Model Paper No. 01
G.C.E. O/L 2020

11ශ්‍රේණිය தரம் 11 Grade 11	ගණිතය II පත්‍රය கணிதவினாதாள்--II Mathematics Paper - II	පැය තුනයි மூன்றுமணிநேரம் *Three Hours*

Important:

- Answer 10 questions by selecting 5 questions from part A and 5 questions from part B.
- Write relevant steps and correct units when answering the questions.
- Each question carries10 marks.
- The volume of a right cone with the radius of the base r and the height h is $\frac{1}{3}\pi r^2 h$.
- Volume of a sphere with the radius r is $\frac{4}{3}\pi r^3$.

Part A

Answer five (05) questions only.

1. A bank and a financial company published the following details to the public.

ABC- Bank	XYZ - Company
• Pay 12% interest on your fixed deposit for each year.	• We issue share. Nominal value in 20/= End of the year dividends 1.50 /= per share.

A person deposited Rs.250,000 in ABC Bank and used Rs 200,000 to buy share in XYZ Company.

I Calculate the interest income of him getting from the ABC Bank.

II At the end of the year he sold his share at Rs.25.50. Calculate the profit he gained from XYZ Company.

III State the profit of each investment as a percentage to the total income.

2. Given below in a table prepared to draw the graph of the function y =(x+3) (x-1) , $-4 \leq x \leq 2$

X	- 4	-3	-2	-1	0	1	2
Y	5	0	-3	-4	-3	___	5

I Find y when x=1.

II Draw the graph on a graph paper using a suitable scale.

III Write down the coordinate of the turning point.

IV Draw the graph of $y = x - 2$ on the same graph paper.

V Hence solve $y = (x + 3)(x - 1)$ & $y = x - 2$

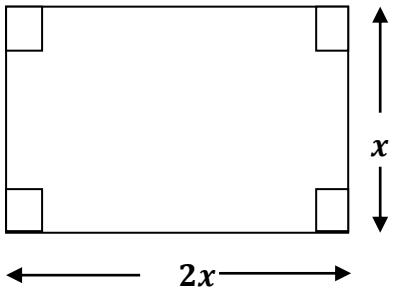
VI Describe the behavior of the graph when $-1 < x < 1$.

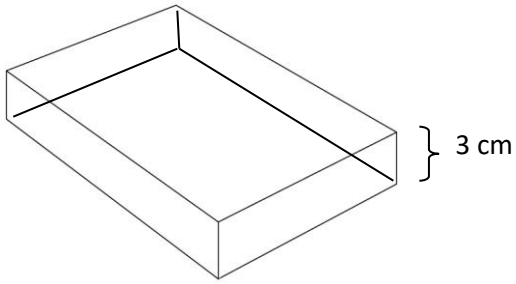
3.

I Solve $\frac{(a+2)}{4} - \frac{(a-3)}{5} = 2\frac{1}{4}$

II The 6 times of the length of the short bar in equal to the 5 times of the long bar. The table length of both bars in 44 feet. Find the length of each bar.

4.





Using a metal sheet of length $2x$ and with x in used to make a small tank. Four small squares of side length 3 have been removed before make this tank.

(i) Write down the length, width and height of the tank.

(ii) The volume of the tank in 100 cm^3 show that $x^2 - 6x - 17 = 0$

(iii) By solving the above quadratic equation find the width of the sheet correct to 2 decimal place.

. (Take $\sqrt{104} = 10.02$)

5.

I A sphere of radius $3r$ in melted to make 3 identical cylinders of radius r and height h and one cylinder with radius $2r$ and height h.

i. Show that $h = \frac{9r}{2}$

ii. If $r = 8\ cm$ find the value of h.

iii. Find the value of $\frac{0.43}{\sqrt{0.53}}$ using the logarithm table. .

6. On a level ground there in a housing tower. Kamal's home in $h1\ meters$ above from the ground and Ranmal's house in $h2\ meters$ above from Kamal's house. Kamal's observes Ruwani from his house with an angle of depression $48^{0.}$ Ranmal also observes Ruwani at an angle of depression 59^{0}. Ruwani in $50\ m$ away from the building.
   i. Sketch a diagram and mark all the details.
   ii. Find $h1$ & $h2$ to the nearest 2dedimal places.

Part B

Answer five questions only

7.
   I In an arithmetic sequence the 10th term in 15. The 15th term in 15 greater than 10th term.
      i. Find the first term and the common difference.
      ii. Show that 49 in not a term of this sequence.
   II Consider the geometric sequence. 9,6,4.....
      i. Show that the 10th term of the sequence is given by $\frac{2^{10}}{3^{8}}$
      ii. Show that the sum of first n terms of the sequence in given by $\frac{3^{n}\ -2^{n}}{3^{n-3}}$

8. Use a cm/mm scale and pair of composer to construct the followings.
   I Construct the triangle ABC such that $AB = 6\ cm, BC = 7cm\ and\ AC = 9cm$
   II Construct the by sector of the $B\hat{A}C$
   III Produce AC up to X. Construct the by sector of the $B\hat{C}X$
   IV Name the point that the above two lines are met as P. Construct a perpendicular to the produced AB from P.
   V Name the foot of the above perpendicular as D. Construct the circle with centre D and BD an radius.

9. The patients came to the hospital due to throat pain are reported against their age as fallows.

Age (years)	Number of patients
00 - 10	02
10 - 20	05
20 -30	07
30 - 40	13
40 - 50	20
50 - 60	25
60 - 70	12
70 - 80	08
80 - 90	05
90 - 100	03

I Draw the cumulative frequency curve for the data set in a graph paper.

II Find the median age of the patients.

III Find the inter quartile range of the age of the patients.

IV Find the lower limit of the age to separate the oldest 10 patients.

10. In the given diagram QOR is one of diameter of the circle with centre O. TS in a tangent to the circle at P. The perpendicular from R to the tangent in RS.

Let $O\hat{Q}P = X$

Expires the value of the following angle in term of x with the reason.

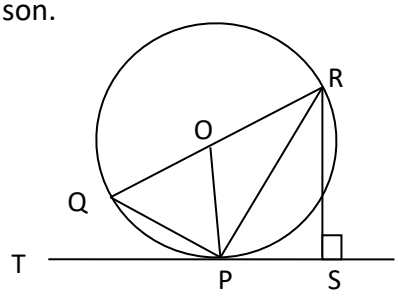
I $P\hat{O}R$

II $O\hat{P}R$

III $R\hat{P}S$

IV $O\hat{P}R$

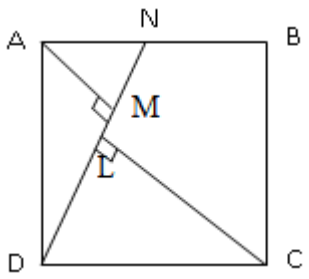
V $Q\hat{P}T$



11.

I Write two common characteristics of a Square and a Rhombus.

II ABCD is a square. N is a point on AB. The perpendicular from A & C to DN are drawn in the figure.



III Show that $A\hat{D}M = D\hat{C}L$

IV Show that $ADM\Delta \equiv CDL\Delta$ and AM^2 = MN x CL

12. There are 6 identical glass balls in a bag. Four of them are red colour and two of them are blue colour. Anura randomly get one ball out and record the colour of it. Without replacement he get another ball out and record the colour of it.

I Draw the sample space grid.

II Find the probability of both balls been same colour.

III Find the probability of first ball been red.

IV Draw the three diagram of illustrate the above sample space.