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Sub Code:KMBAI 205
Roll No.

# MBA (INTEGRATED)
## (SEM II) THEORY EXAMINATION 2022-23
## BUSINESS STATISTICS

*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. What do you mean by Frequency Distribution?
b. What is Semi inter-quartile Range?
c. What is skewness?
d. Define Variance.
e. What do you mean by Coefficients of Correlation?
f. State Rank Correlation
g. Write any four differences between Correlation and Regression
h. Define Regression Coefficients.
i. What is Probability?
j. Define Addition Theorem of Probability.

### SECTION B

**2. Attempt any *three* of the following:** **10 x 3 = 30**

a. What are the various methods of collecting statistical data? Which of these is most reliable and why?

b. What do you understand by absolute and relative measure of dispersion? Explain advantages of the relative measures over the absolute measures of dispersion

c. Explain the concept of correlation. Clearly explain with suitable illustrations its role in dealing with business problems.

d. The lines of regression of a bivariate population are
$8X - 10Y + 66 = 0$
$40X - 18Y = 214$
The variance of $X$ is 9. Find
*(i)* The mean value of $X$ and $Y$
*(ii)* Correlation coefficient between $X$ and $Y$
*(iii)* Standard deviation of $Y$

e. State and prove the Multiplication Theorem of Probability

### SECTION C

**3. Attempt any *one* part of the following:** **10 x 1 = 10**

a. Define the term "Statistics" and discuss its functions and limitations

b. Calculate the most suitable average for the following data:

| Size of the Item | Below 50 | 50 - 100 | 100 - 150 | 150 - 200 | 200 and above |
|---|---|---|---|---|---|
| Frequency | 15 | 20 | 36 | 40 | 10 |

4. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. What do you mean by 'mean deviation'? Discuss its relative merits over range and quartile deviation as a measure of dispersion. Also point out its limitations.

b. The mean of 5 observations is 4·4 and the variance is 8·24. If three of the fiveobservations are 1, 2 and 6, find the values of the other two.

5. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. Define Karl Pearson's Coefficient of Correlation. What is it intended to measure?

b. Find the Karl Pearsonian Correlation Coefficient between sales (in thousand units) and expenses (in thousand rupees) of the following 10 firms:

| Firm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Sales | 50 | 50 | 55 | 60 | 65 | 65 | 65 | 60 | 60 | 50 |
| Expenses | 11 | 13 | 14 | 16 | 16 | 15 | 15 | 14 | 13 | 13 |

6. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. Explain the concept of regression and point out its usefulness in dealing with business problems.

b. By using the following data, find out the two lines of regression and from them computethe Karl Pearson's Coefficient of Correlation.
$\Sigma X = 250$; $\Sigma Y = 300$; $\Sigma XY = 7,900$; $\Sigma X^2 = 6,500$; $\Sigma Y^2 = 10,000$; and $N = 10$. 

7. **Attempt any *one* part of the following:** **10 x 1 = 10**

a. State and prove the addition theorem of probability for any two events A and B. Rewrite the theorem when A and B are mutually exclusive

b. An urn contains 8 white and 3 red balls. If two balls are drawn at random, find the probability that
(i) both are white, (ii) both are red, (iii) one is of each colour.