



MUEO

**MOI UNIVERSITY**

**OFFICE OF THE DEPUTY VICE CHANCELLOR, ACADEMIC  
AFFAIRS, RESEARCH & EXTENSION**

**UNIVERSITY EXAMINATIONS  
2016/2017 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS**

**FOR THE DEGREE  
IN BACHELOR OF BUSINESS AND ECONOMICS**

**EXAM CODE:-       BBM 350**

**COURSE TITLE:-   MANAGERIAL STATISTICS**

**DATE:-9<sup>TH</sup> JUNE, 2017**

**TIME:- 2.00P.M. – 5.00P.M.**

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**INSTRUCTION TO CANDIDATES**

➤ **SEE INSIDE.**

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## BBM 350: MANAGERIAL STATISTICS

Instructions: Answer Question One and any other Three Questions

### QUESTION ONE

- a) Discuss the importance of the concept of probability in business (5 Marks)
- b) Elucidate the assumptions of chi-square (3 Marks)
- c) A binomial distribution has  $n=20$  and  $p=0.3$ . Find the mean and the variance of this distribution. (4 Marks)
- d) Find the probability that at most 10 defective bolts will be found in a box of 400 bolts if it is known that 3% of such bolts are expected to be defective. Take  $e^{-4} = 0.0183$  (5 Marks)
- e) The life time of electric bulbs for a random sample of 10 from a large consignment gave the following data

Item	1	2	3	4	5	6	7	8	9	10
Life in '000 hours	8	9	7	8	5	6	4	8	7	10

At 5% significance level, can we reject the hypothesis that the average life of bulbs is 8000 hours? Develop the limits within which the population means lies. (8 Marks)

Use the following values of t

d.f	7	8	9	10
t.025	2.365	2.306	2.262	2.228
t.05	1.895	1.860	1.833	1.812

### QUESTION TWO

- a) Discuss the uses of ANOVA test in analysis. (5 Marks)
- b) A milk producers' union wishes to test whether the preferences pattern of consumers for its products is dependent on income levels. A random sample of 500 individuals gives the following data; (complete the table)

Income	Product A	Product B	Product C	Total
Low	170		80	280
Medium	50	25		135
High	20			85
Total	240	65	195	500

Use chi-square test values given below at 5% significance level.

Df	1	2	3	4	5
Chi-square	3.84	5.991	7.815	9.49	11.1

### QUESTION THREE

a) Discuss the importance of standard error. (5 Marks)

b) A company is interviewed in finding out if there is any difference in the average salary received by managers of two divisions. According samples of 24 managers in the first division and 20 managers in the second division were selected at random.

The results are given below.

	1 <sup>st</sup> Divison	2 <sup>nd</sup> Divison
Sample Size	24	20
Average monthly salary	25,000	22,400
Standard deviation	640	960

Apply test to find out whether there is a significance difference in the average salary. (10 Marks)

### QUESTION FOUR

a) Clearly highlight the assumption in chi-square (5 Marks)

b) The following table gives the monthly sales (in thousands of shillings) of a certain firm in randomly selected three cities:

City	salesmen		
	I	II	III
A	19	23	16
B	17	21	18
C	26	29	26

Set up ANOVA table for the given information and draw the inference about variance at 1% level of significance regarding i) the difference between sales by the firm salesmen, and ii) sales in the three cities. (10 Marks)

### QUESTION FIVE

a) Discuss the merits and demerits of non-probabilistic sampling design in research? (5 Marks)

b) The marks of the students are normally distributed. 5% get more than 70 marks and 30% get less than 35 marks. Find the mean and the standard deviation of the distribution. The relevant extract of area table (under the normal curve) is given below:

Z	0.84	1.28	2.0
Area	0.2995	0.3997	0.4772

(10 Marks)

## QUESTION SIX

a) Briefly describe the difference between null and alternative hypothesis. **5 Marks)**

b) A multiple-choice test consists of 8 questions with 3 answers to each question (of which one is correct). A student answers each question by rolling a balanced dice and checking the first answer if he gets 1 or 2, the second answer if he gets 3 or 4 and the third answer if he gets 5 or 6. To get a distinction, the student must secure at least 75% correct answers. If there is no negative marking, what is the probability that the student secures distinction? **(10 Marks)**