**ST.MARIE EUGENIE GIRLS SECONDARY SCHOOL**

**HOLIDAY PACKAGE FORM FOUR 2020**

**BASIC MATHEMATICS**

**CODE: 041**

**TIME: 3:00 HOURS March, 2020**

**INSTRUCTIONS**

1. This paper consists of section A and B
2. Answer all questions in Section A and B
3. Mathematical table and graph may be used
4. Where necessary, use the following constants
* Radius of the earth R=6370 km.
* $ π$ = $^{22}/\_{7}$

**SECTION A: (60 MARKS)**

1. (a) Given 0.05473 correct into
2. Three (3) decimal places
3. Three (3) significant figure
4. Standard notation

(b) Express 1.$\dot{2}$ 1 $\dot{3}$ as a rational number

1. (a) Rationalize the denominator $\frac{\sqrt{3}}{\sqrt{2}- \sqrt{5}}$

(b) Find the value of x for: 22x+1 – 2x+1 + 1 = 2x

1. (a) Evaluate, 2log5 + 5log 2 – ½ log 16

(b) If a-b = $\sqrt{13}$ and a2 + b2 =25 find the value of ab.

1. In an election 115 workers voted for chairperson and secretary, 30 workers voted for the secretary but not chairperson, 60 voted for chair person but not secretary. If each worker voted for at least one candidate, determine the number of workers who voted for the secretary.
2. (a) If 6(ax –b)2 = 54x2 + 72x + c. find the value a, b and c

(b) Make c the subject of the formula in the equation y = $\frac{ax+b}{cx+d}$

1. (a) Given that x is inversely proportional to y and directly proportional to the square of z

 when y = 4, x = 2 and z = 3 find the value of x when y = 3 and z = 2.

(b) A bus travels 240 km using 16 litre of diesel. How many litres of diesel are needed to

 drive 90 km?

1. (a) The radio is bought for Tshs. 400,000/= and sold for 500,000. Find:

(i) The profit made

(ii) The percentage profit.

(b) Find the time in which Sh. 300,000/= will earn an interest of Shs. 60,000/= of the

 interest rate is 10% per annum.

1. (a) Write down the nth term of the sequence ½, $¾,$ 1, $^{4}/\_{5}$

(b) The first four term of an Ap are 2, (a-b), (2a+b+7) and (a-3b) respectively where a and

 b are constants find the value of a and b.

1. (a) If (x-650) and (4x+100) are complementary angles what is the value of x.

(b) Let A is an acute angle of right angled triangle ABC such that $\hat{B}$ = 900 and Cos$\hat{e}$ = $^{5}/\_{13}$

 find the value of Sin $\hat{A}$.

1. (a) Solve the following quadratic equation 2x2+7+6=0 by using the method of completing

 the square.

(b) Solve for x if: $\frac{1}{x-2}$ - $\frac{1}{x^{2}-4}$ = ⅘

**SECTON B (40 MARKS)**

1. The mass of 50 students from a certain school were recorded as shown below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Mass (Kg)** | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 28-30 |
| **No. of students** | 3 | a | 16 | 10 | 8 | 5 | 1 |

1. Calculate the value of a
2. Find mode
3. Use the assumed mean method to calculate mean (use assumed mean A = 17)
4. draw the cumulative frequency curve and from it estimate the median
5. Anna commenced business on 1st May, 2019 with Tshs. 300,000/= Cash

May 1 Purchases goods for cash 150,000/=

 1 paid carriage on goods purchased 1,000/=

 5 Sold goods for cash 130,000/=

 6 Paid carriage on sales 1,500/=

 9 Cash purchases 125,000/=

 15 Paid labourers in cash 12,000/=

 20 Paid electricity 500/=

 28 Cash sales 10,000/=

 30 Paid water bills in cash 450/=

 30 Payment made for purchases 50,000/=

 (i) Prepare and open ledgers

 (ii) Extract a trial balance

1. (a) A function f(x) is defined as:

 -1 if x $\geq $0

 f(x) 2 if x = 0

 1-x if x>0

(i) Sketch the graph of f(x)

(ii) State the domain and range of f(x)

(iii) If is f(x) one to one function?

(b) Given that f(x) = $\sqrt{2x+1}$ find:-

(i) f-1(x)

1. The domain and range of f-1(x)
2. The position of Abuja (Nigeria and Bonn (Germany) to the nearest degrees are (90N, 70E) and (510N, 70E) respectively. Calculate the distance apart in:-

(i) Nautical mile (N.m)

(ii) Kilometre (km)