CBCS SCHEME

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20MCA252

Second Semester MCA Degree Examination, Jan./Feb. 2023
Data Mining with Business Intelligence

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define Data Warehouse. Explain its building blocks. **(10 Marks)**

b. Distinguish the differences between OLAP and OLTP. **(10 Marks)**

OR

2 a. Explain about different OLAP models. **(04 Marks)**

b. Explain the different operations that can be performed on OLAP. **(10 Marks)**

c. Explain the three schemas used for modeling the data warehouse. **(06 Marks)**

Module-2

3 a. Explain the functionalities of data mining system. **(10 Marks)**

b. List and explain the issues related to data mining. **(10 Marks)**

OR

4 a. Explain the different data smoothing techniques. Suppose that the data of 'price' attribute is given as : 4, 8, 15, 21, 21, 24, 25, 28, 34 apply smoothing techniques over the data by bins of size 3. **(10 Marks)**

b. Explain the different types of data normalization techniques. Suppose that the data for analysis includes the attribute 'age'. The 'age' values for the data tuples are : 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70. Answer the following:

(i) Use min-max normalization to transform the value 35 for 'age' onto the range [0.0, 1.0].

(ii) Use z-score normalization to transform the value 35 for 'age', where the standard deviation of age is 12.94 years.

(iii) Use normalizations by decimal scaling to transform the value 35 for 'age'. **(10 Marks)**

Module-3

5 a. Explain about concept description and data discrimination. **(10 Marks)**

b. What is class comparison? What is the procedure to follow to do the same? **(10 Marks)**

OR

6 a. Explain about Market-Basket analysis. **(10 Marks)**

b. Explain about associative classification. **(10 Marks)**

Module-4

7 a. Distinguish the difference between classification and prediction. **(05 Marks)**

b. Explain the issues regarding classification and predictions. **(10 Marks)**

c. Explain about classifications by decision tree induction. **(05 Marks)**

OR

8 a. Explain about rule-based classifications. **(10 Marks)**

b. The following are the grades in mid-term and final exam obtained for students in a data mining course.

Mid-term exam (x) : 72, 50, 81, 74, 94, 86, 59, 83, 65, 33, 88, 81

Final exam (y) : 84, 63, 77, 78, 90, 75, 49, 79, 77, 52, 74, 90

(i) Use the method of least squares to find an equation for the prediction of a student's final exam grade based on the student's mid-term grade in the course.

(ii) Predict the final exam grade of a student who received the grade as 86 in the mid-term exam. **(10 Marks)**

Module-5

9 a. Explain how data mining techniques can be applied for fraud detection. **(10 Marks)**

b. Explain how data mining techniques can be applied for telecommunication industry. **(10 Marks)**

OR

10 a. Explain how data mining techniques can be applied for retail industry. **(10 Marks)**

b. Explain the key roles required for a successful data analytics project. **(10 Marks)**

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