

2022

1st Semester Examination

MBA

Paper : MBA 103

(Statistics for Business Decisions)

Full Marks : 80

Time : Three Hours

*The figures in the margin indicate full marks.  
Candidates are required to give their answers  
in their own words as far as practicable.*

**Group - A**Answer any **eight** questions from the following :

5×8=40

1. Explain Primary and Secondary data with examples.
2. Establish the relation between regression coefficients and correlation coefficient.
3. The means of two samples of sizes 50 and 100 are 54 and 51 respectively. Find the mean of sample of size 150 formed by combining the two samples.
4. Write the interpretations of regression coefficients from the following regression equation :  
$$y = 100 + .25x_1 - 1.02x_2 + x_3$$
5. Find coefficient of variation, when mean = Rs. 105 and S.D. = Rs. 2.
6. If S.D. of first  $n$  positive integers is 2, find  $n$ .

P.T.O.

7. Explain the concept of probability distribution. Give two examples of how probability distribution is used in decision making process.
8. "Sampling is a necessity under certain conditions." Illustrate this by suitable examples.
9. Proof that Poisson distribution is a limiting case of Binomial distribution under certain conditions.
10. Briefly discuss the procedure and applicability of multi-stage sampling with an example.
11. What is non-sampling error or bias? How does it arise in sampling? 2+3
12. Write short notes on Type-I error and Type-II error.

### Group - B

Answer any *four* questions from the following :

$10 \times 4 = 40$

13. In the following distribution, two class frequencies are missing :

IQ	No. of Students
55-64	2
65-74	19
75-84	78
85-94	?
95-104	301
105-114	?
115-124	92
125-134	14
135-144	4

It is however known that the total frequency is 900 and the median is 100. Find the two missing frequencies.

14. The following is the record of goals scored by team A in a football season :

Number of goals scored

by team A in a match  $\rightarrow$     0    1    2    3    4

Number of matches  $\rightarrow$     1    9    7    5    3

For team B, the average number of goals scored per match was 2.5 with a standard deviation of 1.25 goals. Find which team may be considered more consistent.

15. Two lines of regression are given by  $x + 2y = 5$  and  $2x + 3y = 8$  and  $\sigma^2_x = 12$ . Calculate the values of  $\bar{x}$ ,  $\bar{y}$ ,  $\sigma_y$  and  $r_{xy}$ .
16. (a) Give a classical definition of probability. What are its limitations?
- (b) A person is known to hit the target in 3 out of 4 shots, whereas another person is known to hit the target in 2 out of 3 shots. Find the probability of the target being hit at all when they both try.
- (2+2)+6
17. (a) State the conditions under which the Binomial Distribution is applied.

(b) Assume that the marks obtained by the students in the MBA admission test of Vidyasagar University are normally distributed with a mean of 56 and a standard deviation of 8.

- What percentage of students got the test score between 48 and 64?

- If the university will not admit any one scoring below 44, what percentage of students would be acceptable to the university for admission in the said PG course?  
4+(3+3)

18. (a) Distinguish between a null hypothesis and an alternative hypothesis.

(b) A manufacturer claimed that at least 90% of the components which he supplied, conformed to specifications. A random sample of 200 components showed that only 164 were upto the standard. Test his claim at 1% level of significance.

4+6