****

**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)**

**Qualification Code :**

**Qualification : Counseling Psychology**

**Unit Code :**

**Unit of Competency : Demonstrate Numeracy skills**

**INSTRUCTIONS TO THE CANDIDATES**

This assessment requires you to demonstrate competence against unit of competency: **Demonstrate Numeracy skills**

In this assessment, you will be required to answer written questions:

*You have* ***TWO*** *hours to answer all the questions.*

*Marks for each question are indicated in the brackets.*

*The paper consists of* ***TWO*** *sections:* ***A and B***

Name of the candidate ……………………………………………………………………

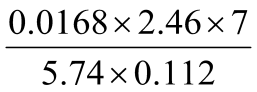
Registration code of the candidate………………………………………………………..

Date ……………………………………………………………………………………....

Signature …………………………………………………………………………………

**SECTION A: 40 MARKS (COMPULSARY)**

1. Without using mathematical tables or calculators, evaluate:       (**3 marks**)



1. A two-digit number is such that the sum of the ones digit and the tens digit is 10. If the digits are reversed, the number formed exceeds the original number by 54. Find the number             (**3marks)**
2. Two bells ring at intervals of 35 and 42 minutes respectively. The bells ring together at 8.48 a.m. Determine the time when the bells will ring together again. **(3 marks)**
3. A Kenya company received US Dollars M. The money was converted into Kenya Shillings in a bank which buys and sells foreign currencies.  
                                    Buying (in Ksh)    Selling (in (Ksh)  
   1 Sterling Pound             125.78              126.64  
   1 Us Dollar                       75.66                75.86  
   1. If the company received Ksh.15, 132,000, calculate the amount, M received in US Dollar. (2marks)
   2. The company exchanged the above Kenya shillings into Sterling pounds to buy a car in Britain. Calculate the cost of the car to the nearest Sterling pound (**2marks**)
4. A triangle ABC is formed by the points A (3, 4), B (-7,2), and C (1,-2).
5. Find the coordinates of the mid-points k of AB and p of AC **(1 mark)**
6. Find the equation of the perpendicular bisector of the line kp **(2 marks)**
7. Given that the ratio x: y = 2:3, find the ratio (5x-2y) : (x +y) **(3 marks**)
8. Express the recurring decimal below to a fraction 5.72 and leaving your answer in the form **a/b** where **a** and **b** are whole numbers           **(3 marks)**
9. A rectangular box with an open top has a volume of . The length of the base is thrice the width. Material for the base costs Ksh. 4 per square meter while material for the sides costs Ksh. 2 per square meter. Express the cost of the material of the box as a function of the width of the base. (**6 marks**)
10. Solve the inequality. (**4marks)**
11. The formula for the perimeter of a rectangle is given by, where is the length and is the width. Assume the perimeter of a rectangular plot of land is 480 ft. The length is twice the width. Find the length of the rectangular plot of land. (**4marks)**
12. A student got 27 as a result of multiplying 8.8 x 2.6 by rounding off the answer to the nearest whole numbers. Calculate the percentage error that arose. (4marks)

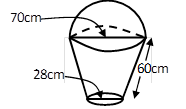
**SECTION B: 60 MARKS(ANSWER ANY THREE )**

1. Given that *x* + y = 8 and *x*2 + y2 = 24

Find;

1. The value of *x*2 + 2*x*y + y2 (**5 marks**)
2. Find the value of ; 2*x*y **(3 marks**)
3. *x*2 – 2*x*y + y2 **(3marks**)
4. x – y **(2 marks**)
5. Value of x and y **(2marks)**
6. Mr. Saidi keeps turkeys and chickens. The number of turkeys exceeds the number of chickens by 6. During an outbreak of a disease, ¼ of the chicken and of the turkeys died. If he lost total of 30 birds, how many birds did he have altogether? (5 marks)

1. Mary and Anna they contributed ksh. 120,000 and ksh 150,000 every year respectively to open a counseling center. After one year, Kuku joined the business and contributed ksh. 90,000.
   1. Calculate the ratio of their investment after 3 years of business (**3marks)**
   2. It was agreed that 30% of the profits after 3 years be used to cater for the cost of running the business, while the remaining would be shared proportionally. Calculate each person’s share, if the profit made after three years was ksh. 187,000 (**4marks**)
   3. If each of them invested their shares back in the business, find their new individual investments at the beginning of the fourth year (**3marks**)
2. The figure below shows a model of a solid in the shape of a frustum of a cone with a hemispherical top.



The diameter of the hemispherical top is 70cm and is equal to the diameter of the top of the frustum. The frustum has a base diameter of 28cm and a slant height of 60cm.

(a) Calculate the area of the hemispherical surface. (1mark)

(b) Calculate the slant height of the cone from which the frustum was cut. (4marks)

(c) Calculate the total surface area of the model (**5 marks**)

1. Define the following as used in statistical analysis
2. Simple random sampling **(2 marks**)
3. Stratified sampling (**2 marks**)
4. Systematic sampling **(2 marks**)
5. Multistage sampling **(2 marks**)
6. Judgment sampling (**2 marks**)
7. The table below shows the masses to the nearest kg of all the students of Kenya institute of business and counseling studies

|  |  |
| --- | --- |
| Masses (kg) | No. of students |
| 30-34 | 5 |
| 35-39 | 7 |
| 40-44 | 10 |
| 45-49 | 10 |
| 50-54 | 19 |
| 55-59 | 20 |
| 60-64 | 20 |
| 65-69 | 6 |
| 70-74 | 2 |
| 75-79 | 1 |

1. Taking the assumed mean A=52kg

Calculate:

1. The actual mean mass of the students.                                                          (**3 marks)**
2. The standard deviation of the distribution.                                                   (**3 marks**)
3. Draw a cumulative frequency curve and use it to estimate the number of students whose masses lie between 44.5kg and 59.5kg.                                                           (**4 marks)**
4. Mambo poured spirit into a test tube which has hemispherical bottom of inner radius 1.5cm. He noted that the spirit is 8cm high.
5. What is the area of surface in contact with spirit? (**4marks)**
6. Calculate volume of spirit in the test tube. **(4marks)**
7. If Mambo obtained the mass of the spirit as 10g, calculate the density of the spirit. **(2marks)**
8. A cylindrical water tank is a diameter 7 meters and height 2.8 metre
9. Find the capacity of the water tank in litres (5 marks)
10. Six members of a family use 15 litres per day. Each day 80 litres are used for cooking and washing and a further 60 litres are wasted. Find the number of complete days a full tank of water would last the family. **(5 marks)**
11. An aircraft flies from a point A (1015’S, 370E) to a point B directly North of A. The arc AB subtends an angle of 4890 at the centre of the earth. From B the aero plane flies due west to a point C on longitude 230W. Take radius of the earth as 6370km.
12. State the location of B   **(2marks**)
13. Find the distance in km traveled by the aero plane between B and C (**3 marks**)
14. The aeroplane left B at 1.00am local time. What was the local tie at C?   **(2 marks**)
15. If it maintained an average speed of 840km/h between B and C, at what local time did it arrive at C?       **(3 marks)**
16. In a Safari rally drivers are to follow route ABCGA. B is 250km from A on a bearing of 0750from A. C is on a bearing of 1100 from A and 280km from B. the bearing of C from D is 1400 and at a distance of 300km.
17. By scale drawing, show the position of the point A, B, C and D. **(4 marks**)
18. Determine Distance of A from C **(2 marks)**
19. Determine the bearing of B from C **(1 mark**)
20. Determine the distance and bearing of A from D **(3 marks**)