0.

i) Draw a rough sketch according to the given data.

ii) Compute the width of the river and height of the tree

Sin25 = 0.42	Cos25 = 0.9	Tan25 = 0.47
Sin50=0.77	Cos50=0.64	Tan50=1.19

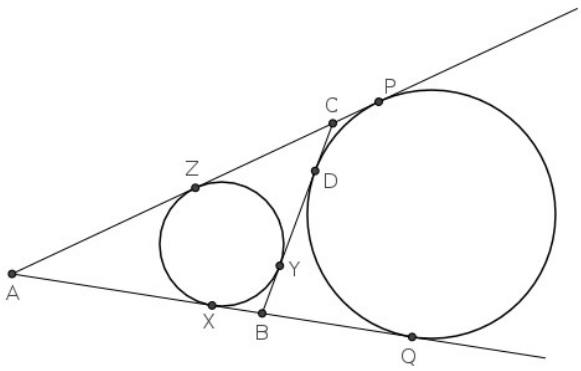
26) Infigure X, Y, Z, P, Q, D are points at which the lines touches with the circle. AP=21cm, AX=8cm, CY=7cm.

i) Find the perimeter of $\triangle ABC$?

ii) Find AB, BC and AC

iii) Find the area of $\triangle ABC$?

iv) Find the radius of the incircle of $\triangle ABC$?



27) a)Draw X and Y axis. Mark the given points A (-2,-1), B (6, -1), C (6, 5)

b) Examine whether A,B, C are the vertices of a right angled triangle. Explain?

c) Find the coordinates of the Centre of the circum circle of the triangle ABC

d) Write the equation of the circum circle of triangle ABC

28) a) The diameter of a wooden hemisphere is 16cm. Find its surface area?

b) A sphere of maximum size is carved out from this. Find the surface area of that sphere?

c) Find the ratio of the volumes of a hemisphere and a sphere of maximum size that can be carved out from it?

Question 29 carries 6 score.

29) Read the following, understand the mathematical idea expressed in it and answer the questions that follow.

When natural numbers are divided by 3 the remainder will be either 0, 1 or 2. If the natural numbers grouped according to this remainder each of them will be in one of the following three groups.

Group A : 3, 6, 9, 12, 15, …….

Group B : 1, 4, 7, 10, 13,…….

Group C : 2, 5, 8, 11, 14,……..

a) What is the remainder on dividing a number in the group A by 3?

b) In which group 302 belongs?

c) What number should be subtracted from a number in group C to get a multiple of 3 ?

d) The difference of two numbers in any group is a multiple of a particular number.

What is that number?

e) In which group the sum of two numbers in group B belongs?

f) At least how many numbers of group B Should be added so that the sum falls in the same group.