Mount Kenya University

UNIVERSITY EXAMINATION 2014/2015

SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF MATHEMATICS, STATISTICS AND ACTUARIAL SCIENCE

BEDS/BEDA/BENH/BSNE
SCHOOL BASED

UNIT CODE: BMA1104 UNIT TITLE: PROBABILITY AND STATISTICS I

DATE: AUGUST 2015 MAIN EXAM TIME: 2 HOURS

Instructions: Answer question one and any other two

1. a) Define the following terms as used in statistics.
   i) Population (2 Marks)
   ii) Statistics (2 Marks)

   b) Distinguish between the following terms;
   i) Descriptive and inferential statistics
   ii) Primary and secondary data
   iii) Discrete and continuous variable (6 Marks)

   c) A bag contains 6 black balls and some brown ones. If a ball is picked at random, the probability that it is black is 0.25. Find the number of brown balls. (2 Marks)

   d) Calculate the mean, mode and the quartile of the following distribution giving the ages of 50 students.

Ages (years)	0-4	5-9	10-14	15-19	20-24
No of children	8	10	20	7	5

e) A bag contains 8 black balls and 5 white balls. If two balls are drawn from the bag one at a time, find the probability of drawing a black ball and a white ball.
i) Without replacement
ii) With replacement (4 Marks)

f) The number of accidents on a certain highway was recorded as follows.

No of accidents	2-4	5-7	8-10	11-13	14-16
No of days	2	5	10	8	5

Draw;
i) Histogram
ii) Frequency polygon
iii) Ogive (8 Marks)

2. a) Define Histogram. (2 Marks)

b) The table below shows the number of goals scored by a team in 15 matches.

Score	0	1	2	3	4	5	6
Frequency	1	0	3	2	5	3	1

Find mean; (2 Marks)

c) Find the standard deviation of the following observations.
52,53,61,67,71,72,78,82

d) Two marbles are drawn in turn from a pack containing 3 red marbles, 6 white marbles, 7 black marbles and 9 green marbles. Determine the probability of having
i) Two white marbles
ii) A black then a green marble
iii) No red marble

iv) If drawing is done;
Without replacement
With replacement (7 Marks)

e) The table below shows the dress sizes of 100 girls at a school. Calculate the mean size.

Size	6	7	8	9	10	11	12
No of girls	2	4	11	29	32	14	8

3. a) Define ogive. (2 Marks)

b) Describe briefly the simple random sampling method. (5 Marks)

c) The daily wages of 30 workers on a farm are shown in the following table

Wages	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	1	6	10	8	2	3

Calculate the mean daily wage. (4 Marks)

d) Calculate the standard deviation of the following frequency distribution.

Class	1-3	4-6	7-9	10-12	13-15	16-18	19-21
Frequency	1	9	25	35	17	10	3

e) The probability that Ken goes to Nakuru is ¼. If he goes to Nakuru, the probability that he will see a flaming is ½. If he goes not to Nakuru, the probability that he will see a flaming is 1/3.

Find the probability that Ken will;
i) Will not to Nakuru and see a flaming
ii) Not go to Nakuru and yet he sees a flamingo.
iii) See a flamingo (5 Marks)

4. a) Find the three quartile of the following observation.
   i) 5,6,7,7,4,5,3,2,9,8,10,6,5,3,15
   ii) 10,15,13,25,30,17,26,50,45,36,65,56

   b) A bag contains 30 tickets numbered from 1 to 50. One ticket is drawn at random. What is the probability that it is divisible by 3 or 5?
   (4 Marks)

   c) A fair is tossed three times. Find the probability of getting head in the third throw given that the first two tosses are heads.

   d) The scores of 50 students of a test are as follows;

35	50	30	40	42	30	60	65	60	55
50	40	45	35	38	30	50	45	50	50
60	48	38	92	59	35	55	45	50	43
56	45	40	61	72	49	24	10	95	82
70	69	8	37	64	43	36	58	90	50

   Construct a grouped frequency distribution. (5 Marks)

5. a) A coin is tossed three times. What is the probability of getting two heads? (3 Marks)

   b) Find the mode of the following distribution.

Score	20	25	36	40	45	46	60	72
Frequency	1	1	3	5	2	6	1	1

c) Find the quartile deviation of the following set of data.

i) 32,30,28,35,33,37,33,34,32

ii) 8,10,9,15,12,17,14,13

d) If the probability that a husband will be alive in 20 years is 0.7 an his wife will be alive in 20 years is 0.5. Find the probability that;

i) Both will be alive

ii) At least one will be alive

iii) None will be alive (4 Marks)

e) Name two advantages and two advantages of a census. (4 Marks)