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Page No.: 1
Date: / /

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DWDM
Mid-Sem Exam

Q-1] MCQ's

1) A

2) B

3) B

4) D

5) B

6) B

7) A

8) A

9) D

10) B

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Q2] Descriptive Questions

1] Difference between OLAP & OLTP

Ans - Here,

OLAP = On-Line Analytical Processing
OLTP = On-Line Transaction Processing.

⊙ Functionality difference

Functionality	OLTP	OLAP
• characteristic	Operational Processing informational Processing	Transactional Analysis
• Orientation	Transaction	Analysis
• Users	Clerk, DBA, database professional	knowledge worker (eg., manager, executive, analyst)
• Function	day-to-day operations	long-term information requirements, decision support.
• DB design	ER based, application-oriented	Star/snowflake, subject-oriented
• Data	Current; guaranteed up-to-date	Historical; accuracy maintained over time.

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Functionality	OLTP	OLAP
• Summarization	Primitive, highly detailed	Summarized, consolidated
• View	Detailed, flat relational	Summarized, multidimensional
• Unit of work	short, simple transaction	Complex query
• Access	Read/write	Mostly Read

12) Data Mining? Why it is called data mining rather knowledge mining.

Ans • The overall goal of the data mining process is to extract information from a large data sets and transform it into an understandable structure for further use.

- Data mining is looking for hidden, valid and potentially useful patterns in huge data sets.

- Data Mining is all about discovering unsuspected / previously unknown relationships amongst the data.

- Data mining is also called as knowledge discovery, knowledge extraction, data/pattern analysis, information harvesting, etc.

- This is an analysis based on historic data. We may do statistical calculation and arrive into some information.

- So knowledge is not the only output from a data mining process and it make sense to call it as data mining as a broad umbrella term.

Reason why data mining is not known as knowledge mining

13) Explain KDD Process.

Ans - Here,

KDD = Knowledge Discovery Databases

- Now, knowledge discovery in databases is a process of an iterative sequence of the following steps:

1. selection
2. Preprocessing
3. Transformation
4. Data Mining
5. Pattern Evaluation
6. User Interface (visualization of pattern or knowledge)

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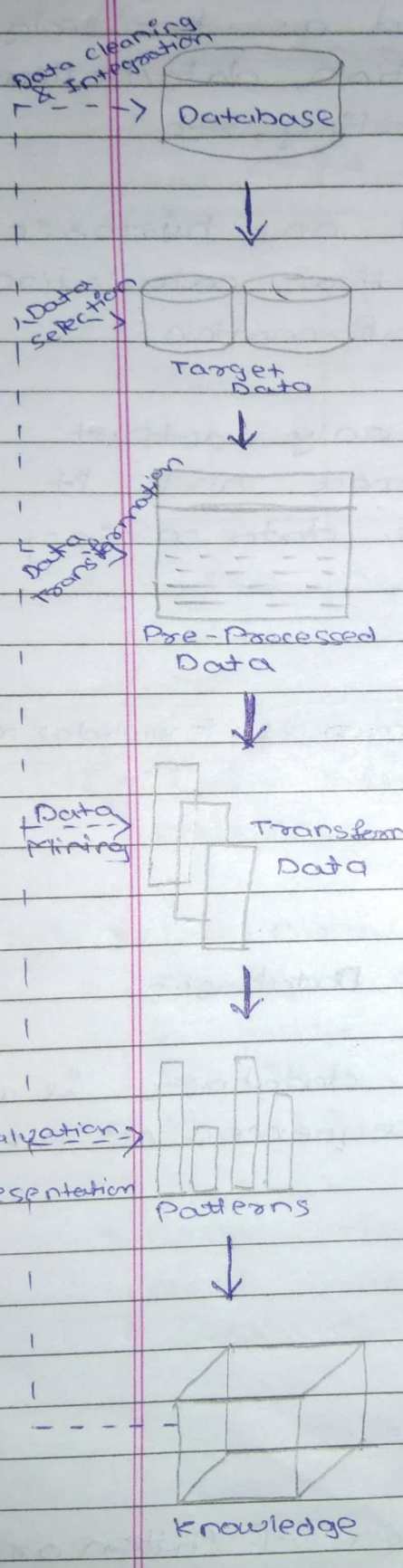
Page No.: 5
Date: / /



- **Data Selection**:- Where data relevant to the analysis task are retrived from the database
- **Data Cleaning**:- To remove noise and inconsistent data
- **Data Integration**:- Where multiple data sources may be combined
- **Data Transformation**:- Where data are transformed or consolidated into appropriate forms for mining by performing summary or aggregation operation
- **Data Mining**:- An essential process where intelligent methods are applied in order to extract data patterns
- **Pattern Evaluation**:- To identify the truly interesting patterns representing knowledge based on some interestingness measures
- **Knowledge Presentation**:- Where visualization and knowledge representation techniques are uses to present the mined knowledge to the user.

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14) Describe various methods of handling missing data values with example.

Ans - To handle missing values these are few steps :-

1) Ignore the tuple
2) Fill missing value manually
3) Fill in the missing value automatically
4) Use a global constant to fill in the missing value.

=> Now, lets dive deep a little bit

- Ignore the tuple (record/row):

Usually done when class label is missing

- Example :-

↳ The task is to distinguish between two types of emails,
  ↳ Spam
  ↳ Non-Spam

↳ Spam & Non-Spam are called as class label

↳ If an email comes to you, in which class label is missing then it is discarded

- Fill missing value manually:

- Use the average to fill in the missing value.

- Use the average for all samples belonging to the same class.

- Fill in the missing value automatically

- Predict the missing value by using a learning algorithm:

  ↳ Consider the attribute with the missing value as a dependent variable and run a learning algorithm to predict the missing value.

- Use a global constant to fill in the missing value

- Replace all missing attribute values by the same constant such as a label like "unknown".

15) Explain Data Mining Issues

Ans - This issues are classified into five categories:

1. Mining Methodology

2. User Interaction
3. Efficiency and scalability
4. Diversity of Database Types
5. Data Mining and Society

-> Now, let's see each in brief:

- Mining Methodology

- Mining various and new kinds of knowledge
  ↳ Data mining covers a wide spectrum of data analysis and knowledge discovery tasks, so these tasks may use the same database in different ways and require the development of numerous data mining techniques.

- Mining knowledge in multidimensional space
  ↳ When searching for knowledge in large data sets, we can explore the data in multidimensional space.

- Data Mining - an interdisciplinary effort

- Handling uncertainty, noise, or incompleteness of data

- User Interaction

- Interactive mining

↳ The data mining process should be highly interactive.

- Incorporation of background knowledge
  ↳ Background knowledge, constraints, rules, and other information regarding the domain under study should be incorporated into the knowledge discovery process

- Presentation and visualization of data mining results

• Efficiency & Scalability

- Efficiency & scalability of data mining algorithms
  ↳ The running time must be short, predictable, and acceptable by applications.

- Parallel, distributed, and incremental mining algorithms

• Diversity of Database Types

- Handling complex types of data.
  ↳ Data mining is how to uncover knowledge from stream, time-series, sequence, graph, social network, and multirelational & data

- Mining dynamic, networked, and global data repositories.
  ↳ The discovery of knowledge from different sources of structured, semi-structured, or unstructured challengable

- **Data Mining and Society**

- Social impacts of data mining

- Privacy - Preserving data mining
  ↳ It poses the risk of disclosing an individual's personal information

- Invisible data-mining
  ↳ we cannot expect everyone in society to learn and master in data mining techniques.