



*(Knowledge for Development)*

**KIBABII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**  
**2016/2017 ACADEMIC YEAR**  
**FIRST YEAR SECOND SEMESTER**  
**SPECIAL/ SUPPLEMENTARY EXAMINATION**  
**FOR THE DEGREE OF BACHELOR OF SCIENCE**

**COURSE CODE:** STA 104/106

**COURSE TITLE:** BASIC STATISTICS

**DATE:** 28/09/17

**TIME:** 3 PM -5 PM

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**INSTRUCTIONS TO CANDIDATES**

Answer Question One and Any other TWO Questions

TIME: 2 Hours

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

**Question One ( 30mks)**

1 .a) Define the following terms (4mks)

- i) Qualitative data
- ii) Quantitative data
- iii) Independent variable
- iv ) Dependent variable

b) Differentiate between descriptive statistics and inferential statistics

c) Given the following values of set data, 9 , 3 ,1 ,4,7,8

- i) Calculate the arithmetic mean , (2mks)
- ii) Calculate the geometric mean, (2mks)
- iii) Calculate the harmonic mean, (2mks)
- iv) Calculate the quartile range , (4mks)
- v) Calculate the standard deviation . (4mks)

d)Using a clearly labeled diagram, show the position of mode, mean and median of a positively skewed distribution. (3mks)

e) Prove that 
$$\sqrt{\frac{\sum_{i=1}^n f_i (x_i - \bar{x})^2}{\sum_{i=1}^n f_i}} = \sqrt{\frac{\sum_{i=1}^n x_i^2 f_i}{\sum_{i=1}^n f_i} - \left( \frac{\sum_{i=1}^n f_i x_i}{\sum_{i=1}^n f_i} \right)^2}$$
 (5mks)

### Question Two (20mks)

2. a) Outline the merits and demerits of arithmetic mean (4mks)

b) Given the following data

Daily wages in Rs	100-200	200-300	300-400	400-500	500-600	600-700
No. of workers	4	6	20	10	5	5

Calculate

- i) Median (4mks)
- ii) 25<sup>th</sup> Percentile (3mks)
- iii) 75<sup>th</sup> Percentile (3mks)
- (iv) Variance (4mks)
- (v) Standard deviation (2mks)

### Question Three (20 mks)

3 a) Given the following data,

X	1	2	4	3	5	6	3	8	9
Y	16	23	35	28	44	40	22	61	82

- i) Sketch a scatter plot (2mks)
- ii) Compute the correlation coefficient  $r$  (7mks)
- iii) Comment on the value of  $r$  above (1mk)
- b)(i) Compute the coefficient of linear regression function  $\hat{Y} = \hat{\beta}_1 X + \hat{\beta}_0$  (8mks)
- (ii) Estimate the value of  $Y$  when  $x=10$  (2mks)

### Question Four (20mks)

4 a) The marks of 50 students in a particular test are given below

Marks	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of students	4	6	9	12	8	6	4	1

Calculate

i) Mean deviation (4mks)

ii) Lower quartile (3mks)

iii) Upper quartile (3mks)

b) A Tobacco company wishes to know whether heavy smoking is related to longevity of years a person lives. The following data was collected of recently deceased smokers

Cigarettes smoked/day	25	35	10	40	85	75	60	45	50
Years lived	68	68	72	62	65	46	51	60	53

i) Calculate the coefficient correlation  $r$  (7mks)

ii) Comment on how smoking affects longevity (3mks)

### Question Five (20 mks)

a) Let  $C$  and  $D$  be two events with  $P(C)=0.25$ ,  $P(D)=0.45$  and  $P(C \cap D) = 0.1$ ,

compute  $P(C^c \cap D)$  (4mks)

b)b) Two dice are rolled,

$A =$  'sum of two dice equal 3'

$B =$  'sum of two dice equals 7'

$C =$  'at least one of the dice shows 1'

Compute

i)  $P(A/C)$  (3mks)

ii)  $P(B/C)$  (3mks)

iii) Are  $A$  and  $B$  independent events? , explain your answer. (2mks)

c) State four methods of collection of data

(4mks)

d) State four methods of data representation

(4mks)