



**Daffodil International University**  
**Faculty of Science & Information Technology**  
**Department of Computer Science & Engineering**  
**Midterm Examination, Summer 2026**  
**Course Code: CSE112 , Course Title: Computer Fundamentals**  
**Level:1 Term:1 Batch: 72**

**Time: 01:30 Hrs**

**Marks: 25**

**Answer ALL Questions**

*[The figures in the right margin indicate the full marks and corresponding course outcomes.  
 All portions of each question must be answered sequentially.]*

|    |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |
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| 1. | a) | Indicate the differences between system and application softwares.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3       | CO1 |
|    | b) | Draw the basic structure of a computer system                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2       |     |
|    | c) | Convert $(23230.3)_3$ to Base-6.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2.5+2.5 |     |
|    | d) | Divide $(201543)_6$ by $(143)_6$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3       |     |
|    | e) | Draw the circuit diagram of the following function using NAND gates only.<br>$F(A,B,C) = (A'BC + A)'$<br>You cannot simplify the function. Just implement whatever is given in the question.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4       |     |
| 2. | a) | <p>A global tech company is launching an AI-powered recruitment tool to screen job applications.</p> <ul style="list-style-type: none"> <li>• <b>Part A:</b> During testing, the company discovers the AI is automatically rejecting highly qualified female candidates because the historical data used to train it mostly featured men.</li> <li>• <b>Part B:</b> The tool is also found to be accessing the private, unencrypted personal messages of applicants on their phones to "better understand their personality" without their knowledge.</li> <li>• <b>Part C:</b> To address these concerns, the company decides to follow a set of formal principles and conduct frequent checks on the AI's data and results.</li> </ul> <p>i) Identify the two specific ethical issues illustrated in Part A and Part B.</p> <p>ii) Name two "Best Practices" or "Guidelines" that the company can use to mitigate these ethical risks.</p> | 1+2     | CO2 |

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|  | <p><b>b)</b> A healthcare company is working on two machine learning projects for medical data analysis.</p> <p>In the first project, the company has a large dataset containing patient records where each record is labeled as either "Diabetic" or "Non-Diabetic." The goal is to train a model that can predict whether a new patient has diabetes based on features such as age, weight, blood pressure, and glucose level.</p> <p>In the second project, the company has a large collection of patient records without any labels. The company wants to discover hidden patterns and group patients with similar health characteristics to identify potential risk categories.</p> <p>To achieve these goals, the company uses machine learning techniques.</p> <p>i) Classify the main types of machine learning.</p> <p>ii) Identify the most suitable type of machine learning for the first project where patient records are labeled. Justify your answer.</p> <p>iii) Name one appropriate algorithm that can be used for the first project.</p> <p>iv) Identify the most suitable type of machine learning for the second project where patient records are unlabeled. Justify your answer.</p> <p>v) Name one appropriate algorithm that can be used for the second project.</p> | 5 |  |
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