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Roll No.

MBA
(SEM I) THEORY EXAMINATION 2022-23
BUSINESS STATISTICS & ANALYTICS

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. How Skewness differs from Dispersion?
b. Calculate the Median from the following data:-

X:	12	15	16	18	20
F:	3	5	0	0	7

c. What is meant by Unit Test?
d. What is Aggregative Expenditure Method in case of Cost of Living Index Number?
e. Show that the Geometric Mean of both Regression Coefficients is known as Correlation.
f. What is meant by Regression Analysis?
g. What is the chance that leap year, selected at random, will contain 53 Wednesdays?
h. From a bag containing 5 Green, 7 Blue and 4 Pink balls, Veer draws 3 at random, find the probability of being all Green.
i. Define the meaning of 'Null Hypothesis' and 'Alternative Hypothesis'.
j. What do you mean by Descriptive Analytics?

SECTION B

2. Attempt any *two* of the following: 15 x 2 = 30

a. From the following table, calculate the Karl Pearson's Coefficient of Correlation between age of husbands and wives:-

Age of Wives (Years)	Age of Husbands (Years)				
	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
55 – 65	-	-	-	4	2
45 – 55	-	-	6	16	5
35 – 45	-	1	15	2	-
25 – 35	-	10	25	2	-
15 – 25	5	9	3	-	-

b. A talent test was conducted on 1000 employees of the 'Veer' Tyres Ltd. in which mean score was found to be 50 units and standard deviation was 20. On the basis of this information, you are required to answer the following questions:
(i). What was the number of employees whose mean score was less than 30?
(ii). What was the number of employees whose mean score exceeded 70?
(iii). What was the number of employees whose mean score were between 30 and 70?
Given:-

Z	0.25	0.50	0.70	1.00	1.25	1.50
Area	0.0987	0.1915	0.2734	0.3413	0.3944	0.4332

c. A sample analysis of an examination result of 500 students was made. It was found that 220 had failed, 170 had secured third class, 90 were placed in second class and 20 got first class. Are these figures commensurate with the general examination result which is in the ratio of 4 : 3 : 2 : 1 for the various categories respectively. Use

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χ^2 test at 5% level of significance.
(Given:- The tabulated value of Chi-square for three degree of freedom at 5% level of significance is 7.815)

SECTION C

3. **Attempt any *one* part of the following:** **10x1=10**

a. What is meant by Measures of Central Tendency? Discuss various Averages.

b. Calculate Mean Deviation about Median and its Coefficient from the following series:-

05 men get less than Rs.5
12 men get less than Rs.10
22 men get less than Rs.15
30 men get less than Rs.20
36 men get less than Rs.25
40 men get less than Rs.30

4. **Attempt any *one* part of the following:** **10x1=10**

a. What is Time Series Analysis? Discuss various Components & Models of Time Series.

b. From the following information, discuss the Time Reversal Test & Factor Reversal Test in case of Laspeyre's, Paasche's and Fisher's index:-

Items	Base Year		Current Year	
	Price	Value	Price	Value
U	5	100	8	96
V	8	96	14	98
W	6	36	8	40

5. **Attempt any *one* part of the following:** **10x1=10**

a. What is meant by Correlation Analysis? How does it differ from Regression? Discuss.

b. Find the two Regression Lines from the following data:-

X: 11	14	14	17	17	21	25
Y: 15	27	27	30	34	38	46

Also estimate the value of Y for X = 37.

6. **Attempt any *one* part of the following:** **10x1=10**

a. What is Poisson Distribution? Discuss the Characteristics of Poisson Distribution.

b. In a tube lights factory, machines 'U', 'V' and 'W' manufacture respectively 25%, 35% and 40% of the total. Of their output 5, 4 and 2 percents are defective tube lights. A tube light is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machine 'V'?

7. **Attempt any *one* part of the following:** **10x1=10**

a. Explain the concept of Fisher's Z-test. Discuss the Applications of Fisher's Z-test.

b. Two groups of students appeared in a test examination and the marks obtained by them were as follows:

First Group	: 48	32	40	44	30	14	20	34
Second Group:	31	18	26	45	22	28	40	

Examine the significance of difference between mean marks secured by the above two groups.
(Given:- Table value of t for 13 d.f., 15 d.f. and 16 d.f. at 5% level of significance are 2.160, 2.131 and 2.120 respectively.)

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