KARACHI UNIVERSITY BUSINESS SCHOOL
University of Karachi
FINAL EXAMINATION DECEMBER 2010: AFFILIATED COLLEGES
BUSINESS STATISTICS: BA (H) – 451
BS – III

Date: December 31, 2010 Max Time: 3 Hrs
Instruction: Attempt ALL questions. Max Marks: 60

Q.1(a) In an experiment to measure the stiffness of a spring, the length of the spring under different loads was measured as follows:

Loads (lbs)	3	5	6	9	10	12	15	20	22	28
Lengths (inches)	10	12	15	18	20	22	27	30	32	34

Find the regression equations appropriate for predicting
(i) the length, given the weight on the spring;
(ii) the weight , given the length of the spring.

(b) Find Q_1, Q_2 and Q_3 for the following data :
4, 4, 6, 5, 9, 8, 14, 12, 21, 18, 29

Q.2 (a) Compute (i) Laspeyres' (ii) Paasche's (iii) Fisher's Ideal quantity Index numbers from the following data :

Commodity	Quantity			Price		
	2007	2008	2009	2007	2008	2009
A	200	350	350	15	16	20
B	100	220	340	18	20	35
C	30	45	50	100	120	150

(b) Goals scored by two teams A and B in a hockey season were as follows:

No. of goals scored in a match (x_i)	No. of matches	
	A	B
0	27	17
1	9	9
2	8	6
3	5	5
4	4	3

By calculating the coefficient of variation in each case, find which team may be considered more consistent.

Q.3 (a) The random variable X, representing the number of defective missiles when 3 missiles are fired, has the following probability distribution:

x	0	1	2	3
P(X=x)	0.51	0.38	0.10	0.01

Calculate σ^2.

(b) How many distinct permutations can be made from the letters of the word "business"?

Cont.....

(c) Find quartile deviation and its coefficient from the following data :-

C.I	0 - 4	5 - 9	10 - 14
F	13	10	12

Q.4 (a) From a group of 4 boys and 5 girls, how many committees of size 3 are possible
(i) with no restrictions?
(ii) with 1 boy and 2 girls?
(iii) with 2 boys and 1 girl if a certain boy must be in the committee?

(b) In a fuse box there are total 20 fuses, of which 5 are defective. If 2 fuses are chosen at random and removed from the box in succession without replacing the first, what is the probability that both fuses are defective?

(c) Life of the 50 car batteries in weeks are given below :

Life in weeks	16-20	21-25	26-30	31-35	36-40	41-45	46-50
No of batteries	4	6	8	14	8	6	4

(i) Compute mean, median and mode .
(ii) Are the averages equal? Why?

Q.5 (a) Calculate the coefficient of correlation for the following data:

X	5	12	14	16	18	21	22	23	25
Y	11	16	15	20	17	19	25	24	21

(b) The number of children per family of 50 families is grouped in the following frequency distribution table:

No.of children	0	1	2	3	4	5
No.of families	4	m	n	8	4	2

If the mean of the distribution is 2, find the value of m and n.

Q.6 (a) An electrical company manufactures energy savers that have a length of life that is normally distributed with mean equal to 800 hrs and a standard deviation of 40 hrs. Find the probability that a energy saver burns between 778 and 834 hrs.

(b) For the following frequency distribution , calculate standard deviation by using

(i) Direct Method
(ii) Proper mean Method.

C.I.	65-84	85-104	105-124	125-144	145-164	165-184	185-204
f	9	10	17	10	5	4	5

(c) Compute harmonic mean for the observations given below :-
X : 10, 20, 40, 50, 80.

(d) Calculate geometric mean for the following data :
X :13, 10, 12, 14, 11, 15.

KARACHI UNIVERSITY BUSINESS SCHOOL
University of Karachi

BS Four Years Program

FINAL EXAMINATION, JUNE 2010; AFFILIATED COLLEGES
BUSINESS STATISTICS: BA (H) – 451
BS – III

Date: June 20, 2010 Max Time: 2.5 Hrs
Instruction: Attempt any 5qts Max Marks: 30

Q.1 (a) Convert the following data into standard scores, means and standard deviation.

5,1,6,3,4,1,0,4,3,5,8

(b) Two sales representatives of Toyota Company report the following quantity sales for the last year.

Sales man 1= 6,5,3,8

Sales man 2= 13,6,8,1

Which one is more consistent?

Q.2 (a) A manufacturer produces three grades of stainless steel. The prices (Rs. / Kg) and the quantities produced (metric tons) are shown below:

Grades of Steel	1979		1980		1981	
	Price	Quantity	Price	Quantity	Price	Quantity
I	20.10	3.86	21.60	4.71	23.00	8.31
II	9.25	41.81	8.20	58.46	5.10	51.22
III	5.40	9.80	6.15	8.03	8.25	11.41

Take base year = 1980, compute for 1979 and 1981.

i. Unweighted aggregative index
ii. Unweighted average of relative index (use median)
iii. Laspeyre's, Paache's and Fisher's Index.

Q3 (a) Four law students appear in a bar experiment, they can pass the examination in at most FOUR attempts, How many of them pass the examination in each attempt is to be studied. Draw tree diagram to show possible results in each examination.

(b) 4 boys and 2 girls are invited in a party. In how many ways they can take their seats if:

i. they can sit any where
ii. boys and girls sit alternatively
iii. two boys occupy the ends.

Q4 (a) A box contains 6 white balls and 2 red balls. Three balls are drawn at random. In how many ways can the three balls be drawn if:

i. the color is not considered.
ii. two balls are white and one is red.
iii. all three balls are white.
iv. at least one ball is white.
v. all the three are red.

(c) How many permutation of all letter can be made from the word "ASSASSINATION"

Q5 (a) In a bag there are 500 envelopes

20 contains 5000 notes
180 contains 1000 notes
26 contains 500 notes
74 contains 100 notes
120 contains 50 notes
80 contains 20 notes

If the amount in each envelopes s the random variable X, fin d the mean and variance of X.

(b) A bag contains 6 red and 4 green balls. Three balls are drawn "with replacement". Calculate probabilities of all possible values of the random variable "No. of green balls drawn".

(c) In a binomial distribution:

n= 5 and p= 0.7

Calculate probabilities for x=0,1,2 and 3

Q6 (a). Fuel consumption (km/lit) achieved by 100 medium sized cars are recorded below:

7.1	5.9	8.8	8.0	7.9	6.6	5.1	7.0	5.7	6.8
8.1	7.7	8.3	5.9	8.7	7.0	9.3	7.8	7.0	7.2
5.4	8.1	5.0	7.3	6.5	8.1	5.1	8.9	7.6	7.5
6.7	4.8	6.0	8.0	6.9	4.6	5.5	8.5	6.6	8.1
6.1	7.6	7.6	8.8	7.3	8.0	7.5	5.5	8.2	7.4
8.4	8.2	7.9	8.8	7.0	7.0	8.7	5.9	6.8	8.0
8.8	6.8	8.0	7.1	7.2	7.7	9.0	8.0	8.0	7.3
7.6	6.7	9.2	5.0	9.0	6.2	8.8	6.2	7.6	7.8
7.9	8.5	8.4	4.8	8.9	8.1	7.6	8.3	8.0	5.0
8.3	6.8	6.2	8.8	6.6	7.9	6.0	6.0	8.1	8.0

a) Construct a frequency distribution using 10 equal intervals.

b) Find mid points and class boundaries of the interval.

c) Find relative frequency distribution.

d) Find cumulative frequency distribution "less than" and "more than" and construct Ogive for it.

Q6(b). For the frequency distribution given below:

Class interval	Frequency
25.0 – 29.9	8
30.0 – 34.9	14
35.0 – 39.9	33
40.0 – 44.9	20
45.0 – 49.9	5

Calculate i) Variance

ii) Standard Deviation

UNIVERSITY OF KARACHI
KARACHI UNIVERSITY BUSINESS SCHOOL
Final Examination; Affiliated Colleges
BUSINESS STATISTICS – BA(H) – 451
BS – III

Time: 3 Hours **Date: June 16, 2009** **Max. Marks: 60**

Instruction: Attempt any FIVE (5) questions.

Q.1(a) Differentiate between (i) Descriptive and Inferential Statistics. **(4)**
(ii) Primary and Secondary data.

(b) Prepare a frequency distribution for the following data taking suitable number of equal classes. Draw Histogram and Frequency Polygon of this distribution on the same paper. **(8)**

3.1	10.3	3.9	0.5	1.5	11.2	15.6	1.8	12.8	8.2	7.7	2.9
3.4	11.6	6.4	3.9	8.0	8.4	0.7	7.2	6.8	10.2	0.9	5.5

Q.2(a) The following table contains "weekly wages" of ~~40~~ 20 employees of an organization: **(8)**

Weekly Wages	401–420	421–440	441–460	461–480	481–500
No. of Employees	2	4	8	4	2

(i) Compute Mean, Median, and Mode.
(ii) Comment on the symmetry of the distribution.

(b) The daily sales in a hardware store are as follows: **(4)**
Rs. 136, 484, 2837, 265, 195, 176 and 572.
(i) Calculate mean and median for these sales data.
(ii) Which one gives a meaningful measure of average and why?

Q.3(a) For the frequency distribution given below, calculate coefficient of variation. **(6)**

C.I	f
8.0 – 8.9	14
9.0 – 9.9	27
10.0 – 10.9	22
11.0 – 11.9	5
12.0 – 12.9	4
13.0 – 13.9	12
14.0 – 14.9	16

(b) The number of machine breakdowns per day in a factory is recorded for seven days in each of two months as: **(6)**

June	4	10	9	0	0	8	3
August	11	4	3	2	3	0	3

Which month exhibits more variability in terms of coefficient of variation?

Q.4(a) Find the number of distinct permutations that can be formed from all the letters of the word PROPOSITION. **(4)**

(b) Two balanced dice are rolled. What is the probability that the sum of dots is at least 8? **(4)**

(c) A coin is tossed four times. Find the probability of one head. **(4)**

Q.5(a) Given that events A and B are independent, and P(A) = 0.3 and P(B) = 0,6, Compute P(A U B). **(4)**

(b) Given the probability function: **(8)**

$$P(X) = \frac{5 - X}{10}, \quad X = 1,2,3,4.$$

Calculate the mean and variance of X.

Q.6(a) 4 cards are drawn at random from a deck of 52 playing cards. What is the probability of getting 2 kings if the cards are drawn **(6)**
(i) with replacement?
(ii) without replacement?

(b) It is known that 6% of the production of a manufacturer is defective. What is the probability that "the number of defective product" in a random sample of 10 will be exactly 2. **(6)**

Q.7(a) A sample of paired observations is given as: **(6)**

X	2	3	4	5	6	7	8
Y	2	8	11	9	19	14	14

(i) Determine the Regression equation of y on x.
(ii) Estimate y for x = 10.

(b) For the following data, construct weighted aggregative price index for 2007. **(6)**

Product	Price		Weight
	2005	2007	W
A	1125	650	215
B	575	825	120
C	6600	7100	560
D	8250	8500	105

xxx///xxx///xxx///xxx///xxx///xxx///xxx///xxx///xxx///xxx///xxx

BBA – TWO YEARS PROGRAM

KARACHI UNIVERSITY BUSINESS SCHOOL
UNIVERSITY OF KARACHI

FINAL EXAMINATION JUNE 2008, AFFILIATED COLLEGES

BUSINESS STATISTICS BA (P) – 451

BBA – III

Time: 3 Hours
Max Marks: 60

June 14, 2008

Instructions: 1. *Attempt any five (05) questions*
2. *Use of Scientific Calculator is allowed.*

Q. NO. 1 (a). Differentiate between Qualitative and Quantitative variables giving examples. **(4)**

(b) Determine the missing values in the following grouped data: **(8)**

C. I	f	c. f. <
7.5 – 7.9	?	?
8.0 – 8.4	11	14
8.5 – 8.9	?	32
9.0 – 9.4	9	?
9.5 – 9.9	?	48
10.0 – 10.4	?	?
Total	50	-

Q. No.2 (a). In a class there are 22 girls and 38 boys. The mean score of girls in an examination in 78 and the mean score of boys is 71. What is the mean score of the entire class? **(4)**

(b) Given the frequency distribution:

Max. Load (Tons)	8 – 10	11 – 13	14 – 16	17 – 19	20 – 22	23 - 25
No. of Cables	2	4	6	4	3	1

Compute **(i)** Mean **(ii)** Median **(8)**

Q. No. 3. (a) The coefficient of variation of a data is computed as 50%. If the variance is 16, what is the mean of the data? **(4)**

(b) The following table contains data which represent the life recorded to the nearest tenth of a year of 40 car batteries of certain brand.

C. I	1.5 – 1.9	2.0 – 2.4	2.5 – 2.9	3.0 -3.4	3.5 – 3.9	4.0 – 4.4	4.5 – 4.9
F	2	1	4	15	10	5	3

Calculate coefficient of variation. **(8)**

Q. No.4. (a) Define Mutually Exclusive Events with examples. **(3)**

(b) Given that events A and B are independent and $P(A) = 0.3$ and $P(B) = 0.6$. Find $P(A \cup B)$. **(4)**

(c) Four fair coins are tossed. What is the probability of getting exactly two heads? **(5)**

Q. No.5. (a) Define Binomial Random variable and its probability distribution. **(3)**

(b) Mean and variance of a Binomial Probability Distribution are 2 and 1 respectively. Calculate $P(x \geq 2)$. **(5)**

(c) If OPEC is successful in raising the price of oil an average of 3 times every two years, find the probability of one price hike in a randomly selected period of 2 years, using Poisson probability distribution. **(4)**

Q. No.6. For the data given below:

Price x	18	10	14	11	16	13
Demand (y)	9	125	57	90	22	79

a) Determine Regression Equation of y on x. **(6)**

b) Calculate Karl Pearson's coefficient of correlation. **(6)**

Q. No.7. (a) For the following data:

Year	1999	2000	2001	2002	2003	2004	2005	2006
Price	75	50	65	60	70	75	65	83

Calculate: (i) Price Relatives taking 2000 as base. **(3)**

(ii) Link Relatives. **(3)**

(b) For the data given below: **(6)**

		Price	
Commodities	**Weights**	**2005**	**2006**
A	8	36	41
B	15	22	27
C	3	10	15
D	24	42	52

Calculate Weighted Aggregative Price Index for 2006 taking 2005 as base.

GOOD LUCK

B.S III

KARACHI UNIVERSITY BUSINESS SCHOOL
UNIVERSITY OF KARACHI

FINAL EXAMINATION, DECEMBER-2007 : AFFILIATED COLLEGES
BUSINESS STATISTICS : BA (P) – 451
BBA – III

Date : December 24, 2007 **Time : 3 Hours**
Max. Marks : 60

Instructions: 1. Attempt any five (5) questions.
2. Use of Scientific Calculator is allowed.

Q.No.1. a) Differentiate between Primary and Secondary data. (4)

b) The length of service for each 25 randomly selected employees of a large company are recorded below: (years upto one decimal place). (8)

3.1	1.8	6.4	10.2	11.2
15.6	11.6	6.8	1.5	2.9
3.4	7.2	0.5	7.7	8.4
0.7	3.9	8.2	8.0	5.5
10.3	12.1	3.9	0.9	4.3

Form a frequency distribution with equal classes of size 2.0 years.

Q.No.2. a) Write three important properties of Arithmetic Mean. (3)

b) The following distribution gives the number of defective pieces in 100 uniforms size samples of a certain kind of bolt: (9)

Number of Defective Bolts	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29
Frequency	12	20	48	10	7	3

Q.No.3. a) Define Relative Measures of Dispersion. (3)

b) Given: $n = 25$, $\Sigma X = 50$ cm. and $\Sigma x^2 = 1000$ cm^2. Compute Mean and Standard Deviation. (3)

c) Compute Coefficient of Variation for the following frequency distribution: (6)

Class	Frequency
01 — 05	2
06 — 10	5
11 — 15	12
16 — 20	6

Compute (i) Mean (ii) Median and (iii) Mode

Q.No.4. a) Define Random Variable. (3)
Differentiate between Discrete and Continuous Random Variables.

b) A coin is tossed three times. Find the probability distribution of the random variable "Number of Heads". (6)

c) Two balanced dice are rolled. What is the probability that the sum of dots is a multiple of 5? (3)

Q.No.5. a) It is known that 6% of the production of a manufacturer is defective. What is the probability that the number of defective product in a random sample of 10 will be 2?

b) A population consists of 9 junior executives of whom 5 have masters degree. A random sample of 6 is selected from the population. What is the probability that the number with a masters degree will be 3? (4)

c) In a steel industry the average number of fatal accidents per month is 0.5. What is the probability that there will be no fatal accident in the next month? (4)

Q.No.6. a) An economist gives the following estimates of price and demand for a product. (6)

Price	1	2	3	4	5
Demand	9	7	6	3	1

Compute Karl Pearson's Coefficient of Correlation and comment.

b) The data in the following table give the market-share of a product for a given advertising expenditure: (6)

Month	Market Share	Advertising Expense Rs. (0000)
January	15	23
March	17	25
May	13	21
July	14	24
September	16	26

(i) Find a least squares line of Regression to estimate market-share for a given advertising expenditure.

(ii) Estimate market-share when advertising expenditure is Rs. 300,000.

Q.No.7. a) What is Consumer Price Index and how it is constructed? (3)

b) The prices and quantities sold for three commodities are shown below: (9)

Commodity	2006		2007	
	Price	Quantity	Price	Quantity
A	24	28	39	17
B	12	96	17	150
C	8	34	11	35

Construct Laspeyre's, Paasche's and Fisher's price index numbers for 2007 taking 2006 as base.

B.S III

KARACHI UNIVERSITY BUSINESS SCHOOL
UNIVERSITY OF KARACHI
FINAL EXAMINATION: AFFILIATED COLLEGES
BUSINESS STATISTICS (BA(P) -451)
(BBA-III)

MAX. MARKS: 60 DATED: JUNE,18,2007 TIME:Three Hours

INSTRUCTION: ATTEMPT FIVE QUESTIONS ONLY

Q1. Define and explain with examples, where necessary, the following.

a) Mutually exclusive events b) Independent & dependent events
c) Coefficient of determination d) Classical probability

Q2. The age distribution of a group of 300 workers is presented below

Age in Years	No. of Workers
19 ------ 24	20
25 ------ 30	25
31 ------ 36	32
37 ------ 42	42
43 ------ 48	50
49 ------ 54	55
55 ------ 60	46
61 ------ 66	30

i) Determine the mean and standard deviation age of workers.
ii) Determine the maximum limit of age of the youngest10% of workers.
iii) What is the minimum limit of age of the oldest 15% of workers.

Q3. The number of police officers (X) assigned to preventive petrol are believed to be associated to the number of serious crimes (Y). For a small town the past eight years data is given as under.

X:	12	13	15	17	20	21	26	28
Y:	162	154	138	130	127	121	114	112

a) Obtain the regression equation of Y on X and predict the number of crimes when
   i) no officer is assigned to preventive petrol.
   ii) 30 officers are assigned to preventive petrol.
b) Obtain the regression equation of X on Y and predict the number of officers required to eliminate crimes completely.
c) Determine r^2 and interpret.

Cont'd------2

Q4. a) Marks obtain in an examination are assume to follow a binomial distribution with a mean of 3.3 marks and a variance of 1.485 marks. A student selected at random, what is the probability that he earns

i) at least 5 marks.
ii) at most 2 marks.
iii) no mark at all.

b) For the probability distribution given below, determine the mean and Variance of X.

X :	1	2	3	4	5
f(X):	1/30	1/10	1/6	1/3	11/30

Q5. a) What are the desirable characteristics of a good base.

b) Given below are the indices of production from 2000 through 2005, shift the base of the indices to 2004.

88 100 106 111 120 124

c) From the following data construct indices for 2004 with base 2006, using

i) Fisher formula
ii) Marshall Edgeworth formula.

Items	**2004**		**2006**	
	Price	**quantity**	**price**	**quantity**
A	10	20	14	22
B	23	08	30	12
C	20	15	22	20
D	12	13	14	16
E	15	12	15	18

Q6. For the data given in question 2, above, construct

a) Histogram and determine mode graphically.
b) Cumulative frequency curve of less than form and determine Median graphically.

G O O D L U C K