KADI SARVA VISHWAVIDYALAYA
MBA I, Sem I University Examination (Batch 2013-15)

Quantitative Techniques for Managers (CC 106) **Date: 30th December, 2013**
Marks: 40 **Time: 10:00 a.m. to 12:30 p.m.**

Instructions:
1) Answers should be precise and to the point.
2) Show all calculations and make assumptions, wherever necessary.
3) Statistical Tables, would be provided during the exam.

Q1a) Explain interval level and ratio level data. (4)

Q1b) What are disadvantages of median. Differentiate between mean and median. (4)

OR

Q1b) Following data were used to estimate number of days required to fill orders for Dawson Supply Inc. (DSI) and Clark Distributors (CD). (4)

DSI	11	10	9	10	11	11	10	11	10	10
CD	8	10	13	7	10	11	10	7	13	12

Use range & standard deviation and decide, which, provides more consistent delivery time.

Q2a) A survey of magazine subscribers showed that 45.8% rented a car for business reasons, 54% rented car for personal reasons and 30% rented car for both business and personal reasons, during past 12 months. What is probability that a subscriber rented a car for business or personal reason ? What is probability that a subscriber did not rent a car for either business or personal reasons ? (4)

Q2b) Nielsen Media Research provides two measures of television viewing audience: television program rating and television program share. Following data shows these two values, over a nine year period: (4)

Rating	19	17	17	14	16	12	15	12	13
Share	32	28	29	24	26	20	24	20	22

Calculate sample correlation coefficient. Find coefficient of determination and interpret the relationship between the two variables.

OR

Q2a) Census Bureau's current population survey shows 28% of individuals, aged 25 and older, have completed 4 years of college. For sample of 15 individuals, aged 25 and older, answer the following questions: (4)
a) What is probability that four individuals have completed four college years
b) What is probability that three or more individuals have completed four college years ?

Q2b) Average stock price for companies is Rs. 30 and standard deviation is Rs. 6. Taking stock prices as normally distributed, (4)
a) Find probability that stock price will be Rs. 40 or more
b) Find probability for stock price to be less than or equal to Rs. 20

Q3a) What is stratified sampling ? Discuss, with applications for organisations. (4)

Q3b) Mean life of 200 bulbs produced by a company is 1860 hours with standard deviation of 50 hours. Find, whether, sample has come from population with a mean life of 1500 hours, at 2% level of significance ? (4)

OR

Q3a) A sales clerk in departmental store claims that 60% of shoppers entering store leave without making purchases. Random sample of 50 shoppers shows that 35 of them, leave without buying anything. Should sales clerk's claim be accepted or rejected, at 2% level of significance ? (4)

Q3b) Visa card USA studied, how frequently, consumers of various age groups use plastic cards, while making purchases. Sample data for 300 consumers is as under: (4)

	Age Group			
Payment	**18-24**	**25-34**	**35-44**	**45 and over**
Plastic	21	27	27	36
Card or Check	21	36	42	90

a) Test, whether, method of payment and age group are independent or not ?
b) Using 5% level of significance, provide conclusion.

Q4a) US department of transportation provides number of miles that residents of 75 largest metropolitan cities travel per day in a car. It is seen that for sample of 50 Buffalo residents, mean is 22.5 miles per day and standard deviation is 8.4 miles per day. Similarly, for sample of 40 Boston residents, mean is 18.6 miles per day and standard deviation is 7.4 miles per day. (4)

a) Calculate point estimate of differences between mean number of miles travelled by Buffalo and Boston residents per day.
b) At 5% level of significance, test for the difference between two sample means.

Q4b) Discuss the non-sampling errors, with relevant examples. (4)

OR

Q4a) Task completion times for method 1 and method 2 are given. Test, whether, two related samples are having a difference, at 5% level of significance. (4)

Worker	1	2	3	4	5	6
Completion time (1)	6.0	5.0	7.0	6.2	6.0	6.4
Completion time (2)	5.4	5.2	6.5	5.9	6.0	5.8

Q4b) Discuss importance of using analysis of variance technique, with assumptions. (4)

Q5. In a manufacturing process, it appeared that assembly line speed affects number of defective parts found, during inspection process. Following data was collected to test this theory. (8)

Line speed	20	20	40	30	60	40
No. of defective parts	21	19	15	16	14	17

a) Develop estimated regression equation to relate two variables.
b) Find coefficient of determination and interpret, whether equation is good fit to data.
c) Develop 95% confidence interval to get value of mean number of defective parts for line speed of 50 feet per minute.

KADI SARVA VISHWAVIDYALAYA
MBA I, Sem I , University Trial Examination

Quantitative Techniques for Managers (CC 106) **Date: 3rd May, 2014**
Marks: 40 **Time: 10:00 a.m. to 12:30 p.m.**

Instructions:
1) Answers should be precise and to the point.
2) Show all calculations and make assumptions, wherever necessary.
3) Statistical Tables, would be provided during the exam.

Q1a) Differentiate between nominal and ordinal scale data. (04)

Q1b) A sari is drawn at random from a box having 6 red saris, 4 white saris and 5 blue saris. Find probability that: i) it is red and ii) it is not white. (04)

OR

Q1b) Calculate mean and median for the given data and suggest, which is better measure. (04)

Groups	5-7	7-9	9-11	11-13	13-15	15-17	17-19
No. of Observations	4	7	11	5	3	2	1

Q2a) These data are sample of daily production rate of fibreglass boats. (04)
17, 21, 18, 27, 17, 20, 21, 22, 18, 23
Calculate standard deviation and range. Interpret the results.

Q2b) What is Correlation ? Discuss types of correlation, in brief. (04)

OR

Q2a) Construct regression equation for consumption expenditure on income. (04)
Calculate consumption expenditure, for income of Rs. 450.

Income	200	300	400	600	900
Consumption Expenditure	180	270	320	480	700

Q2b) Out of 50 fishes in a pool, 10 are golden. If 5 fishes are taken at random from the pool, what is probability that 2 fishes are golden ? (04)

Q3a) Discuss probability sampling methods in brief. (04)

Q3b) Distribution of height of 1000 soldiers is normally distributed with mean of 165 cm and standard deviation 15 cm. What is probability of height of soldiers: i) less than 138 cms and ii) more than 198 cms (04)

OR

Q3a) Discuss sampling errors, with examples. (04)

Q3b) 200 mangoes are taken at random from a consignment and 20 are bad. Test the hypothesis that proportion of bad mangoes in the consignment is 15 %. Take 1 % level of significance. (04)

Q4a) Discuss applications of chi square test. (04)

Q4b) Average marks of 80 boys is 78, with standard deviation of 12 and average marks of 120 girls is 75, with standard deviation of 15. Test the (04)

hypothesis to find whether, average marks of boys is more than that of girls ? Assume 5 % significance level.

OR

Q4a) Proportions of illiterates in two towns X and Y are 65 % and 75 %. (04)
If samples of 1500 and 1000 are taken from these populations, can it be concluded that there is significant difference between two proportions. Take 5 % level of significance.

Q4b) Following data relates to the sales, in time of trade depression of a certain article, widely demanded. Using Chi-square test, does the given data, suggest that the sales are independent of depression ? Take 5 % significance level. (04)

Sales	**Track depression**	
	Not hit by	Hit by
Satisfactory	140	60
Not satisfactory	40	60

Q5. Four different drugs have been developed for a certain disease. These drugs are used in 3 different hospitals. Based on given data, related to the number of recoveries per 100 people, who have taken the drug, can we conclude that there is not much significant difference between the average effect of the drug across 3 hospitals, with analysis of variance ? Take 5 % significance level. (08)

Hospital	**Drug**			
	D1	D2	D3	D4
H1	19	8	23	8
H2	10	9	12	6
H3	11	13	13	10

Seat No. _____

Kadi Sarva VishwaVidyalaya, Gandhinagar

MBA – Semester – I – December 2014 Examination

Quantitative Techniques for Manager (CC106)

Date: 29/12/2014 **Weightage:** 40% **Duration:** 2½ Hours

Instructions:

1 Make assumptions wherever necessary and state them clearly
2 Working notes must form part of your answers
3. Figures to the right indicate weightage

Q-1 (A) Explain the following terms in brief. 4%

a) Standard Deviation
b) Null Hypothesis and Alternative Hypothesis
c) Rejection and Non-rejection regions
d) Mutually Exclusive Events

(B) The ABC magazine is studying the sales of the magazines of 25 towns in Gujarat. The data has compiled in the following frequency distribution. 4%

Sales(000)	0-5	5-10	10-15	15-20	20-25
Frequency	2	6	10	5	2

The management wants to know the answers for the following questions:

1. What is the overall average sales figure of the magazine?
2. How much deviation is there in terms of sales in different towns

OR

(B) Assume that the daily demand for unleaded gasoline at a service station is normally distributed with a mean of 25000 gallons and a standard deviation of 5000 gallons. 4%

a) What are the chances that daily demand will exceed 30000 gallons?
b) What are the chances that the daily demand will be less than 15000 gallons?
c) What are the chances that the daily demand will between 20000 to 32000?

Q-2 (A) The normal probability distribution is the most important distribution for describing a continuous random variable. Explain with its characteristics. 4%

(B) The Bureau of Labor statistics publishes data on the benefits offered by small companies to their employees. Only 42% offer retirement plans while 61% offer life insurance. Suppose 33% offer both retire plans and life insurance as benefits. If a small company is randomly selected, determine the following probabilities: 4%

a) The company offers a retirement plan given that they offer life insurance.
b) The company offers life insurance given that they offer a retirement plan.
c) The company offers life insurance or a retirement plan.
d) The company offers a retirement plan and does not offer life insurance.

OR

Q-2 (A) What is random and non random sampling? Explain it types with examples. 4%

(B) A corporation owns several companies. The strategic planner for the Personal manager of a large industrial unit is interested to find a measure that can be used to fix the wages of skilled workers. On experimental basis, the data on the 4%

years of services and their yearly wages from a group of 10 randomly selected workers are given below; develop the best regression line to fit this data.

Years of services	11	7	9	5	8	6	10	12	3	4
Yearly Wages	14	11	10	9	13	10	14	16	6	7

Q-3 (A) Discuss the four level of data measurement with suitable examples. 4%

(B) The latest nationwide political poll indicates that for Americans who are randomly selected, the probability that they are conservative is 0.55, the probability that they are liberal is 0.30 and the probability that they are middle-of-the-road is 0.15. Assuming that these probabilities are accurate, answer the following questions pertaining to a random chosen group of 10 Americans. 4%

a) What is the probability that four are liberal?
b) What is the probability that none are conservative?
c) What is the probability that two are middle-of-the-road?
d) What is the probability that at least eight are liberal?

OR

Q-3 (A) What is correlation? Explain the methods of correlation with examples. 4%

(B) One of the earliest applications of the Poisson distribution was in analyzing incoming calls to a telephone booth. Analysts generally believe that random phone calls are Poisson distributed. Suppose phone calls to a booth arrive at an average rate of 2.4 calls per minutes. 4%

a) If an operator wants to take one minute break, what is the probability that there will be no calls during a 1-minute interval?
b) If an operator can handle at most five calls per minute, what is the probability that the operator will be unable to handle the call in any 1-minute interval?
c) What is the probability that exactly three calls will arrive in a 2-minute interval?

Q-4 (A) A Research firm has been asked to determine the proportion of all restaurants in the state of Ohio that serve alcoholic beverages. The firm wants to be 98% confident of its results but has no idea of what actual proportion is. The firm would like to report an error of no more than 0.05. How large a sample should it take? 4%

(B) A consumer-research organization routinely selects several car models each year and evaluates their fuel efficiency. In this year's study of two similar subcompact models from two different automakers, the average gas mileage for 12 cars of brand A was 27.2 miles per gallon, and the standard deviation was 3.8 mpg. The nine brand B cars that were tested average 32.1 mpg, and the standard deviation was 4.3 mpg. At $\alpha = 0.01$, should it conclude that brand A cars have lower average gas mileage than do brand B cars? 4%

OR

Q-4 (A) Seven homemakers were randomly sampled, and it was determined that the distances they walked in their housework had an average of 39.2 miles per week and a sample standard deviation of 3.2 miles per week. Construct a 95% confidence interval for the population mean. 4%

(B) A ketchup manufacturer is in the process of deciding whether to produce a new extra-spicy brand. The company's marketing research department used a national telephone survey of 6000 households and found that the extra-spicy ketchup would be purchase by 335 of them. A much more extensive study 4%

made two years ago showed that 5% of the households would purchase the brand then. At a 2 percent significance level, should the company conclude that there is an increased interest in the extra-spicy flavor?

Q-5 Are the types of professional jobs held in the computing industry independent of the number of years a person has worked in the industry? Suppose 246 workers are interviewed. Use the results to determine whether types of professional jobs held in the computing industry is independent of years worked in the industry? Use the 0.01 level of significance. 8%

	Professional Position			
Years	Manager	Programmer	Operator	Analyst
0-3	6	37	11	13
4-8	28	16	23	24
>8	47	10	12	19

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