CLASS: MBA   SEMESTER : III
BRANCH: MBA   SESSION : MO/2024

SUBJECT: MT551 DATA SCIENCE WITH R

TIME: 3 Hours   FULL MARKS: 50

Instructions:
1. The paper contains five questions of 10 and 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably. Notations are of usual meaning.
4. ensure you got the correct question paper before attempting the question paper.
5. Tables/Graph Paper, etc., if required, will be supplied to the candidates in the examination hall.

Q.1(a)	"Data Science is used extensively for Business Applications" Highlight this statement with a real-life application.	[5]
Q.1(b)	Discuss the stepwise Process flow of how Data Science works.	[5]

Q.2 Explain the following is related to Data Science with R. (Any TWO)   [5x2=10]
  (i)   Data manipulation in R,
  (ii)   Feature Engineering,
  (iii) Label encoding / one hot encoding,
  (iv)   Control Structure (functions) in R

Q.3 Mr. Anand has two independent ventures, X and Y, available but can undertake only one   [5+5=10]
at a time due to certain constraints. He can choose X first and then stop, or if X is
successful, then take Y or *vice versa*. The probability of success for X is 0.6, while for Y, it
is 0.4. Both investments require an initial capital outlay of Rs. 10,000, and both return
nothing if the venture is unsuccessful. Successful completion of X will return Rs. 20,000
(over cost), and successful completion of Y will return Rs. 24,000 (over cost).
(i) Draw the Decision Tree and
(ii) Determine the 'Best Strategy' Mr Anand should opt for

Q.4(a)	Establish any real-life forecasting situation where, '*for Predictive Modelling, Regression will be the best choice for a solution*'.	[5]
Q.4(b)	Write the Flow Diagram / Algorithm / Code in R for the solution. (Any One)	[5]

Q.5 Discuss any TWO concerning predictive modeling.   [5x2=10]
  a. Decision Tree Algorithm for Predictive Modelling
  b. Random Forest for Predictive Modelling
  c. Data types and objects in R

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Alignment of CO and Bloom's Taxonomy (Hierarchical ordering of Cognitive skills)

Question No.	Alignment of CO and Bloom's Taxonomy
1	Develop a clear understanding of data science concepts and their usefulness in business applications. *[(1) Knowledge]*
2	Given the topic, the conceptual base of the Data Science will be evaluated. *[(2) Comprehension]*
3	Given the problem, understanding uncertainty will be analysed under the Data Science platform. *[(3) Synthesis]*
4	Explain Regression as one of the best approaches for predictive modelling and application *[(4) Analysis]*
5	Discuss advanced Data science methods and their application to Engineering and Management Science under uncertainties. *[(5)Synthesis / Evaluation]*