

**Mathematics**

**21/10/2019**

**8h30 am -11h30am**

**SENIOR ONE END OF YEAR EXAMINATIONS, 2019**

**SUBJECT: MATHEMATICS**

**/100**

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| **Marks:** |

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Do not open this question paper until you are told to do so.
2. Answer all questions: **100 marks**

5) Use only a **blue** or **black** pen.

**S1 MATH END OF YEAR EXAM,2019**

**ANSWER ALL QUESTIONS (100MARKS)**

1)Sets A and B are subsets of the set of natural numbers, N. If A = { x : 1 ≤ x ≤ 7} and B = { x : 2 ≤ x ≤ 20, x ∈ set of even numbers}.

List the members of: (i) set A **(2marks)**

(ii) set B**(2marks )**

2) Set B has 6 elements. How many subsets does it have?(**3marks)**

3) Consider the domain A = {0, 1, 3, 4} set A is mapped onto set B by the relation x → 2x.

Find the a)Range (**3marks**

b)ordered pair of the relation. **(2marks)**

4) a) Given the function, find f(2). **(2marks)**

b) Find the inverse of the following function**(3marks)**

5)If f(x) =2+x and g(x) =3-x

Calculate **(8marks)**

a)fog(x)=

b)gof(x)=

c)gof(3)=

d)fog(-1)=

6)Workout a)(**1mark)**

b)(**1mark)**

7)Simplify:**(3marks**)

8) Find the gradient and y-intercept of the line whose equation is 4x – 3y – 9 = 0. (**3marks)**

9)Solve the equation: 9x − (4x − 3) = 11 + 2(2x − 1). **(3marks)**

10)The sum of two numbers is 120 and their difference is 18. Find the two numbers.(**4marks)**

11)When 55 is added to a certain number and the sum is divided by 3, the result is 4 times the original number. What is the original number?(**4marks)**

12)Solve the inequalities: 3x – 4 ≥ 5 **(4 marks)**

13. In a class, 15 students play basketball, 11play handball, 6 play both games and everyone plays at least one of the games.

a) Present the information above using the Venn diagram (**8marks)**

b)Find the total number of students in the class. **(3marks )**

14)Given that set T = {the first 5 letters of the alphabet} and set Y = {all the vowels};

(a) List the elements of set T and Y. (**4marks)**

(b) Find T ∩ Y. (**2marks )**

(c) Draw a Venn diagram to represent set T ∩ Y.(**3marks)**

**15**)A marked price ofa watch is9 000 FRW if 20% discount is given.

Find the

(a) The discount. **(3marks)**

(b) The sale price**(3marks)**

16)Calculate **(3marks)**

17)John has 1160 FRW and Jane has 640 FRW. How many must Jane give John so that Jack shall have 4 times as much as June?

(**5marks)**

18.A solid hemisphere has a radius of 5.8 cm. Find its surface area. Take p = 3.142 (**3marks)**

19.The table below shows the mass of beans sold in a certain market in one month.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100 | 120 | 110 | 90 | 90 | 120 | 100 | 110 | 70 | 90 |
| 70 | 110 | 80 | 80 | 120 | 80 | 110 | 100 | 100 | 110 |
| 90 | 80 | 100 | 100 | 110 | 110 | 90 | 80 | 80 | 110 |
| 100 | 90 | 100 | 90 | 100 | 90 | 100 | 90 | 80 | 100 |

1. Complete the table below: (**8marks)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Mass(****)** | **Tally** | **Frequence,** |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

ii)Find the mean mass (**3marks)**

1. What is the mass modal **(2marks**)
2. What is the lowest mass **(1marks)**
3. What is the highest mass.**(1marks)**