



UNIVERSITY EXAMINATIONS: 2023/2024
EXAMINATION FOR THE MASTERS IN DATA ANALYTICS/ISM
MDA 5203 DECISION SUPPORT SYSTEMS
FULLTIME/ PART TIME/DISTANCE LEARNING

DATE: DECEMBER 2023

TIME: 3 HOURS

Instructions: Question One Is Compulsory, Choose Two Other Questions

QUESTION ONE [20 marks] Compulsory

- a) Decision tree induction is one of the machine learning techniques. Explain what decision tree induction means and how it is used for classification problems. (There is no need to explain the actual induction process.) [10 marks]
- b) Induce a decision tree from the data supplied below. S1 and S2 are symptoms, testA is a diagnostic test and the diagnosis is the decision of interest: does the patient have D or not. [10 marks]

Case#	S1	S2	testA	diagnosis
1	Severe	No	-ve	No D
2	Severe	Yes	-ve	D
3	Severe	Yes	+ve	D
4	Mild	No	+ve	D
5	Mild	Yes	-ve	D
6	None	No	+ve	No D
7	Mild	No	-ve	No D
8	Severe	No	+ve	No D
9	Mild	Yes	+ve	D
10	None	Yes	-ve	No D
11	None	Yes	+ve	D
12	None	No	-ve	No D

QUESTION TWO [15 marks]

- a) Select and discuss one of the best practices in dashboard design. [8 marks]
- b) List the four steps of data preprocessing and include examples of activities that may be

completed at each step.

[12 marks]

QUESTION THREE [15 marks]

- a) Compare and contrast decision making under uncertainty, risk and certainty. [6 marks]
- b) List the seven steps in the methodology of simulation. [7 marks]
- c) Can customer relationship management (CRM) systems and revenue management systems (RMS) recommend not selling a particular product to certain customers?, Explain. [2 marks]

QUESTION FOUR [15 marks]

- a) Describe the difference between quantitative and qualitative data. Include definitions for nominal and ordinal data. [5 marks]
- b) What are the key attributes of cognitive computing systems? [10 marks]