**PRESIDENT’S OFFICE**

**REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**

**FORM IV MOCK EXAMINATION 2020 DODOMA REGION**

**041 BASIC MATHEMATICS**

(For Both School and Private Candidates)

**Time:3 Hours Wednesday, 5th August 2020 a.m.**

**Instructions**

1. This paper consists of sections A and B with a total of **fourteen (14)** questions.
2. Answer all questions in section A and B. Each question in section A carries **six (6) marks** while each question in section B carries t**en (10) marks**.
3. **All** necessary working and answers for each question must be shown clearly.
4. NECTA mathematical tables may be used.
5. Cellular phones, calculators and any unauthorised materials are **not** allowed in the examination room.
6. Write your **examination number** on every page of your answer booklet(s)

**SECTION A (60 Marks)**

Answer all questions in this section.

1.

2. 

3. (a) A box contains 4 white balls and 5 black balls. Two balls are selected at random without replacement. Find the probability that

(i) Both are white balls

(ii) The first is black and the second is the white ball

(b) In a class of 15 students who take either Mathematics or Biology, 12 students take Mathematics, 8 students take Biology. If each student takes either subjects find by using formula the number of students who take Biology but not Mathematics.

4. (a) The gradient of line  is -2. Another line L2 is perpendicular to L1 and passes through point (-3, -2). What is the equation of L2?

(b) The distance between (1,5) and (k+5, k+1) is 8. Find K, given that it is positive

5. **(**a) The area of the triangle ABC is 140 cm2, AB = 20, AC = 14cm, find the angle BAC

(b) Triangle XYZ is similar to triangle ABC and XY = 8 cm. If the area of the triangle XYZ is 24 cm2 and the area of the triangle ABC is 96 cm2. Calculate the length of AB.

6.

7.

=

/=

19 bought Shelves for cash 110,000/=

20 sold goods for cash 900,000/=

21 purchases goods for cash 800,000/=

22 sold goods for cash 1, 400,000/=

26 paid rent 300,000/=

Record the above transactions in Cash account ledger and extract a Trial balance.

**8**. (a). The product of a three terms of a geometric progression (GP) is 8000. If the first term is 4. Find the second term and third term

(b). Mahona invested a certain amount of money in a Savings Bank whose interest rate was 10% compounded annually. After two years he got 5000 shillings.

1. How much did he invest at the start?
2. How much did he receives as Interest at the end of two years.

9. (a) Find the value of

Sin (1500) cos (3150) Without using mathematical tables

Tan (3000)

(b) Calculate the angles of a triangle which has sides of lengths 4m, 5m and 7m

10.(a). Given that *x*2 –*y*2 = 27 and *x* + *y* = 9 find the value of *xy*

(b). Solve the equation 2*x*2 – 3*x* – 5 = 0 by completing the square.

**SECTION B (40 Marks)**

Answer all questions

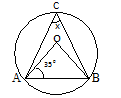
11. (a) The number of workers absent in 52 working days is given in a cumulative frequency table below

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No.of absent | 0 – 4 | 5 – 9 | 10 – 14 | 15 – 19 | 20 – 24 | 25 - 29 |
| Cumulative frequency | 5 | 13 | 30 | 45 | 48 | 52 |

Find (i) Percentage of workers who are absent at least for 20 days

(ii) Median

(b) Find the angle x in the figure below



12. (a) A ship sails from point A (40) due west along the same latitude to point B for 1000km. Find the latitude and longitude of point B. Use R=6370km and (give your answer in nearest degree)

(b) VABCD is a pyramid with VA=VB=VC=VD=5cm and ABCD is a square base of sides 4cm each. Assume that the centre of the base is at point N. Find

1. The angle between VA and the base ABCD
2. The volume of the pyramid

13. 

14. (a). A function F is defined by the formula f(x) = where *x* is a whole number

1. If f(x) = 25 find the value of x
2. Find the value of

(b). A craftsman wishes to decide how many of each type A and B charcoal stove he has to fabricate in order to maximize profit for this month. Unit profit for type A stove is shs. 1000 and Unit profit for type B is shs. 1500. Type A stove requires 1m2 of mild steel sheet per unit and type B requires 2m2. He has only 12 m2 of mild steel available. He can fabricate a total of 8 stoves of either type per month. How many of each type should he fabricate?