



## **The Co-operative University of Kenya**

### **SPECIAL / SUPPLEMENTARY EXAMINATIONS**

**EXAMINATION FOR THE DEGREE OF BACHELOR OF COMMERCE, BACHELOR OF  
COOPERATIVE BUSINESS AND BACHELOR OF COOPERATIVES AND COMMUNITY**

### **DEVELOPMENT**

**COURSE CODE: CODM 2103**

**UNIT TITLE: QUANTITATIVE SKILLS**

**DATE: DECEMBER, 2019**

**TIME: 2 Hours**

### **INSTRUCTIONS**

1. Answer question ONE and any other THREE (3) questions
2. Show all your workings
3. Scientific calculators and non- programmable calculators may be used
4. Use the provided statistical tables where applicable

1. a) Evaluate

(5mrks)

$$\int \cos x (\sin x)^5 dx$$

b) Solve  $3x^2 = 9x$  using completing the square method

(5mrks)

c) Solve the following using elimination method

(5mrks)

$$3y + 2x = 11$$

$$Y + 5x = 9$$

d) Consider the universal set T and its sub sets A, B and C below:

$$T = \{a, b, c, d, e, f\}$$

$$A = \{a, d\}$$

$$B = \{b, c, f\}$$

$$C = \{a, c, e, f\}$$

Find a)  $A \cup B$

$$b) A \cap B \cup C$$

$$c) T - C$$

e) Find  $\frac{dy}{dx}$  given  $Y = (3X^2 + 4X)^5$  (4mrks)

f) a) Define statistics (2mrks)

b) The economic growth rate of five counties were given as 20%, 15%, 25%, 18% and 5%.

Calculate their harmonic mean

2. 250 members of a certain society have voted to elect a new chairman. Each member may vote for either one or two candidates. The candidate elected is the one who polls most votes. Three candidates x, y and z stood for the elections and when the votes were counted it was found that

59 voted for y only, 37 voted for z only, 12 voted for x & y, 14 voted for x & z, 147 voted for either x or y or both x & y but not z, 102 voted for y or z or both but not for x.

Represent this information in a Venn diagram, hence;

Find:

a) How many voters did not vote?

b) How many voters voted for x only?

c) Who won the elections? (20mks)

3

a) Differentiate between simple random sampling and stratified sampling (5mrks)

b) Describe statistical estimation giving the characteristics of a good estimator. (10mrks)

i.

C) A manager wants an estimate of sales of a salesman in his company. A random sample of 100 out of 500 salesmen is collected and average sales found to be sh.75,000, if a sample standard deviation is sh.15,000, then find out the population mean at 99% level of confidence.

(5mrks)

4. Determine the area of the region bounded by  $x = -y^2 + 10$  and  $x = (y - 2)^2$  (10 mrks)

b) Determine all the points where the following function is not changing (5 mrks)

$$g(x) = 5 - 6x - 10\cos(2x)$$

ii) Determine all the critical points of  $f(x) = 6x^5 + 33x^4 - 30x^3 + 100$

(5mrks)

5 a) Define a measure of central tendency (5mks)

b) Differentiate between direct method and the indirect method of calculating an arithmetic mean of grouped data. (5mks)

c) The following data shows the number of consignments and their weights (in kg)

| Weight(kg) | frequency |
|------------|-----------|
| 6.5-7.5    | 5         |
| 7.5-8.5    | 12        |
| 8.5-9.5    | 25        |
| 9.5-10.5   | 48        |
| 10.5-11.5  | 32        |

|           |   |
|-----------|---|
| 11.5-12.5 | 6 |
| 12.5-13.5 | 1 |

Compute the arithmetic mean of the above weights using the indirect method (10mks)