PG/IVS/MBA/401/24

MBA 4th Semester Examination, 2024

MBA

(*Business Analytics*)

PAPER – MBA-401

Full Marks : 100

Time : 3 hours

Answer **all** questions

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

A. Answer any *eight* questions from the following : 5×8

1. Describe the role of descriptive statistics in the initial stages of data exploration. Explain how these measures describe the shape of a distribution. $3 + 2$

2. Explain the method of drawing a stratified sample. State the situation where stratified random sampling is preferred to simple random sampling. 3 + 2

3. Given a Pearson correlation coefficient of 0.75 between two variables, interpret the strength and direction of the relationship between them.

4. Discuss, in brief, the components of HR Score Card.

5. Distinguish between descriptive analytics and predictive analytics.

6. What are the importance of prescriptive analytics ?

7. What are the fundamental steps involved in the process of business analytics from data collection to insights generation ?

8. How do the three pillars of business analytics work together to enhance an organization's performance ?

9. Discuss the advantages and limitations of relying solely on intuition versus incorporating analytical thinking at the time of making HR decisions.

10. Distinguish between CB-SEM and PLS-SEM.

11. Which mandatory criteria need to be fulfilled before run PLS-SEM model ?

12. Write a short note on 'pandas in python'.

B. Answer any *four* questions from the following : 10×4

13. (*i*) What is multicollinearity in the context of regression analysis, and why is it problematic ? Describe how a correlation matrix can be used to identify multicollinearity among predictor variables with suitable examples. $2 + 3$

(*ii*) Explain the difference between correlation and causation. Discuss why correlation does not imply causation. 2 + 3

14. (*i*) Explain the meaning of the R-squared value in regression analysis. Discuss the difference between R-squared and adjusted R-squared, particularly in models with multiple predictors with suitable examples. 2 + 3

(*ii*) In a regression output, the p-value for X_1 is 0.02, for X_2 is 0.35, and for X_3 is 0.01. Discuss the statistical significance of each predictor at the 0.05 significance level and explain the implications for model interpretation. 5

15. Briefly discuss any five HR metrics to measure the performance of HR Department of an organization.

16. Develop a simulation model to forecast the demand of employees for a 7-day period.

	Demand								Total
Number of Employees	4	5	6	7	8	9	10	12	
Number of Days	5	8	15	40	60	35	7	10	180

Consider the following sequence of random numbers :

48, 78, 19, 51, 56, 77, 15

17. Briefly describe the roles of data scientists, data engineers, and business analysts in a single project.

18. What is machine learning ? Discuss the role of python as a tool of machine learning in business analytics. 3 + 7

[Internal Assessment – 20 Marks]