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**University Examinations 2015/2016**

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF PURCHASING AND SUPPLIES MANAGEMENT AND BACHELOR OF INFORMATION SCIENCE

**SMB 3225/ICS 3205: QUANTITATIVE METHODS I/ QUANTITATIVE TECHNIQUES**

**DATE: November, 2015 TIME: HOURS**

**INSTRUCTIONS:** *Answer questions* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE - (30 MARKS)**

1. Find the value of x that satisfy the linear equation.

(2 Marks)

1. Use elimination method to solve the following simultaneous equations

4x – 2 = 2y (3 Marks)

1. Calculate the present value of receiving sh. 1,000 in one year, sh 2,000 in 2 years and sh3,000 in three years time with a discount rate of 10% (4 Marks)
2. If A = and B = Find:
3. AUB (1 Mark)
4. A (1 Mark)
5. Use factorization method to solve; (3 Marks)
6. A company loans money at 20% nominal interest but compounds months. Find the APR.

(3 Marks)

1. Compute the mean and the standard deviation from the following data.

6,8,9,10,11,11,14,6 (4 Marks)

1. Calculate the present value of sh 20,000 received in 5 years at a discount rate of 10%.

(2 Marks)

1. Calculate the price index for the following information. Take 2010 as the base year.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| Price of 1kg Rice | 25 | 30 | 35 | 40 | 60 | 80 |

1. Briefly describe the four levels of measurements. (4 Marks)

**QUESTION TWO (20 MARKS)**

1. Define the following terms as used in set theory. Give an example in each case.
2. A set (1 Mark)
3. A subset (1 Mark)
4. Number of a set (1 Mark)
5. A universal set (1 Mark)
6. Set equality (1 Mark)
7. If A = and B = with the universal set T =
8. Determine the intersection of A and B (2 Marks)
9. Illustrate the answer in (i) in a venn diagram. (2 Marks)
10. If A = B = C = and a universal set

u =

Find:

1. AUB (1 Mark)
2. A (1 Mark)
3. (1 Mark)
4. ( AUB) (2 Marks)
5. BC (1 Mark)
6. State four sources of secondary data. (4 Marks)
7. Define the term “variance” as used in statistics. (1 Mark)

**QUESTION THREE ( 20 MARKS)**

1. List the five stages that are involved in a statistical investigation. (4 Marks)
2. Briefly describe the following methods of data collection. In each case give one advantage and one limitation.
3. Observation (3 Marks)
4. Interviews (3 Marks)
5. Questionnaires (3 Marks)
6. Sampling (3 Marks)
7. Draw a ;

1. Multiple bar graph (2 Marks)
2. Component bar graph (2 Marks)

From the following information;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| year | 1995 | 1996 | 1997 | 1998 | Totals |
| Sales of A | 120 | 180 | 200 | 280 | 780 |
| Sales of B | 160 | 170 | 210 | 250 | 790 |
| Sales of C | 220 | 200 | 250 | 320 | 990 |

**QUESTION FOUR (20 MARKS)**

1. A firm rents its premises and the rental agreement provides for a regular annual increase of sh 2650. If the rent in the first year is sh 8,500. Find
2. the rent in the 10th year (5 Marks)
3. the total rent paid for the premises over the 10 years (5 Marks)
4. A firm buys a machine for sh 32,500 which is expected to last for 20 years and to have a scrap value of sh 7,500.
5. find how much should be provided each year if the depreciation is on a straight line method. (5 Marks)
6. Find the percentage rate of depreciation if the depreciation was to be calculated on the reducing balance method. (5 Marks)

**QUESTION FIVE (20 MARKS)**

1. Use graphical method to estimate the ;
2. Mode (3 Marks)
3. Median (5 Marks)

For the following data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| class | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 |
| frequency | 2 | 14 | 29 | 43 | 3 | 9 |

1. Calculate the amount accrued by sh 10,000 at 8% p.a for 15 years;
2. Simple interest (2 Marks)
3. Compound interest (2 Marks)
4. Illustrate each of the following inequalities on a number line.
   * 1. (1 Mark)
     2. (1 Mark)
5. Solve the following inequalities
6. x – 4 (1 Mark)
7. (2 Marks)
8. (3 Marks)