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	FINAL EXAMINATION	Issue No. <b>1</b>

[ **Software Engineering Department, College of Engineering** ]

**Final Examination for the Course Business Intelligence**

**Examination Date: 15 June, 2026**

**Academic Year: 2025/26**

**Maximum score: 50%**

**Semester: II**

**Time Allowed: 2 hours**

**Target Group: 1<sup>st</sup> Year**

**Tick an ‘X’ mark in the box where it applies you.**

Freshman	Applied Science	<input type="checkbox"/>	Engineering	<input type="checkbox"/>
Regular (2 <sup>nd</sup> & above):	Undergraduate	<input type="checkbox"/>	Postgraduate	<input type="checkbox"/>
Continuing Education	Undergraduate	<input type="checkbox"/>	Postgraduate	<input type="checkbox"/>

**Course instructor(s) name(s):**  Dr. Tilahun Melak


**Student Name:** \_\_\_\_\_ **ID. No:** \_\_\_\_\_

**General Directions**

- Write your name (including your grandfather’s name) and ID No. both on the question paper and answer sheet (if any).
- The examination booklet constitutes two types of questions, **25 Multiple Choice, 7 essay** questions.
- Make sure that all the parts are included in your booklet, which has **6 page(s)** including the cover page and answer sheet page(s), if any.
- Please read the instructions carefully and attempt all the questions.
- It is strictly forbidden to bring mobile phones and any electronic devices into the examination room
- Do not use pencil and red pen.
- Do not detach the answer sheet from the question paper.
- Cheating automatically nullifies your total scores.

**For Instructor’s Use Only**


Question Type/ No.	Mark Allotted	Mark Scored
Multiple Choice (1 – 25)	25 pts	
Work out/Essay	25pts	
<b>Total</b>	<b>50 pts</b>	

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**PART I: MULTIPLE CHOICE (25%)**

***Instruction: For questions 1 to 25, write the letter of the correct answer on the answer sheet provided. Don't mark or circle the answer on the question paper. (1 points each)***

1. Which one of the following best describes Business Intelligence (BI)?
  - A. A collection of programming languages used for data mining
  - B. A set of technologies and processes used to transform data into actionable information for decision-making
  - C. A database management system for storing transactional data
  - D. A statistical technique used for forecasting
2. The primary objective of Business Intelligence is to:
  - A. Replace human decision-makers
  - B. Increase data storage capacity
  - C. Support strategic, tactical, and operational decision-making
  - D. Eliminate uncertainty from business environments
3. Which type of data is estimated to constitute the largest proportion of organizational data today?
  - A. Structured Data
  - B. Semi-Structured Data
  - C. Unstructured Data
  - D. Transactional Data
4. Which type of analytics focuses on understanding what has happened in the past?
  - A. Predictive Analytics
  - B. Prescriptive Analytics
  - C. Descriptive Analytics
  - D. Diagnostic Analytics
5. Predictive analytics is primarily concerned with:
  - A. Summarizing historical events
  - B. Explaining past performance
  - C. Forecasting future outcomes
  - D. Automating transactions
6. Which one of the following is used to generate descriptive summary of the data to have general property of the data and understand which data values should be considered as noise or outliers.
  - A. measure of central tendency of the data
  - B. measure of dispersion of the data
  - C. Visualizations
  - D. All
  - E. None

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7. **Exploratory Data Analysis** or EDA is a critical first step in analyzing a new dataset. Which one of the following **cannot** be the primary objective of EDA
- To enable us to direct specific testing of the hypothesis.
  - To detect outliers
  - To detect anomalies
  - To identifying patterns and visualizations
  - None
8. Which one of the following statements is **not** correct about the data cleaning?
- It is a kind of pre-process in which the given set of data is prepared for the data warehouse.
  - It refers to the transformation of wrong data into correct data
  - It refers to correcting inconsistent data
  - All of the above
  - None
9. Which of the following also used as the first step in the data preprocessing?
- Data selection
  - Data cleaning
  - Data transformation
  - Data integration
10. Which one of the following missing value handling technique is usually applied when class label is missing
- Fill in the missing value manually
  - Use a global constant to fill in the missing value
  - Ignore the tuple
  - Using the attribute mean
11. Which one of the following is **not** true about data transformation through attribute construction
- Attribute construction can be important to improve performance
  - Enable to discover missing information or information hidden within the dataset
  - It is the process of driving new attributes from the existing attributes.
  - All
  - None
12. Which one of the following **cannot** be used for data reduction?
- Log-linear model
  - Histograms
  - Clustering
  - Multiple regression
  - None



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13. Which one of the following is True about frequent pattern and association rule mining
- A. If an itemset is frequent, each of its subsets is frequent as well.
  - B. An itemset X is closed itemset in a data set S if there exists proper super-itemset Y such that Y has the same support count as X in S.
  - C. An itemset X is maximal frequent itemset (or max-itemset) in set S if X is frequent, and there exists super-itemset Y such that  $X \subset Y$  and Y is frequent in S.
  - D. all closed frequent itemset is member of maximal frequent item set
  - E. None
14. The Apriori algorithm uses prior knowledge of subset support properties. Which one of the following is true about these properties
- A. All nonempty subsets of a frequent itemset must also be frequent.
  - B. The support of any nonempty subset s' of itemset s must have at least the same support count as s.
  - C. Given frequent itemset l and subset s of l, the confidence of the rule "s'=> (l-s)" cannot be more than the confidence of "s=> (l - s)", where s' is a subset of s.
  - D. All
  - E. None
15. If we don't have predefined classes in the dataset for training our data mining model which data mining technique is more appropriate
- A. Association rule mining
  - B. Classification and prediction
  - C. Clustering
  - D. All
  - E. None
16. Concurrent access to shared data may result in\_\_\_\_\_
- A. Data consistency
  - B. Data insecurity
  - C. Data inconsistency
  - D. None
17. Which one of the following is not true about big data
- A. Traditional RDBMS queries are not sufficient to gain useful information out of huge volume of data
  - B. Searching with traditional tools to find out if a particular topic is trending can be timely.
  - C. It is difficult to process big data with on hand database management tools.
  - D. All
  - E. None
18. A flight generates 240 terabytes of data in a flight of 6 to 8 hours. This data needs to be analyzed to make decisions and guide actions. Which one of the big data characteristics more appropriately describes the stated challenge?
- A. Volume
  - B. Variety
  - C. Velocity
  - D. All
  - E. None



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is one of the most common datamining model. Discuss the detail steps in CRISP-DM model. (5pts)

4. Explain the difference between the following concepts/techniques/terms (4pts)
  - A. Supervised and Unsupervised learning
  - B. Classification and Prediction
5. There are a lot challenges in big data. Discuss the challenges of big data in detail with examples. (4pts)
6. Discuss at least two reasons of how spark is better than Apache Hadoop. (2pts)
7. Critically examine the importance of data privacy and data protection in modern Business Intelligence systems. Discuss the challenges organizations face in balancing data utilization and privacy preservation. (3pts)