THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

ASSOCIATE OF SCIENCE EXAMINATION

SEMESTER I – 2018 DECEMBER

PROGRAMMES:	**HEALTH AND WELLNESS TOURISM** **HOSPITALITY AND TOURISM MANAGEMENT**
COURSE NAME:	**APPLIED MATHEMATICS FOR HOSPITALITY**
CODE:	**MATH1205**
YEAR GROUP:	**ONE**
DATE:	**MONDAY, 2018 DECEMBER 03**
TIME:	**9:00 A.M. – 11:00 A.M.**
DURATION:	**2 HOURS**
EXAMINATION TYPE:	**FINAL**

This Examination paper has **10** *pages*

INSTRUCTIONS:

1. **ANSWER ALL QUESTIONS FROM SECTION A**
2. **SECTION B CONSISTS OF FOUR (4) QUESTIONS. ANSWER ANY TWO (2)**

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SECTION B

Instruction: In the booklet provided, answer any <u>TWO (2)</u> questions from this section.

<u>Question 1</u>

A. Mathew was asked to go to the store six different times by his brother. The table below shows some different items that Mathew was asked to buy and their associated cost.

ITEMS BOUGHT	ITEM COST
Apple	$25.00
Orange	$20.00
Grape	$35.00
Banana	$15.00
Pumpkin	$35.00
Carrot	$10.00

i. Calculate the mean price of the items bought by Mathew. ***(4 marks)***

ii. Find the median of the prices of items bought. ***(2 marks)***

iii. What is the mode of all the prices? ***(1 mark)***

iv. Calculate the range ***(2 marks)***

v. Calculate the standard deviation of the prices for the items bought by Mathew. ***(6 marks)***

B. Use the information presented in the table in **A.** to draw:

i. a well labelled bar graph. ***(5 marks)***

ii. a pie chart showing the percentages for each item represented on the chart. ***(5 marks)***

C. A lady invests $9,500 in a bank for **<u>THREE (3)</u>** years and receives simple interest at 8% per annum. If she invests this money in bonds for the same period, she will receive compound interest at 6% per annum. Calculate the interest she receives in both cases and state which investment is better. ***(5 marks)***

(Total 30 marks)

Question 2

A. Calculate the value of the expressions below, given the following information. If $p = 10$, $q = 5$, and $r = 2$

i. $15pq + 12p - qr^2$ ***(2 ½ marks)***

ii. $20pq + r - pq^3 - 16p$ ***(2 ½ marks)***

B. Solve the following equations:

i. $7(3x + 5) - x = 75$ ***(2 marks)***

ii. $3x - 5y = -5$
$2x + y = 14$ ***(3 marks)***

C. Factorize the following:

i. $2x^2 + 6xy + 4x$ ***(2 marks)***

ii. $pq^2 - qr + 2q$ ***(2 marks)***

D. Marsha was given a total of $85,000 to buy several items from the store, from which she brought back $8,500 change. The items Marsha bought were as follows: 7 T-shirts at $540 each, 5 pairs of shoes at $x, and 10 bed-sets which each cost 3 times the cost of a pair of shoes. Represent this information using an equation and solve the equation to find the value of x. ***(4 marks)***

E. Mark was promised that if he invested his $550,000 in the JNB bank for six years he would be given an annual rate of interest of 15%.

i. Calculate the total amount of money that Mark would have in the JNB bank after the six years if he took the offer and the interest was compounded. ***(4 marks)***

ii. Calculate the total amount of money Mark would have in the bank at the end of the period if he calculated at a simple interest. ***(2 marks)***

F. A hotel worker is paid a basic rate of $545 per hour for a 38-hour work week. Last week he worked for 50 hours, overtime is paid at time and a half.

i. Determine his gross wage for the week. ***(4 marks)***

ii. If he has the following deductions, what is his net pay for the week?

1.	Education taxes	$315
2.	NHT	$216
3.	Health Insurance	$259
4.	Income Tax	$648

(2 marks)

(Total 30 marks)

Question 3

A. Donavon wants to start his own catering company, but he does not have all the money he need to start. First National Bank (FNB) offers him $500,000 at a simple interest of 8% per annum for 3 years. Second National Bank (SNB) offers him the same amount for 3 years at a 7.5% compound interest per annum.

i. Calculate the total Donavon would pay back if he chose FNB. ***(3 marks)***
ii. Calculate the interest he would pay if he chose SNB. ***(4 marks)***

B. For his first job Donavon is catering a party for 25 people. A recipe for pistachio cake serves 5 persons and requires ½ cup of pistachio. If 1 cup of pistachio weighs 4 ounces and pistachios are purchased for $500 per pound, how much will the pistachio needed for the party cost? ***(5 marks)***

C. Donavon's assistant is paid a basic rate of $1,200 per hour for a basic 35hr work week. During the week of the party, she worked 12 hours overtime at a rate 1 ½ times the basic rate and 5 hours at twice the basic rate.

i. Calculate the assistant's gross wage for the week. ***(4 marks)***
ii. What is the net wage if income tax is levied at 18% and her allowances are:
    1. Travelling $3000
    2. Studying $5000 ***(5 marks)***

D. Ian bought 3 bags of cabbage for $750 each. He cleaned all the cabbages and got 2 ½ lbs of trim. If each bag weighs 12 lbs, calculate the:

i. APQ ***(2 marks)***
ii. EPQ ***(1 mark)***
iii. yield percent ***(2 marks)***

E. Simplify the following:

i. $(x+3)(x+4)$ ***(2 marks)***
ii. $2x-y(2x+2)+3y$ ***(2 marks)***

(Total 30 marks)

Question 4

A. The table below shows the revenue a store received for sales from the year 2000 to 2005.

Income ($000)	90	110	120	160	130	140
Year	2000	2001	2002	2003	2004	2005

i. Using a scale of 1cm to represent $1,000 on the vertical axis and 2cm to represent 1 year on the horizontal axis, draw a line graph to represent this information.
(5 marks)

ii. State the period during which the revenue showed the greatest rate of decrease.
(2 marks)

iii. State the period during which the revenue showed the greatest rate of increase.
(2 marks)

iv. Find the mean of the revenue recorded over the six years period. Use your graph to explain if you expect the revenue to increase or decrease in year 2006. ***(3 marks)***

v. Calculate the probability that in a year chosen at random, the revenue will be greater than or equal to $120,000. ***(2 marks)***

B. Solve the following simultaneous equations
$4x - 3y = -10$
$5x + 2y = 45$ ***(5 marks)***

C. The ingredients to make Yellow Pound Cake are listed:

Cake Flour	*40 ounces*
Vegetable Shortening	*28 ounces*
Granulated Sugar	*40 ounces*
Salt	*1.5 ounces*
Water	*20 fluid ounces*
Dry Milk	*2.5 ounces*
Whole Eggs	*28 ounces*
Vanilla to taste	

This recipe yields two (2) cakes with ten (10) slices each. You are having a party and want enough cakes so that each of your 60 guests will each get a slice.

i. Determine the recipe conversion factor required to obtain the number of cakes you will need. *(2 marks)*

ii. Calculate the number of kg of flour you need for this new recipe. *(2 marks)*

iii. Determine the number of pints of water required for this new recipe. *(2 marks)*

D. Solve the following equations for x

i. $6x+5=3x+11$ *(2 marks)*

ii. $\frac{5x-2}{3}+\frac{3x+2}{7}=2x$ *(3 marks)*

(Total 30 marks)

END OF EXAMINATION