(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR THREE SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF
BACHELOR OF EDUCATION SCIENCE

COURSE CODE　　　:　　CSC 316

COURSE TITLE　　　:　　DATABASE SYSTEMS II

DATE: 19 /07/2021　TIME: 9:00 A.M – 11:00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE[COMPULSORY] [30 MARKS]

a) Indexing is defined based on its indexing attributes, explain the three types of indexing

[6 marks]

b) What is the difference between Dense Index and Sparse Index?   [4 marks]

c) Explain the prime reasons for using the ER Diagram   [6 marks]

d) Key is an attribute or collection of attributes that uniquely identifies an entity among entity set, briefly explain the following types of keys   [4 marks]

   i.   Super key

   ii.   Candidate key

   iii.   Primary key

   iv.   foreign key

e) Define Relationship as used in DBMS   [2 marks]

f) Cardinality defines the number of entities in one entity set, which can be associated with the number of entities of other set via relationship set, with the aid of a well labelled diagrams explain the following entity sets   [8 marks]

   a.   One-to-one

   b.   One-to-many

   c.   Many-to-one

   d.   Many-to-many

QUESTION TWO [20 MARKS]

a) With the aid of a well labeled diagrams discuss the three types of DBMS architecture

[10 marks]

b) Decompose the Teachers Table into 2NF [10 marks]

TEACHER table

TEACHER_ID	SUBJECT	TEACHER_AGE
25	Chemistry	30
25	Biology	30
47	English	35
83	Math	38
83	Computer	38

QUESTION THREE [20 MARKS]

a) Discuss main components and symbols in ER Diagrams: [10 marks]

b) Decompose the Employee Table below into 1NF [10 marks]

EMPLOYEE table:

EMP_ID	EMP_NAME	EMP_PHONE	EMP_STATE
14	John	7272826385 9064738238	UP
20	Harry	8574783832	Bihar
12	Sam	7390372389, 8589830302	Punjab

QUESTION FOUR [20 MARKS]

a) Discuss the five types of attributes as used in DBMS　　　　[10 marks]

b) Decompose the Student Table below into 4NF　　　　[10 marks]

STUDENT

STU_ID	COURSE	HOBBY
21	Computer	Dancing
21	Math	Singing
34	Chemistry	Dancing
74	Biology	Cricket
59	Physics	Hockey

QUESTION FIVE [20 MARKS]

a) Draw an ER (Entity Relationship) diagram illustrating the relationship between Student and College as many to one, as a college can have many students however a student cannot study in multiple colleges at the same time. Student entity has attributes such as Stu_Id, Stu_Name & Stu_Addr and College entity has attributes such as Col_ID & Col_Name.

[10 marks]

b) Decompose the table below into 5NF　　　　[10 marks]

SUBJECT	LECTURER	SEMESTER
Computer	Anshika	Semester 1
Computer	John	Semester 1
Math	John	Semester 1
Math	Akash	Semester 2
Chemistry	Praveen	Semester 1