

Sri Jayawardanapura Educational Zone

Second Term Test - 2017

Grade : 11

Mathematics II

Time : 2 ½ hours

Name :

Index number :

- Answer ten questions selecting 5 questions from Part A and 5 questions from Part B
- Each question carries 10 marks
- The volume of a right circular cylinder of radius r and height h is $\pi r^2 h$
- The volume of a Sphere of radius r is $\frac{4}{3} \pi r^3$

Part A

1. A refrigerator can be bought for outright purchase at Rs. 75 000 by making a down payment of Rs.15,000 and paying the rest in 2 years in equal monthly installments. If the 18% annual interest rate is charged and the interest is calculated on the reducing balance. Calculate the value of a monthly installment.

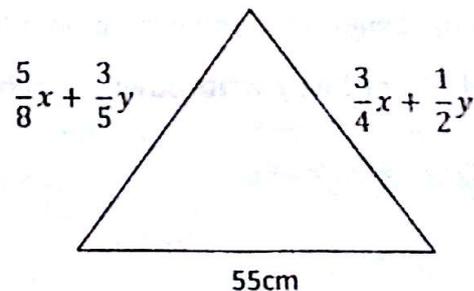
2. A suitable table of values is given to draw the graph of $y = (x + 2)^2 + p$

x	-5	-4	-3	q	-1	0	1
y	6	1	-2	-3	-2	1	6

- a) i) By examining the function and the table of values, write the values p and q
- ii) By taking 10 small divisions along the x axis and y axis to be one unit as scale, draw the graph of the given function
- b) By considering the graph, write down
- i) the roots of the equation $(x + 2)^2 - 3 = 0$
- ii) find the value of $\sqrt{3}$ to the nearest 1st decimal place using the roots of the above equation

3. An equilateral triangle is shown in the figure. Its length of two sides are written on each side.

Find the values of x and y . (10marks)



4.

a) When looking at a ship stopped at sea can be seen at a certain height of a Light house with an angle of depression of 45° and 8m than that height it can be seen with an angle of depression of 60°

- i) Draw a rough sketch representing all the data given above (2marks)
- ii) Taking a suitable scale draw its scale diagram (3marks)
- iii) Using your scale diagram find the distance to the ship from the foot of the light house (2marks)

b) Find the time taken by a 80 m long running train with the average speed of 60 kmph, to pass a lamp post (3marks)

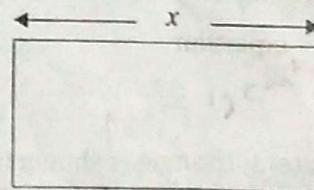
5. The data collected in a survey conducted among 50 of young people and the time taken by them to cross the white line of a 20m wide road, is given below.

Time duration (Seconds)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Frequency (No of People)	4	8	15	12	8	3

- i) What is the maximum time period of green light must be kept lighting to prevent an accident. (1mark)
- ii) By taking the mid value of the modal class as the assumed mean or any other method find the mean time period that a young person takes to cross a road of 20m wide and round it off to the nearest whole number. (5`marks)
- iii) According to that find the speed of crossing a road of 20m wide by a young person (1`mark)
- iv) If a person who drives his motor car at 40 kmph of average speed has to travel to his working place 20km away from his house and passing through 10 white crossing lines of 20m each, find the time taken to his Journey in minutes. (3`marks)

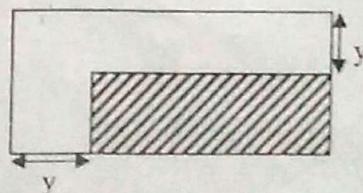
6. The length of a rectangular lamina is x . Its breadth is $\frac{3}{4}$ of its length.

i. Write the breadth of the rectangle using x .



ii. If the area of the lamina is $12m^2$ find its length

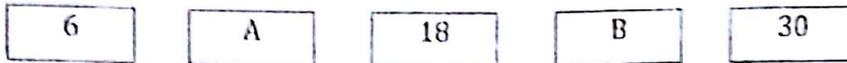
iii If y cm of length remaining from both length and breadth shaded rectangular area is cut and removed . Accordingly write down 2 algebraic expressions to denote its length and breadth.



iv. If the area of the cut and removed rectangle is $5m^2$, find the length and breadth of it separately.

Part B

7. Samadhi wrote 5 numbers on cards and lined up and 2 of them were turned other sides



If Samadhi says, numbers of these cards are in an Arithmetic Progression,

i) Find the numbers written on A and B cards. (2 marks)

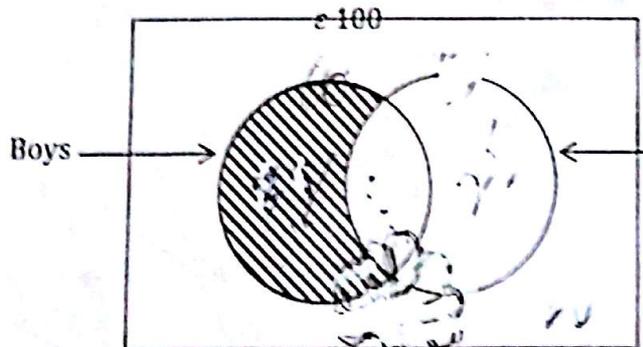
ii) Find the 8th term of the above progression. (2 marks)

iii) Find the sum of the first eight terms of the above Progression (2 marks)

iv) if you Write 1st, 2nd, 4th and 8th terms respectively which progression does it belongs. Give reasons for your answer (2 marks)

v) Find the sum of the first five terms using the formulae (2 marks)

8. A group of 100 selected students in primary classes were referred to a medical clinic and it revealed those students were undergoing diabetes and malnourished symptoms. Out of this group 60 were boys and out of the boys 25 got diabetic, 30 out of girls got malnourished symptoms and rest of the girls got diabetic.



i) Complete the Venn diagram (5 marks)

ii) How many girls got diabetic (1 marks)

iii) Describe the students represented in the shaded region of the Venn diagram. (2 marks)

iv) What is the probability of a student who was selected randomly has malnourished symptom. (2 marks)

9. There is water at a certain height of a right cylindrical vessel with R radius of the bottom. When 100 solid metal spheres with r radius dipped in the cylinder, water level raised from h height.

i) Show that $h = \frac{400r^3}{3R^2}$

ii) If $R = 14\text{cm}$ and $r = 3.5\text{cm}$ find the value of h using the table of logarithms.

