



MURANGA UNIVERSITY COLLEGE

(A constituent College of Jomo Kenyatta University of Agriculture & Technology)

MAIN/TOWN CAMPUS

SUPPLEMENTARY/SPECIAL UNIVERSITY EXAMINATIONS

2014/2015 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF PURCHASING AND SUPPLIES CHAIN MANAGEMENT

COURSE CODE: HPS 2205

COURSE TITLE: QUANTITATIVE METHODS 1

DATE: 5TH AUGUST 2015

TIME: 2.00-4.00PM

INSTRUCTIONS TO CANDIDATES

Question ONE (1) is compulsory
Answer any TWO (2) questions

MRUC observes ZERO tolerance to examination irregularities

This Paper Consists of 5 Printed Pages. Please Turn Over.



QUESTION ONE (30MKS)

- a. Mention five limitations of statistics (5mks)
- b. Income of employees in a firm is given below. Compute the mean income (5mks).

Income(shs)	Number of employees
0-5000	90
5000-10000	150
10000-15000	1000
15,000-20,000	80
20,000-25,000	70
25,000-30,000	10

- c. Find the compound interest on the sum of shs 30,000 at 20 % per annum for 5 years. (5mks).
- d. Solve for x in

$$2x^{1/3} + 8x^{-1/3} - 8=0 \quad (6mks)$$

- e. Explain the following terms as used in set theory.

- i. Intersection of set (2mks)
- ii. Disjoint of sets (2mks)

- f. A trader bought 200 bags of sugar and 300 bags of rice for a total of shs 850,000 from Kongowea market. He also bought 90 bags of sugar and 120 bags of rice for a total of shs 360,000 from Majengo market. Determine the prices of a bag of sugar and a bag of rice in the two markets. (5mks)

Question Two (20mks)

- a. A payroll can be completed in 4 hours by the computer working simultaneously. How many hours are required for each computer to complete the payroll alone if the older model requires 3 hours longer than the newer model (5mks)
- b. A survey of 117 households was carried out at Rongai town find out the number of households that watched television channels .A,QB and C respectively the results of the survey were as follows
- 42 of the households watched channel A.
 - 52 of the households watched channel B
 - 51 of the households watched channel C.
 - 11 of the households watched both channels A and C
 - 17 of the households watched both channel B and C.
 - 5 of the households watched all the three channels.
- i. Present the above information in a Venn diagram. (4mks)
- ii. Determine the number of households which watched only one channel. (3mks)
- iii. The number of households which watched none of the three channels. (3 mks).
- c. If the demand function for a product is given by $p^2+2q=1600$ and the supply function is given by $200-p^2+2q=0$ find the equilibrium quantity and the equilibrium price. (5mks)

Question Three (20mks)

- a. A manufacturer produces a standard model and a deluxe model of 14 inch television set. The standard model requires 12 hours labour to produce; whereas the deluxe model requires 18 hours .The labour available is limited to 360 hours per week. Also the plant capacity is limited to producing a total of 25 sets per week. Obtain the inequalities that represent these conditions. (4mks).
- b. Solve the simultaneous equations.
- $$\begin{aligned}5x+6y&=24,400 \\7x+9y&=35,600\end{aligned}$$
- (5mks)
- c. Solve the inequality $3x-2 \geq 5x+13$. (4mks)

- d. A firm produces 200 units of a product for a total of shs 730 and 500 units for the products for a total cost of shs 970. Assuming the cost curve to linear, derive the equation of this straight line and use it estimate the cost of producing 400 units of the products. (7mks)

Question Four (20mks)

- a. Mention five features of statistics as a statistical method (5mks)
 b. The data collected below shows the distribution of profits realized by 1000 Mpesa agents within Mombasa for the financial year ended 30 June 2013.

Profits (Shs Million)	Frequency
80-96	17
96-112	53
112-128	199
128-144	194
144-160	327
160-176	208
176-192	2

- i. Calculate the mean annual profit (4mks)
 ii. The coefficient of variation (6mks)

Type of cereal	2011		2012	
	Price per kg Shs	Quantity per kg	Price per kg shs	Quantity per kg
Maize	50	100	80	120
Rice	80	140	100	120
Beans	40	150	80	110
Peas	50	100	90	100

Using year 2011 as the base year, calculate Paasche's price index. (5mks)