

PARUL UNIVERSITY
FACULTY OF MANAGEMENT
MBA Summer 2017 - 18 Examination

Semester: 1
Subject Code: 06200103
Subject Name: Business Statistics

Date: 06/06/2018
Time: 10:30am to 01:00pm
Total Marks: 60

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A).Multiple choice type questions/Fill in the blanks. (Each of 1 mark) (05)**

1. The hyper-geometric distribution applies only to experiments in which
 - a) Trials are done with replacements.
 - b) It describes rare events.
 - c) It is continuous distribution.
 - d) Trials are done without replacements
2. The Central Limit Theorem states that if n is large enough the distribution of sample means follows which distribution?
 - a) Normal
 - b) Random
 - c) Exponential
 - d) Uniform
3. ANOVA tests use which of the following distributions?
 - a) Z
 - b) t
 - c) Chi-square
 - d) f
4. A measure of degree of relatedness of two variable is _____
 - a) Regression
 - b) Degree of association
 - c) Correlation
 - d) Least square relationship
- 5 Which of the following describes the overall tendency of a time series
 - a) seasonal component
 - b) trend
 - c) irregular component
 - d) cyclical component

B).Define the following. (Each of 1 mark) (05)

1. Time Series Data
2. Coefficient of determination
3. Central Limit Theorem
4. Empirical Rule
5. Kurtosis

C).Direct questions. (Each of 1 mark) (05)

1. State random and non random sampling techniques..
2. What is Nominal-level of data?
3. State various characteristics of Binomial distribution
4. What is Skewness.
5. Name the various measures of central tendency

Q.2 Answer the following questions.

- A).**Suppose the average speeds of passenger trains traveling from Delhi to Ahmedabad are normally distributed. The mean average speed of train is 88 miles per hour and a standard deviation of 6.4 miles per hour. What is the probability that a train will average less than 70 miles per hour? What is the probability that a train will average more than 80 miles per hour? What is the probability that a train will average between 90 and 100 miles per hour? **(07)**

- B).** A behavioral scientist is conducting a survey to determine if the financial benefits, in terms of a salary, influence the level of satisfaction of employees, or whether there are other factors such as work environment which are more important than salary in influencing employee satisfaction. A random sample of 300 employees is given a test to determine their level of satisfaction. Their salary levels are also recorded. The information is tabulated below: (08)

Level of satisfaction	Annual Salary (Rs. Lakhs)			
	Up to 5	5 – 10	More than 10	Total
High	10	10	10	30
Medium	50	45	15	110
Low	40	15	5	60
	100	70	30	200

At 5% level of significance, determine whether the level of employee satisfaction is influenced by salary level?

Q.3 Answer the following questions.

- A).** Three machines producing 40%, 35% & 25% of the total output are known to produce with defective proportion of items as 0.04, 0.06 and 0.03 respectively. On a particular day, a unit of output is selected at random and is found to be defective. What is the probability that it was produced by the second machine? (07)
- B).** The number of cheques cashed each day at the five branches of a bank during the past five months had the following frequency distribution: (08)

Class	Frequency
0-199	10
200-399	13
400-599	17
600-799	42
800-999	18

Find Mean, Median and Standard deviation for the given sample data.

Q.4 Attempt any two questions. **(Each of 7.5 mark)** (15)

1. Three groups of five salesmen each were imparted training to marketing of consumer products by three Management Institutes. The amount of sales made by each of the salesmen during the first month after training were recorded and are give as:

		Salesmen				
		1	2	3	4	5
Institutes	1	67	70	65	71	72
	2	73	68	73	70	66
	3	61	64	64	67	69

Check whether the three institutes training program are equally effective. $\alpha = 0.05$

Calculate Laspeyre's, Paasche's Price Index using the following data:

Commodities	Base Year		Current Year	
	Price (Rs.)	Quantity (Kg.)	Price (Rs.)	Quantity (Kg.)
A	2	7	6	6
B	3	6	2	3
C	4	5	8	5
D	5	4	2	4

3. Construct Histogram and a frequency polygon for the following data:

Class	Frequency
30 - under 32	5
32 - under 34	7
34 - under 36	15
36 - under 38	21
38 - under 40	34
40- under 42	24
42 - under 44	17
44 - under 46	8

4. Five students of an Engineering program at certain Institute were selected at random. Their intelligent Quotient (I.Q.) and the marks obtained by them in one paper were as given below

I.Q.	Marks (Out of 100)
120	85
110	80
130	90
115	88
125	92
120	87

Calculate coefficient of correlation