

**THIRD TERM EXAMINATION - 2020**

**GRADE 11 – MATHEMATICS II**

**2 Hours**

**Part - A**

● **Answer 05 questions.**

01. Given below is an incomplete table with corresponding x and y co-ordinates to draw the graph y = x2 – 4x – 3.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| y | 2 | -3 | -6 | ……. | -6 | -3 | 2 |

i. Find the value of y when x = 2.

ii. Using standard axes and a suitable scale draw the graph of the function using the above table.

iii. Explain the behavior of y when x moves from O to 2.

iv. Express the quadratic function in the form of y = (x - a)2 – b.

v. In this function if one unit is expanded towards the positive direction of the x axis and 4 units towards the positive direction of the y axis, what is the eqnation of the function.

02. A television which has a cash selling price of Rs. 80,000/- can be purchased by paying Rs. 10,000/- as an advance and Rs. 6500/- for each installment for 14 monthly installment. What is the annual interest percentage?

03. a). Solve

b). ‘A’ has 18 coins. They are only Rs. 2/- and Rs. 5/- coins only. The value of Rs. 5/- coins is Rs. 34/- more than the value of Rs. 2/- Coins.

i. Taking x as the number of Rs. 5 coins and y as number of Rs. 2 coins, construct a pair of simultaneous equations.

ii. Solve the simultaneous equations and find the number of Rs. 5 and Rs. 2 coins.

iii. If the value obtained for x is replaced with y and the value obtained for y is switched with x, calculate the total value ‘A’ now has, with him.

04. A triangle is attached to a rectangle with length (*x* + 4) cm and width *x* cm to make a composite figure as given below.

(*x*+4) cm

*x* cm

4 cm

If the area of the above composite plane figure is 51 cm2 , construct a quadratic equation and find the length of the rectangle, by using squaring or any other method. Keep the answer rounded off to the first decimal place. ( = 3.87)

05. In a garment factory which produces T – shirts, the defected t – shirts are stored separately. The following table illustrates the number of defective t – shirts stored during a period of 40 days.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No. of defective**  **T - Shirts** | 31 – 35 | 36 – 40 | 41 – 45 | 46 – 50 | 51 – 55 | 56 – 60 | 61 – 65 |
| **No. of Days** | 6 | 7 | 8 | 9 | 6 | 3 | 1 |

i. Find the modal class of the above distribution.

ii. Find the mean of the amount of defective t – shirt in a day, to the nearest whole number.

iii. If the daily defective t – shirts amount to 5% of the daily t – shirt production, how many t – shirts are produced daily?

iv. If it takes 2 employees, 3 days of working to re – correct 9 defective t – shirts, How many days will it take for 3 employees to re - correct a day’s defective t – shirt?

06. AB is a tree vertically placed on a flat land (surface). A person who is at point ‘X’ which is 20m away from B sees the top of the tree at an angle of elevation of 62o. Using the trigonometric charts,

B

A

X

Y

i. Find the height of AB tree, to the nearest whole number.

ii. The person walks away from the tree and arrives at

point ‘Y’ which is 10 m from ‘X’. Find the angle of

elevation of A from point Y.

**Part - B**

● **Answer 05 questions.**

07. A tourist travels 2km less than the previous day, each day. He travels 50 km the first day.

i. State the distance he travelled the first 4 consecutive days.

ii. Find the distance he travelled on the 10th day.

iii. On which day does he travel 28 km?

iv. If the day he travelled 28 km (in part (iii)) is the final day he travelled, calculate the total distance, he has travelled.

v. Even if he travelled till the last day of travel is zero distance, by travelling 2km less each day as above; Show that the total distance travelled will not exceed 675 km.

08. Use a cm/mm straight edge and a pair of compasses only to construct the below. Please ensure the construction lines are clearly visible.

i. Construct ABC triangle where AB = 7 cm, BC = 60o and AC = 6 cm.

ii. Construct a paralleled line through C parallel to AB.

iii. Construct the angle bisector of BC and name the point it meets the above parallel line as D.

iv. State the reasons how ACD becomes an isosceles triangle.

v. Construct the in circle (liner circle) of the triangle ACD and measure and state it’s radins.

09. ABCD is a parallelogram ‘X’ and ‘Y’ points lie on AB and DC sides respectively so that AX = CY.

i. Show that, AB = AX + DY

D

Y

C

B

X

A

ii. Prove that AXCY is a parallelogram.

iii. Show that ADY CX

iv. Prove that area of AXCD trapezium is equal to

area of ABCY trapezium

10. A, B, C, D and E are points on the circumstance of circle with centre ‘O’. AB = BD

Using the above information;

i. Show that BE is the locus of the point equal – distant to AB and BD lines.

B

C

D

E

A

O

ii. Prove that BC = ED.

11. On a certain day out of some of the customers, whoever who bought sugar or salt, bought rice as well. The customers who bought only rice is 2 less than the number of customers who bought Rice, Sugar and Salt. The number of customers that bought rice is 26, while the number of customers that did not buy sugar are 17.

i. Using the above information complete the below venn diagram.

Rice

Sugar

Salt

ii. Find the number of customers that buy at least 2 out of the 3 products.

iii. Shade the area that buys only 2 products.

iv. It has been erroneously recorded that 2 persons who had only purchased sugar, has bought sugar and rice. Correct the above mistake and re – draw the venn diagram, with correct elements.

12. A solid cone, where the radius of the base is ‘r’ and a height of 6 cm is melted and 12 solid semi – spheres where radius of the cross section is 6 cm is made.

i. Find the volume of the cone in terms of ‘r’.

ii. Show that r = 12

iii. Using the logarithm table find the value of ‘r’, to the first decimal place.