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Total No. of Pages : 03

Total No. of Questions : 09

MBA (Executive) (Sem.-2)
STATISTICS FOR BUSINESS DECISIONS
Subject Code : MBX-201
Paper ID : [74218]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A** contains **TEN** questions carrying **TWO** marks each and students has to attempt any **EIGHT** questions.
2. **SECTIONS-B** consists of **SEVEN** questions each carrying **SEVEN** marks each and student has to attempt any **FIVE** questions.
3. **SECTION-C** is consist of **ONE** Case Study carrying **NINE** marks.

SECTION-A**Q1. Answer briefly :**

- a. What is missing value and what are the reasons of it?
- b. What is the difference between descriptive statistics and inferential statistics?
- c. On which type of data it is wise to use geometric mean and not the arithmetic mean? Explain with example.
- d. What is a random variable? What are the different types of random variables?
- e. What is the multiplication theorem of probability?
- f. What do you understand by the linearity of relationship between the variables?
- g. What is significance level in hypothesis testing?
- h. How would you compute the standard deviation of a sample data?
- i. What is the formula to compute sample size in case of finite population?
- j. Assume a Poisson distribution, if $\lambda = 2.5$, find $P(X = 3)$.

SECTION-B

Q2. Why should managers study statistics? Discuss the advantages and disadvantages of using statistics in business decisions.

- Q3. Discuss probability and non-probability sampling techniques.
- Q4. According to a research on the tax structure of government, data from, 1005 income tax payers collected. The report states that almost 60% of all people said the tax structure is unfair. Based on the data given below, please answer the following questions -

	Income Level	
	Less than 5 lakh	More than 5 lakh
Tax structure is fair	225	180
Tax structure is not fair	280	320

- a) Given that a respondent earn less than 5 lakh, what is the probability that he/she said that the tax structure is fair?
- b) Given that a respondent earn more than 5 lakh, what is the probability that he/she said that the tax structure is fair?
- c) Is income level statistically independent of attitude about whether the tax structure is fair? Explain.
- Q5. Below data is related to the advertising expenditure (in 1000 rupees) and number of units of washing machines sold. With the help of regression estimate the effect of advertising expenditure on sales of washing machine? Also, prove if the effect was significant or not? Also, what is the model fit and write the regression model. What would be the expected sales of advertising expenditure in Rs. 110 (thousands)?

Advertising Expenditure (Rs.1000)	102	109	110	105	104	111	108	105	101	111	106	104
Sales (1000 units)	14	15	18	17	13	19	16	17	11	18	16	17

- Q6. Estimate the skewness of the following dataset.
- 47 56 66 54 46 38 48 51 39 61
- Q7. Following data exhibits the product lengths produced by two different machines installed in a factory. The quality control department concluded that the length of product of machine-1 is significantly higher than the length of product produced by machine-2. Assuming equal variance among the groups, at 1% level of significance, do you agree that the length of product produced by machine-1 is significantly higher than the length of product produced by machine-2. (Given critical value = 3.20 for 18 degree of freedom).

Machine-1 (mm size)	175	175	174	179	177	181	171	173	174	178
Machine-2 (mm size)	166	172	168	169	166	161	165	163	162	165

- Q8. What are the sources of secondary data? What are the advantages and disadvantages of secondary data?

SECTION-C**Q9. Case Study :**

In 1965, Mexico initiated its widely known maquiladora program that permits corporations from the United States and other countries to build manufacturing facilities inside the Mexican border, where the company can import supplies and material from outside of Mexico free of duty, assemble or produce products, and then export the finished items back to the country of origin. Mexico's establishment of the maquiladora was to promote the foreign investment and jobs in the poverty- stricken country and, at the same time provide a cheaper labour pool to the participating companies, hereby reducing the labour cost so that companies could more effectively compete on the world market. After 2006, the Mexican government renamed the Maquila program as INMEX program.

The maquiladora program has been quite successful, with more than 3500 registered .companies participating and more than 1.1 million maquiladora workers employed in the program. It has been estimated that \$50 billion has been spent by maquiladora companies with suppliers. Recently, industry exports were approaching \$65 billion. About 1600 of the maquiladora plants are located in the US -Mexico border area, where about 40% manufacture electronic equipment, the maquiladora program has spread to the interior of Mexico, where maquiladora employment growth has been nearly 30%. Maquiladora companies also manufacture and assemble products from petroleum, metal, transportation, and medical industry, among others. Whereas most maquiladora companies in the early years utilized low-skilled assembly operations, in more recent years, maquiladoras have been moving towards sophisticated manufacturing centers. The maquiladora program now encompasses companies from all over the world, including Japan, Korea, China, Canada, and European countries.

What are the Mexican maquiladora workers like? What are their attitude towards their jobs and their companies? Are there cultural gaps between the company and the workers that must be bridged in order to utilize human resources more effectively? What culture-based attitude and expectations do the maquiladora labourers bring to the work situations? How does a business researcher go about the surveying workers?

Suppose the researcher decides to survey maquiladora workers to ascertain the workers' attitude and expectations of the work environment and the company.

Questions :

Q1 Should the researcher take census of all maquiladora workers or just a sample? What are the reasons for each? (2 marks)

Q2 If a sample is used, what type of sampling technique would gain the most valid information? How can the researcher be certain that the sample of workers is representative of the population? (4 marks)

Q3 How can survey question be analyzed quantitatively? (3 marks)