

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION
DURATION: 1 HOUR 30 MINUTES

SUMMER SEMESTER, 2021-2022
FULL MARKS: 75

CSE 6291: Information Security

Programmable calculators are not allowed. Do not write anything on the question paper.

Answer **all 3 (three)** questions. Figures in the right margin indicate full marks of question.

1. a) Explain the term 'Data Anonymization'. Discuss the data anonymization process using a suitable figure. 3 + 7
- b) Consider the dataset shown in Table 1. 15

Table 1: Dataset for Question 1.b) and Question 2.b)

Serial	Gender	Age	Score %	Class Performance	Major
1	Female	20	84	Satisfactory	Computer
2	Male	20	89	Satisfactory	Electronics
3	Male	20	90	Satisfactory	Electronics
4	Female	21	98	Satisfactory	Electronics
5	Female	21	90	Satisfactory	Engineering
6	Male	20	90	Satisfactory	Electronics
7	Male	20	84.5	Satisfactory	Business Management
8	Male	21	84	Satisfactory	Business Management
9	Female	20	82.5	Satisfactory	Law
10	Female	21	51	Unsatisfactory	Engineering
11	Male	20	57	Unsatisfactory	Electronics
12	Female	20	53	Unsatisfactory	Engineering
13	Male	21	57.5	Unsatisfactory	Electronics
14	Male	21	43	Unsatisfactory	Engineering
15	Male	20	54	Unsatisfactory	Computer
16	Male	20	46.5	Unsatisfactory	Computer
17	Male	20	56	Unsatisfactory	Business Management
18	Male	21	46	Unsatisfactory	Business Management

The dataset has six columns - a student's serial number, gender, age, percentage of score in a test, class performance, and major of the student.

Apply five (5) different data anonymization techniques on these columns except class performance. Explain the outcome after applying anonymization techniques.

2. a) Explain the principle of the K-anonymity Model. 5
- b) Consider the dataset shown in Table 1. Apply the 2-anonymity model over the dataset and show the outcome, i.e., the Released Table (RT). 15
- c) Explain one of the reidentification attacks on the K-anonymity model. 5
3. a) List the major dimensions of an Information System. Explain two risks associated with an Information System. 3 + 4
- b) Explain the process associated with a Cryptosystem using a suitable diagram. 8
- c) Identify the characteristics of Symmetric/Private Key Encryption. Discuss the limitations of this encryption process. 5 + 5