MUEO

MOI UNIVERSITY

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

UNIVERSITY EXAMINATIONS
2014/2015 ACADEMIC YEAR

4TH SEMESTER EXAMINATIONS

FOR THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION

EXAM CODE:-   **BBM 350**

COURSE TITLE:-   **MANAGERIAL STATISTICS (EMBA)**

DATE:-29TH SEPTEMBER, 2015   **TIME:-**9.00A.M. – 12.00NOON.

INSTRUCTION TO CANDIDATES
  ➤ SEE INSIDE.
THIS PAPER CONSISTS OF (3) PRINTED PAGES

BBM 350: MANAGERIAL STATISTICS (EMBA)

Answer Question **One** And Any Other **Three** Questions.

QUESTION ONE   (25 Marks)

a) Clearly distinguish the following terms as used in statistics;

   i.   Point estimate and Interval estimate

   ii.   Type I and Type II errors

   iii. Standard error and Error of estimate.   (6marks)

b) State the condition for Poisson approximation to the binomial. In a production process the probability that an item is faulty is 0.04 and there are 4,000 items produced .What is the probability of there being;

   i.   No faulty item?

   ii.   At most 3 fault items?

   iii. Two or more fault items   (6 Marks)

c) State two disadvantages of using point estimation. A company wishes to estimate its mean weakly expenditure on transport to within Ksh 300 with 99.1 percent confidence level, given that the estimated standard deviation of the value of the transport cost is Kshs. 5000, find the minimum sample size.   (5 marks)

d) An electrical firm manufactures light bulbs that have a length of life that is normally distributed with a standard deviation of 40 hours. If a sample of 36 bulbs has average life of 750 hours and standard deviation of 38.23.

   a) Find a
   i.   95% confidence interval
   ii.   98% confidence interval for the population mean of all bulbs produced by this firm.
   b) If estimation is to be done within a maximum error of 2.5%, find the required sample size at 97% confidence interval. (8 marks)

QUESTION TWO. (15 Marks).

a) Differentiate between probability and non-probability sampling methods. For each of the sampling methods, identify and briefly discuss two sampling procedures.   (8marks.)

b)

  i.   Normal distribution is widely used and applied distribution. Discuss this statement citing practical examples.   (2marks)

  ii. State the condition under which Normal distribution approximates to the Poisson. The average number of broken bricks per lorry load is known to be 80. What is the probability that there will be;

     I.   More than 80

     II. Less than 45 bricks on a particular lorry load. (5 marks)

QUESTION THREE (15marks).

a) Define the following terms;

  i.   Estimate

  ii. Level of significance

  iii. Power of a test

  iv. Unbiased estimator (4 marks)

b) In an examination 46% of the candidates get a pass and 9% achieve distinction. Estimate the average marks obtained by the candidates and the standard deviation, the minimum pass and distinction marks being 40 and 75, respectively (assume that the marks of the candidates were normally distributed). (6 marks)

c) Table below gives the times taken (in minutes) by eight typists to type the same number of words using two different typewriters. Do the data indicate any difference in speeds for the two typewriters? Use $\alpha = 5\%$. (5Marks)

Typist	Time using typewriter I	Time using typewriter II
A	6.3	5.1
B	4.5	4.4
C	7.1	6.2
D	8.4	7.3
E	3.7	4.5
F	3.9	4.0
G	4.7	3.6
H	5.2	5.1

QUESTION FOUR (15 MARKS)

a) Oral test are conducted by three examiners separately. The members of candidates in the categories credit, pass, fail are as shown in the table below.

EXAMINER	CREDIT	PASS	FAIL	TOTAL
1	50	110	40	200
2	62	90	28	180
3	74	100	56	230
TOTAL	186	300	124	620

Use a χ^2 test to examine the hypothesis that the examiners do not differ in their statements of awards. State the assumptions made.   (5marks).

b) An explorer measured the lengths of the feet of ten adult males of tribe A with the following results: 9.4, 10.8, 10.9, 9.0, 10.0, 11.1, 10.5, 9.5, 9.7, 9.8 inches. He also measured the length of the feet of twelve men of tribe B, obtaining: 8.4, 8.8, 10.0, 10.3, 9.3, 8.4, 9.0, 8.5, 9.1, 8.3, 8.6, 9.2 inches. Is there evidence of a real difference between distribution of lengths of feet in the two tribes.   (5marks)

c) Four diets were compared on premature babies with three types of respiratory diseases. Table below gives the increase in mass, in kilograms, for these babies.

Respiratory Disease	Diets			
	1	2	3	4
A	3.2	3.9	2.7	2.0

B	2.3	3.0	3.9	4.5
C	2.9	3.4	5.7	6.3

Carry out an analysis of variance and test for differences between diets and between diseases. (5marks).

QUESTION FIVE(15 MARKS).

a) A company minibus has capacity of seven passengers and on a routine run any passenger seat will be filled with probability of 0.42.

    i.   What is the mean and variance of the binomial distribution of the number of passengers on a routine run?

    ii.   Calculate the probability that , on a routine run:

        I.   There will be no passengers

        II.   There will be just one passenger

        III.   There will be exactly two passengers

        IV.   There will be at least three passengers   (10marks)

b) In the past average weekly earnings in a factory have averaged $302? A random sample of 9 employees yielded a mean of $287 with standard deviation of $16. Is there any evidence of a difference in pay? (5marks).