



UNIVERSITY COLLEGE TATI (UCTATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DCT2113
COURSE	: SYSTEM ANALYSIS AND DESIGN METHOD
SEMESTER/SESSION	: 2 2022/2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains **5** questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise up your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO
THIS BOOKLET CONTAINS 6 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

- a) Describe the phases of the systems development life cycle. (10 marks)
- b) Provide **TWO (2)** example of System Requirements Checklist. (4 marks)
- c) Describe and sketch Gane and Sarson Symbols used for processes, data flows, data stores, and entities. (8 marks)
- d) Given the DFD (Data Flow Diagram) symbols in Figure 1. State the correct and incorrect of the relationship. (6 marks)



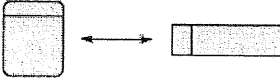



a)		Process to Process
b)		Process to External Entity
c)		Process to Data Store
d)		External Entity to External Entity
e)		External Entity to Data Store
f)		Data Store to Data Store

Figure 1

SYSTEM ANALYSIS AND DESIGN (DCT2113)

- e) Explain the difference between Logical Design and Physical Design. (2 marks)
- f) A shop gives some customers a discount on goods totaling more than \$20. The discounts are: 5% for goods totaling more than \$100 5% with a discount card 10% with a discount card and goods totaling more than \$100. Create decision table based on given scenario. (8 marks)

QUESTION 2

- a) List **SIX (6)** advantages of web-based system development. (6 marks)
- b) State **THREE (3)** reasons of In-House development. (3 marks)
- c) State **FOUR (4)** reason of purchasing software package. (4 marks)

QUESTION 3

- a) List **SEVEN (7)** principles for user-centered interface design. (7 marks)
- b) List **SIX (6)** User interface controls. (6 marks)
- c) List **SIX (6)** types of Data validation checks. (6 marks)
- d) Describe **THREE (3)** types of output. (6 marks)

QUESTION 4

a) Define each of the following terms :

i) Database. (2 marks)

ii) Database Management System. (2 marks)

b) Explain **THREE (3)** advantages of Database Management System (DBMS). (6 marks)

c) Describe the First Normal Form (1NF), Second Normal Form (2NF) and Third Normal Form (3NF). (6 marks)

QUESTION 5

Faculty of Computer Science wants to develop an Advisor System. An initial ERD for STUDENT, ADVISOR and COURSE is shown in the following Figure 2.

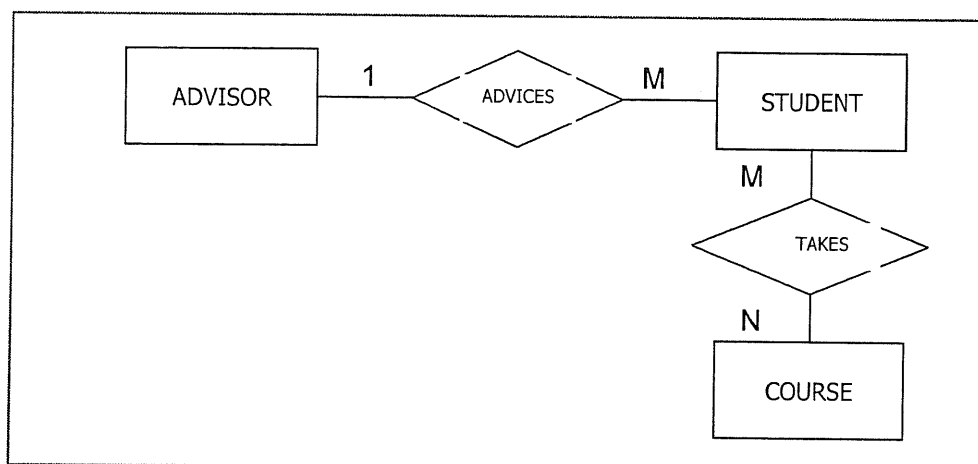


Figure 2

SYSTEM ANALYSIS AND DESIGN (DCT2113)

The initial design of the data store for STUDENT entity includes the student number, student name, total credits taken, grade point average (GPA), advisor number and advisor name. For every course the student has taken, the course code, course description and grade received.

Given:

- STUDENT record design
STUDENT (STUDENT NUMBER, STUDENT_NAME, TOTAL_CREDIT, GPA, ADVISOR_NUMBER, ADVISOR_NAME, (COURSE NUMBER, COURSE_DESC, GRADE))
- ADVISOR record design
ADVISOR (ADVISOR NUMBER, ADVISOR_NAME)
- COURSE record design
COURSE(COURSE NUMBER, COURSE_DESC, NUM_CREDITS)

Sample of student records are given in figure 3 below:-

STUDENT								
STUDENT- NUMBER	STUDENT- NAME	TOTAL- CREDITS	GPA	ADVISOR- NUMBER	ADVISOR- NAME	COURSE- NUMBER	COURSE-DESC	GRADE
1035	Linda	17	3.647	49	Smith	CSC151	Computer Science I	B
						MKT212	Marketing Management	A
						ENG101	English Composition	B
						CHM112	General Chemistry I	A
						BUS105	Introduction to Business	A
3397	Sam	9	3.000	49	Smith	ENG101	English Composition	A
						MKT212	Marketing Management	C
						CSC151	Computer Science I	B
4070	Kelly	14	2.214	23	Jones	CSC151	Computer Science I	B
						CHM112	General Chemistry I	C
						ENG101	English Composition	C
						BUS105	Introduction to Business	C

Figure 3

SYSTEM ANALYSIS AND DESIGN (DCT2113)

The ADVISOR and COURSE records already in 3NF, your tasks are:

- a) Convert the unnormalized for student record into 3NF. (4 marks)
- b) Redesign the ERD after normalization process. (4 marks)

-----End of question-----