



THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA
ASSOCIATE OF SCIENCE EXAMINATION
SEMESTER I – 2014 DECEMBER

PROGRAMMES: HOSPITALITY AND TOURISM MANAGEMENT

COURSE NAME: APPLIED MATHEMATICS FOR THE HOSPITALITY AND
TOURISM MANAGEMENT

CODE : (MAT1205)

YEAR GROUP: ONE

DATE: TUESDAY, 2014 DECEMBER 9

TIME: 9:00 A.M. – 12:00 NOON

DURATION: 3 HOURS

EXAMINATION TYPE: FINAL

This Examination paper has 6 pages

INSTRUCTIONS:

SECTION B: ANSWER ANY THREE (3) QUESTIONS FROM THIS SECTION.

SECTION B

Instructions: Answer any **THREE (3)** questions from this section.

Question 1

- a. You are catering a wedding for 350 people. You predict that each guest will have two 5ounce glasses of wine. The wine is purchased at \$90 per case where each case contains 9 litres.
- Calculate in litres, correct to 2 decimal places, the quantity of wine needed. **(3 marks)**
 - How many cases will you need to purchase? **(2 marks)**
 - What is the cost of the wine to be provided for each guest? **(3 marks)**
- b. During 1993 eight of the major earthquakes had Richter magnitudes as shown below:
- 6.2, 7.7, 8.0, 6.4, 6.2, 7.2, 5.4, 6.4
- Calculate the mean and standard deviation. **(7 marks)**
- c. Solve the pair of equations simultaneously:
- $$\begin{aligned} 2x + 3y &= 10 \\ 5x - 3y &= 4 \end{aligned}$$
- (5 marks)**
- d. You purchase 20 pounds of onions for \$23.80. When you prepare the onions you have 11% trim loss.
- What is the cost of a pound of onions, as purchased? **(1 mark)**
 - What is the cost per pound of the cleaned onions? **(2 mark)**
 - You need 40 lbs of these onions remaining after trimming. How much of the untrimmed amount do you need to buy? **(2 marks)**

(Total 25 marks)

Question 2

- a. The quantities of ingredient used in the making of a certain kind of dough are given in the table below.

	No. of Servings	Flour	Sugar	Shortening	Vanilla	Salt
Original recipe	20	5.5 #	0.75 #	1 cup	5 tbsp.	2.5 tsp
Required recipe	12	_____ #	_____ oz	_____ tbsp	_____ tsp	_____ tsp

You are required to make a quantity of this dough that should yield 12 servings.

- i. Calculate the ratio of original number of servings to required number of servings. **(2 marks)**
 - ii. Calculate the recipe conversion factor. **(2 marks)**
 - iii. Using the recipe conversion factor, or otherwise, calculate the required amounts of each ingredient needed for the 12 servings. Leave your answer in the units as indicated in the Required Recipe row of the table. **(8 marks)**
- b. Skeena invested \$25,400 for 5 years at an interest rate of 8% per annum.
- i. Find the amount available if invested at simple interest. **(3 marks)**
 - ii. Find the amount available if interest is compounded yearly. **(5 marks)**
- c. Solve the equation:

$$\frac{x+3}{5} - x = 1 - \frac{x}{2}$$

(5 marks)

(Total 25 marks)

Question 3

- a. To play electronic games in Devon's Games Shop patrons are charged \$200 as entry fee. If a patron chooses to play a game he/she is charged for the length of time, in hours, spent on the machine.

The formula $C = 200 + 150x$ gives the total charge, C (in dollars) to the patron for spending a time of x hours on a machine.

- i. From inspection of the equation, write down the hourly rate charged for playing a game. *(1 mark)*
- ii. What is the total charge to a patron who spent $2\frac{1}{2}$ hours playing? *(3 marks)*
- iii. If a patron's total charges came to \$987.50, how long did he/she spend on the machine? *(3 marks)*
- b. Rewrite as a single fraction in its lowest terms $\frac{2x}{3} - \frac{5-x}{6}$ *(3 marks)*
- c. A sales person's total monthly pay is made up of a basic pay of \$25 000 plus a commission which is a percentage of the volume of her sales for the month.
- i. On a certain month her total pay came to \$97,500. What was her commission for that month? *(2 marks)*
- ii. If her total sales for that month was \$580, 000 what percentage of her sales does she receive as commission? *(3 marks)*
- iii. The following month her volume of sales was \$1.25 million. What was her monthly pay for this month? [Assume percentage obtained in Part ii] *(5 marks)*
- d. Carlene buys buns and bullas for 10 persons. For 7 bullas and 3 buns she paid \$1,923. If she had bought 3 bullas and 7 buns instead she would have paid \$2,055. Using x to represent the price of a bulla and y to represent the price of a bun.
- i. Form a pair of simultaneous equations to represent the information. *(2 marks)*
- ii. By solving the equation determine the price of a bulla and that of a bun. *(3 marks)*
- (Total 25 marks)*

Question 4

- a. The amount of gas consumed by each of 40 cars travelling the same journey was measured to the nearest litre. The table summarizes the result.

Consumption (to the nearest litre)	10	11	12	13	14	15
No. of cars	3	5	12	10	4	6

- i. Write down the mode of the consumption amounts. *(1 mark)*
- ii. Calculate the mean consumption *(4 marks)*
- iii. A car is selected randomly from the lot. What is the probability it consumed less than 13 litres? *(2 marks)*
- b. The cash price of a refrigerator is \$25, 600. When bought on hire purchase the buyer pays a deposit of \$6,016 followed by 36 monthly installments of \$909.08 each.
- i. Express the down payment as a percent of the cash price. *(2 marks)*
- ii. Calculate the total amount paid, on hire purchase, after 36 months. *(4 marks)*
- iii. Calculate the difference in price of the hire- purchase price over the cash price. *(2 marks)*
- iv. Express the difference in price obtained in (iii) above as a percent of the cash price. *(2 marks)*
- c. Marsha was given a total of \$85,000 to buy several items from the store. 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 each, and
10 bed- sets each of which cost 3 times that of a pair of shoes
- i. Write down an expression in x for the cost of 10 bed- sets *(2 marks)*
- ii. Write down an expression in x for the total cost all items bought. *(2 marks)*
- iii. Form an equation involving the total costs of the items and solve for x . *(4 marks)*

(Total 25 marks)

Question 5

Nicolas wants to start his own catering business but he does not have all the cash he needs to start. First National Bank (FNB) offers him \$500 000 at a simple interest rate of 8% per annum for 3 years. Second National Bank (SNB) offers him the same amount for 3 years at 7.5% per annum compound interest.

- a. i. Determine the total to be repaid if Brad chooses First National Bank. **(3 marks)**
- ii. Calculate the interest to be repaid if he chooses Second National Bank **(4 marks)**
- iii. Which bank should he choose? **(1 mark)**
- b. For his first job Nicolas is catering a party for 25 people. A recipe for pistachio cake serves 5 persons and requires $\frac{1}{2}$ cup of pistachios. If 1 cup of pistachios weighs 4 ounces and pistachios are purchased for \$500 per pound, how much will the pistachios cost for the party? **(6 marks)**
- c. Nicolas' assistant is paid a basic rate of \$1,200 per hour for a basic 35 hour work week. During the week of the party she works 12 hours overtime at time and a half and 5 hours at double time.
- i. What is her gross wage for the week? **(5 marks)**
- ii. What is the net wage if income tax is levied at a rate 18% and her allowances are:
- Single person allowance of \$3,000
 - Dependent relative allowance of \$5,000
- (6 marks)**

(Total 25 marks)

END OF EXAMINATION