INTERSECONDARY SCHOOL'S EXAMINATION SERIES

ISESE

FORM FOUR PRE NECTA No.01

041 BASIC MATHEMATICS

Time: 3:00Hours **Monday ;22th July 2024**

INSTRUCTIONS

i. This paper consists of section A and B with total fourteen (14) questions.
ii. Answer all questions in both sections
iii. Each question in section A carries six (6) marks while each question in section B carries ten (10) marks.
iv. All writings must be in blue and black ink, except drawings which should be in pencil
v. Mathematical tables and No-programmable calculators may be used.
vi. All communication devices, programmable calculators and any unauthorized materials are not allowed in the examination room.

SECTION A (60 MARKS)

Answer all questions in this section

1. a) Find the approximation value of the expression by rounding off each number in the expression $\frac{0.0695\ x\ 19812}{6.8125}$ to one significant figure.

b) The numbers 28, 41, 42, 59, 70 belong to the set of natural numbers. By using these numbers

i) Calculate the difference between the lowest common multiple of prime numbers and the greatest common factor of the remaining number

ii) Express the answer obtained in 1(b) above in standard notation $Ax10^n$ convert into two significant figures where $1 \leq A < 10$ and n is any integer

2. a) If a = $0.8\dot{5}$ and b = $0.\dot{2}\dot{1}$ Find the value of $\frac{a}{b}$ in simplest form

b) i) The interior angle of a regular polygon is one hundred and eight degrees greater than the exterior angle. How many sides does the polygon have? And suggest the name of the polygon.

ii) Solve for x given that $25(2^{logx})$ = x

c) Given that a: b = 5: 2 and b:c = 3:4, find a:c

3. a) Each of the 50 students in a class must take at least one of the following subjects cookery and needle work. If 30 take cookery and 20 take needle work, how many take both subjects

b) i) Show this (A∪B)' on a Venn diagram

ii) A census was made in a certain village and found that some of families are famers and some are hunters and some practice both farming and hunting, at this village were forty families. It was also found that the number of families who practice farming only were six more than twice the number of hunters only. However, families who practise both hunting and farming were three times the number of families who practice hunting only.

Furthermore, there were four families who just practice none of these activities. Calculate the probability of selecting families who practice either hunting or farming

4. a) Both lines r and s passes through the point (k,9) Line r has a slope of $-\frac{4}{3}$ and pass through the point (5,-3). Determine

i) The value of k

ii) Equation of s in standard form of ax + by + c = 0. If its x – intercept is 4

b) Mikumi is one hundred forty kilometres of a bearing of seventy degree from Iringa . Makambako is one hundred sixty kilometres at a bearing of two hundred fifteen degrees from Iringa.

Sketch the position of the towns relative to each other. Hence calculate the displacement from

Makambako to Mikumi.

5. a) The surface area of a solid sphere whose radius is six centimetres is equal to the surface area of a solid right cylinder with radius two centimetre. Find the height of the cylinder.

b) i) Prove that the bisector of the vertical angle of an isosceles triangle is perpendicular to the base its midpoint

ii) Find the area of a regular decagon inscribed in a circle with radius of ten centimetres

6. a) The number of the square tiles needed to surface the floor of a hall varies inversely as the square of the length of a side of the tile used. If 2016 tiles of sides 0.4m would be needed to surface the floor of the hall. How many tiles of sides 0.3m would be required?

b) i) A shopkeeper sold five hundred sweets. Some sweets cost five shillings and some costs eight shillings. The cash received for the more expensive sweets was one hundred more than for the cheaper sweets. Find the number each kind of sweets

ii) Using the information in 6(b) above. Assuming that you are in US how much USD could you use for the cheaper sweets if 1 USD is equivalent to Tsh. 1200/=

7.a) A bicycle costs Tsh.150,800 If $2\frac{1}{2}\%$ discount is given to a customer. What is the discounted price?

b) Define the following terminologies as used in accounts

(i) Double entry system

(ii) Ledger

(iii) Closing stock (Stock at close)

(iv) Long terms liabilities

8. a) Second term, fifth term and seventh term of AP is the first three terms of a geometric progression. Calculate the common ratio and the second term of the geometric progression.

b) i) A series of an arithmetic progression has six, a number and thirty-eight. Find the number

ii) Find the sum of all integers from one to one hundred which are not divisible by five

9. a) Your are walking up a five hundred meters high hill. The trail has an inclined of twelve degrees. How far will you walk to get to the top of the hill.(your answer in kilometre)

b) i) Consider two square of different size. Draw the smaller square ABCD inscribed in the larger one PQRS whose vertices divides the length of the larger at a ratio a: b such that the length l = a + b prove the Pythagoras theorem.

ii) A student is standing ten meter away from a foot of a big and tall tree and observed that the angle of elevation is fifty five degrees. How high is he if it is sixteen high meters?

10. a) i) What must be added to make the expression that the difference between the square of a number and twelve times the number will make it a perfect square.

ii) The sum of the two consecutive numbers is five. Find the numbers

b) The entrance door of the house of Mr. Msaki has two stairs, the length of the base stair is twelve plus a certain number while its height it two plus the same number. However, the second stair's height is four times the same number from the first stair, while its length is four plus the same number. Moreover, the second stair is on top of the base stair.

i) Write the expression for the sum of the area of the down stair and the upper stair

ii) What is the value of the number if the total area of the stairs is $104cm^2$

SECTION.B (40 MARKS)

Answer **all** questions in this section

11. Consider the data given in the following frequency distribution table

Class – Interval	Frequency
0-10	4
10-20	16
20-30	x
30-40	y
40-50	z
50-60	6
60-70	4

The total frequency = 230, median = 33.5 and mode = 34

a) State:

i) The median class

ii) The modal class

b) Find the values of x, y and z

c) Find the mean of the data.

d) Show the radius of a circle with an arc of length π m and central angle of $\frac{\pi}{6}$ is 6m

12. a) The ship P and Q are at the points A (Latitude 70^0N, Longitude 40^0W) B (Latitude 5^0S, Longitude 40^0W) respectively. Ship P has an average speed of 40KM/h and Q of 45 km/h. If the two ships leave their ports at 8:00a.m on January 1 and travel toward each other. Where and when will they meet? (Radius of the earth = 640km, $\pi = 3.142$.)

b) Draw a rectangular box ABCD and the points E, F, G and H are vertically above in the respective order. If AB = 12cm, BC = 5cm, GC = 6cm.

i) Find the diagonals AC and AG

ii) Find the angle between AG and the base

iii) Is HD and AB skew lines? Why?

iv) State number of faces, edges and vertices.

13. a) For what value of p will the matrix $\begin{pmatrix} p-1 & p+3 \\ 1 & 6p \end{pmatrix}$ be non- singular matrix

b) If A = $\begin{pmatrix} 2 & -3 \\ -2 & 1 \end{pmatrix}$ and f (x) = x^2 -3x-4I. Find f (A), Where I is an identify matrix.

What is the name of a matrix?

c) A shopkeeper is planning to start a business using two types of commodities. With these commodities, the shopkeeper found that. If he takes three times the first commodity more than half of the second commodity, he gates the profit of one thousand two hundred shillings. However, if he takes twice the first commodity less than three times the second commodity he gets four hundred shillings as a profit. Using Cramer's rule find which type of commodity the first one or second one he has to buy in large quantity to get large profit

14. A company sells refrigerator and washing machines. Each refrigerator takes up 1.8m^2 of space and cost 300,000 shillings. Whereas each washing machine takes up 1.5m^2 of space and cost 500,000 shillings. The owner of the shop has 6,000,000 shillings to spend and has 27m^2 of space

a) Write down all the inequalities which represent the given information

b) If he makes a profit of 30,000 shillings on each refrigerator and 40,000 shillings on each washing machine, find how many refrigerators and washing machines he should sell for maximum profit.

INTERSECONDARY SCHOOLS EXAMINATION SERIES
ISESE TIME TABLE
FORM TWO PRE – NATIONAL No.04
20th – 30th September 2024

DAY & DATE	MORNING SESSION (A.M)			AFTERNOON SESSION (P.M)		
	CODE NO.	SUBJECT	TIME	CODE NO.	SUBJECT	TIME
Friday 20/09/2024	013	Geography	8:00 – 10:30	011	Civics	2 : 00 - 4 :30
Monday 23/09/2024	033	Biology	8:00 – 10:30	021	Kiswahili	2 : 00 - 4 :30
Tuesday 24/09/2024	041	Basic mathematics	8:00 – 10:30	012	History	2 : 00 - 4 :30
Wednesday 25/09/2024	022	English language	8:00 – 10:30	032	Chemistry	2 : 00 - 4 :30
Thursday 26/09/2024	031	Physics	8:00 – 10:30			2 : 00 - 4 :30
Friday 27/09,2024	062	Book-keeping	8:00 – 10:30			2:00 – 4:30
Monday 30/09/2024c	061	Commerce	8:00 – 10:30			2:00 – 4:30

KUSHIRIKI PRE-NECTA HIZI WASILIANA NA COORDINATOR 0624 254 757 (UNAWEZA KUSHIRIKI SOMO MOJA AMA ZAIDI)

INTERSECONDARY SCHOOLS EXAMINATION SERIES
ISESE TIME TABLE
FORM FOUR PRE – NECTA No.04
20th – 30 September 2024

DAY & DATE	MORNING SESSION (A.M)			AFTERNOON SESSION (P.M)		
	CODE NO.	SUBJECT	TIME	CODE NO.	SUBJECT	TIME
Friday 20/09/2024	011	Civics	8:00 – 11:00	022	English	2 : 00 - 5 :00
Monday 23/09/2024	033/1	Biology 1	8:00 – 11:00	012	History	2 : 00 - 5 :00
Tuesday 24/09/2024	041	Basic mathematics	8:00 – 11:00	021	Kiswahili	2 : 00 - 5 :00
Wednesday 25/09/2024	013	Geography	8:00 – 11:00	032/1	Chemistry 1	2 : 00 - 5 :00
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