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QUESTION BANK (DESCRIPTIVE)

Subject with Code: **BUSINESS STATISTICS FOR MANAGERS (20MB9004)**

Course & Branch: MBA I Year I -Sem **Regulation:** R20

UNIT –I

INTRODUCTION TO STATISTICS

1.		Define Statistics? Explain the characteristics of statistics?	**[L2,CO1,10M]**
2.		Explain the importance of statistics.	**[L2,CO1,10M]**
3.	a)	Discuss in detail the Limitations of Statistics with illustrations	**[L2,CO1,5M]**
	b)	Write a note on Functions of Statistics.	**[L2,CO1,5M]**
4.		Explain Scope of statistics.	**[L2,CO1,10M]**
5.	a)	Meaning of statistics.	**[L2,CO1,3M]**
	b)	Explain Statistical investigation.	**[L2,CO1,7M]**
6.		Write a note on Application of Statistics in various fields.	**[L2,CO1,10M]**
7.	a)	Statistics and Computers.	**[L2,CO1,5M]**
	b)	Classification of Statistics	**[L2,CO1,5M]**
8.	a)	Explain the reasons for learning Statistics.	**[L2,CO1,5M]**
	b)	Briefly explain Growth and development of Statistics.	**[L2,CO1,5M]**
9.	a)	Statistical thinking and analysis.	**[L2,CO1,5M]**
	b)	Explain the types of Statistical methods.	**[L2,CO1,5M]**
10.	a)	Role of Statistics in Business Management	**[L2,CO1,5M]**
	b)	Explain how Statistics is useful in Research.	**[L2,CO1,5M]**

UNIT –II

MEASURES OF CENTRAL TENDENCY

1.Compute Quartile Deviation and its Coefficient from the following distribution. **[L5,CO6,10M]**

Weekly wages (Rs.)	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24	24 - 28	28 - 32	32 - 36	36 - 40
No. of Workers	6	10	18	30	15	12	10	6	2

2. Complete the following distribution, if its Median is 2600 and Find the value of Arithmetic Mean. **[L5,CO2,10M]**

Size	1000 - 1500	1500 - 2000	2000 - 2500	2500 - 3000	3000 - 4000	4000 - 5000	5000 - 6000	Total
Frequency	120	?	400	500	?	50	20	1500

3. Two brands of Tyres are tested for their life and the following results were obtained: **[L5,CO2,10M]**

Life (in months)	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45
No. of Tyres 'X'	1	22	64	10	3
No. of Tyres 'Y'	3	21	74	1	1

If consistency is the criterion which brand of tyre would you prefer?

4. Explain Measures of Central tendency **[L2,CO2,10M]**

5. a) From the following marks of 100 students compute the Mean Deviation and its coefficient. **[L5,CO2,7M]**

Marks	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 – 65
No. of Students	6	12	17	28	12	10	8	5	2

b) Explain Merits and de merits of Mean deviation. **[L2,CO1,3M]**

6. a) Explain Measures of Dispersion. **[L2,CO1,5M]**

b) Compute the range and the Coefficient of range of the series, and state which one is more dispersed and which one is more uniform.

[L5,CO2,5M]

Series	Values of variables							
A	10	11	12	13	14	…	(Mean = 12)	"Central tendency differs but formation is same"
B	40	41	42	43	44	…	(Mean = 42)	
C	100	101	102	103	104	…	(Mean = 102	

7. a) Form a continuous frequency table from the following data, using class intervals such as 40 – 50, 50 – 60 …. So on, determine the modal value**.** **[L5, CO2, 6M]**

90, 78, 86, 51, 96, 104, 51, 78, 50, 72, 49, 77, 90,
74, 69, 70, 68, 69, 104, 80, 79, 54, 79, 73, 58, 91,
78, 67, 50, 84, 76, 110, 53, 74, 40, 60, 42, 82, 41,
76, 84, 76, 42, 65, 60, 77, 61, 75, 11, 81

b) i) Mode = 50 and Median = 45 Mean **=?** **[L5, CO2, 2M]**

ii) Mean = 12 and Mode = 13 Median **=?** **[L5, CO2, 2M]**

8. Compute Quartiles from the following data**:** **[L5,CO2,10M]**

Class Interval	0 - 10	10 - 20	20 -30	30 - 40	40 - 50	50 – 60	60 - 70	70 - 80
frequency	5	8	7	12	28	20	10	10

9. a) The mean age of a group of 100 children was 9.35 years. The mean age of 25 of them was 8.75 years and that of 65 was 10.51 years. What was the mean age of the remaining children?

[L2, CO1, 5M]

b) A limited company wants to pay bonus to the members of the staff. The bonus is to be paid as under,

Monthly Salary (Rs.)	100	120	140	160	180	200	220 &
Not exceeding:	120	140	160	180	200	220	over
Bonus (Rs.)	50	60	70	80	90	100	110

Actual salary of the members of the staff is given as under:
200, 180, 195, 218, 187, 160, 250, 168, 190, 168, 170, 178, 175, 140,
120, 148, 165, 155, 145, 125, 110, 162, 130, 150, 185.
What is the total bonus paid? What is the average bonus paid to the members of the staff?

[L5, CO2, 5M]

10. From the data given below rate which of the two series is more variable: **[L5, CO6, 10M]**

Variable	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency A	10	18	32	40	22	18
Frequency B	18	22	40	32	18	10

UNIT – III

DATA COLLECTION

1. Explain Diagrammatic and graphical representation of data. **[L2,CO3,10M]**

2. Explain Classification and tabulation of data**.** **[L2,CO3,10M]**

3. Discuss the procedure for Drafting Questionnaire. **[L6,CO3,10M]**

4. Discuss various types of data and data collection methods **[L6,CO3,10M]**

5. Construct a Histogram from the following and locate the Mode. **[L5,CO6,10M]**

Marks	0 - 10	10 - 20	20 - 40	40 - 50	50 - 70
Number of Students	10	30	80	64	56

6. Draw the two Ogives from the following data and locate Median: **[L5, CO6, 10M]**

Class	100 - 200	200 - 300	300 - 400	400 - 500	500 - 600	600 - 700
Frequency	20	40	60	80	100	120

7. Construct a Histogram and then locate the mode for the following data. **[L4,CO6,10M]**

Marks	0 - 5	5 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 70	70 - 80
Number of Students	2	5	12	20	35	15	20	5

8. a) Represent the following by a sub-divided Rectangular diagram. **[L5,CO3,5M]**

Particulars	A	B
Price per unit (Rs.)	12	8
Quantity sold (Kg)	50	100
Cost of Raw materials (Rs.)	450	600
other Expenses (Rs)	90	100
Profit (Rs)	60	100

b) Draw a pie chart to represent the following data of the proposed expenditure by the Government for 2024-25. **[L5, CO3, 5M]**

Items	Agriculture	Industry	Irrigation	Education	Miscellaneous
Expenditure (Rs. In Lakhs)	600	400	450	300	250

9. a) Express the following data using Pie- Chart: **[L5, CO3, 5M]**

Items	Expenditure as % of Total
Food	50
Clothing	15
Housing	10
Fuel	5
Education	10
Entertainment	5
Miscellaneous	5

b) Represent the following data in a Line diagram. **[L5, CO3, 5M]**

Profits (in Lakhs) Rs.	5	10	15	20	25	30	35	40	45	50
Number of firms	35	80	20	30	50	68	90	40	25	10

10. From the following data, Draw a less than Ogive and locate the value of median graphically.

[L5, CO6, 10M]

Marks Less than:	20	30	40	50	60	70
No. of Students:	5	13	24	39	52	60

UNIT-IV

CORRELATION AND REGRESSION ANALYSIS

1. From the following table calculate the coefficient of correlation by Karl Pearson's method Arithmetic means of X and Y variables are 6 and 8 respectively.

[L4, CO4, 10M]

X	6	2	10	-	8
Y	9	11	-	8	7

2. Calculate the coefficient of correlation from the following data and its probable error.

[L4, CO4, 10M]

Marks in Statistics (X)	30	60	30	66	72	24	18	12	42	6
Marks in Accountancy (Y)	6	36	12	48	30	6	24	36	30	12

3. Compute Karl Pearson's coefficient of correlation for the following data. What conclusion do you draw from the result? **[L4, CO4, 10M]**

Supply (Quintals)	30	29	29	25	24	24	24	21	18	15
Price (Rs.)	11	12	13	14	15	16	15	17	18	20

4. a) Calculate the correlation coefficient between the variables X and Y from the following figures:

[L5, CO4, 5M]

$n = 30$ $\sum x = 118$ $\sum x^2 = 556$ $\sum xy = 368$ $\sum y = 93$ $\sum y^2 = 309$

b) Coefficient of correlation between two variants X and Y is 0.8. The variance of X is 16. Their Co variance is 20. Find the standard deviation of Y series. **[L2, CO4, 5M]**

5. Ten competitors in a voice contest are ranked by three judges in the following order:

Judge 1	1	6	5	10	3	2	4	9	7	8
Judge 2	3	5	8	4	7	10	2	1	6	9
Judge 3	6	4	9	8	1	2	3	10	5	7

Using Rank correlation determine which pair of judges have the nearest approach to common opinion**.** **[L2, CO4, 10M]**

6. Construct two Regression equations for the following data and estimate the value of X. When Y = 70 and Y, when X = 650 **[L2,CO4,10M]**

X	100	200	300	400	500	600	700
Y	30	50	60	80	100	110	130

7. From the following data you are required to : **[L5, CO4, 10M]**

i) Form two regression equations

ii) Estimate the value of X when Y = 10 and the value of Y when X = 15.

iii) Find correlation co-efficient through Regression co-efficient.

	Series X	Series Y
Number of pairs of observations	5	5
Mean	6	8
Sum of squares of deviations of X & Y from their respective means	40	20
Sum of the products of deviations of X & Y from their respective means	-26	

8. a) Distinction between Correlation and Regression. **[L4,CO4,5M]**

b) Elaborate methods of studying Correlation. **[L4, CO4, 5M]**

9. Calculate Co-Efficient of Correlation and the Probable Error and comment on the significance of the correlation for the following data: **[L5, CO4, 10M]**

X	6	7	7	9	10	12
Y	18	16	17	19	19	21

10. a) Properties of Correlation Coefficient. **[L5, CO4, 2M]**

b) Determine the Regression equation of X on Y and Y on X for the following data: **[L5, CO4, 8M]**

X	12	14	16	20	32
Y	34	40	38	42	50

UNIT-V

HYPOTHESIS TESTING

1. a) Define Hypothesis. Explain the importance of hypothesis testing. **[L2,CO5, 5M]**
b) Explain the process of hypothesis testing **[L2, CO5, 5M]**

2. A random sample of size 20 from a normal population gives a sample mean of 42 and sample standard deviation (S.D) of 6. Test the hypothesis that the population mean is 44. **[L6,CO6,10M]**

3. The following data shows the retail prices of certain commodities selected at random in three different places. Carryout the analysis of variance to test the significance of the difference between the prices of the commodity in three places. **[L4,CO5,10M]**

A	**B**	**C**
6	9	5
7	10	6
5	11	4
18	**30**	**15**

4. Four judges of a soft skills assessment test gave the following marks to six candidates. Using ANOVA test whether there is a significant difference in

a) The performance of the six candidates
b) The judgment of the four judges

[L4,CO5,10M]

	Candidates					
Judges	A	B	C	D	E	F
1	11	12	11	12	13	13
2	13	13	11	13	12	12
3	3	12	12	12	13	12
4	14	15	13	15	14	12

5. Explain the procedure involved in solving ANOVA problem **[L4,CO5,10M]**

6. Using Chi – square (χ^2) test analyse the following data to determine whether the preference pattern of consumers for cellphones is dependent on the income levels. **[L5, CO5, 10M]**

	Level of income			
Cell phones	Low	Medium	High	Total
Sony	65	90	100	255
Motorola	35	40	80	155
Ericson	50	60	220	330
Total	150	190	400	740

7. A potential buyer of light bulbs bought 50 bulbs of each of two brands. Open testing these bulbs he found that brand A had a mean life of 1282 hours with a standard deviation 80 hours. Whereas brand B had a mean life of 1208 hours with standard deviation of 94 hours. Can the buyer be quit certain that two brands do differ in quality. **[L5, CO6, 10M]**

8. A random sample of 50 items gives the mean 6.2 and variance 10.24 can it be regarded as dawn from a normal population with 5.4 at 5% level of significance? **[L2, CO6, 10M]**

9. Two random samples were drawn from the two normal populations and their values are:

A: 16, 17, 25, 26, 32, 34, 38, 40, 42

B: 14, 16, 24, 28, 32, 35, 37, 42, 43, 45, 47

Test whether the two populations have the some variance at 5% level of significance.

[L2, CO5, 10M]

10. The following table lists the frequency distribution of cars sold at an auto dealership during the past 10 months.

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Cars sold	23	17	15	10	14	12	13	15	26	25

Using the 5% level of significance, will you conclude that the number of cars sold at this dealership is same for each month? **[L5, CO6, 10M]**

CASE STUDIES:

1. a) Compute the missing frequency from the following distribution if its mean is 15.25.

[L5, CO2, 5M]

x	10	12	14	16	18	20
f	3	7	?	20	8	5

b) An incomplete distribution is as follows:

Variable	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	Total
Frequency	12	30	-	65	-	25	18	229

Compute the missing frequency, if its median is 46. **[L5, CO2, 5M]**

2. Draw a Histogram and frequency polygon for the following data. Also find its mean.

[L5, CO6, 10M]

Marks (C.I)	20 - 30	30 -40	40 - 50	50 - 60	60 - 70
No. of students(f)	3	7	11	8	5

3. Compute Arithmetic Mean , Geometric Mean, Harmonic Mean of the following discrete series

[L5, CO2, 10M]

x	2	4	8	16
f	2	3	3	2

4. To study the performance of three detergents and three different water temperatures, the following whiteness readings were obtained with specially designed equipment. Make the ANOVA for the given data.

[L5, CO5, 10M]

Water Temperature	**A**	**B**	**C**
Cold water	47	45	50
warm water	39	42	52
Hot water	44	36	48

5. Calculate the Karl Pearson's Co-efficient of Correlation from the following data: comment on the result through the probable error.

[L5, CO4, 10M]

X	6	8	12	15	18	20	28	31
Y	10	12	15	15	18	25	26	28

6. From the following data of the age of husband and the age of wife, form two regression equations and calculate the wife's age when husband's age is 25 years. **[L5, CO4, 10M]**

Husband's age	31	32	35	29	33
wife's age	23	25	29	21	26

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