Question 3

Why would you choose a database system instead of simply storing datain operating system files? When would it make sense *not* to use a database system? [25]

Question 4

i. Explain the difference between logical and physical data independence. [12]

ii. Explain the difference between external, internal, and conceptual schemas. How are these different schema layers related to the concepts of logical and physical data independence? [13]

Question 5

What are the responsibilities of a DBA? If we assume that the DBAis never interested in running his or her own queries, does the DBA still need tounderstand query optimization? Why? [10]

QUESTION 1

Notown Records has decided to store information about musicians whoperform on its albums (as well as other company data) in a database. The companyhas wisely chosen to hire you as a database designer (at your usual consulting fee of$2500/day).

A. Each musician that records at Notown has an SSN, a name, an address, anda phone number. Poorly paid musicians often share the same address, and noaddress has more than one phone.
B. Each instrument used in songs recorded at Notown has a unique identificationnumber, a name (e.g., guitar, synthesizer, flute) and a musical key (e.g., C, B-flat,E-flat).
C. Each album recorded on the Notown label has a unique identification number, a title, a copyright date, a format (e.g., CD or MC), and an album identifier.
D. Each song recorded at Notown has a title and an author.
E. Each musician may play several instruments, and a given instrument may be played by several musicians.
F. Each album has a number of songs on it, but no song may appear on more than one album.
G. Each song is performed by one or more musicians, and a musician may perform a number of songs.
H. Each album has exactly one musician who acts as its producer. A musician may produce several albums, of course.

Design a conceptual schema for Notown and draw an ER diagram for your schema.

QUESTION 2

(a) Explain deadlock. **[5 Marks]**

(b) Describe 2 ways in which the deadlock can be prevented. **[5 Marks]**

(c) What is concurrency control? **[5 Marks]**

(d) Describe three problems that can arise if concurrency control fails. **[10 Marks]**

ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE	:	CDT107
COURSE TITLE	:	Database Systems
DURATION	:	3 Hours
LEVEL	:	1.2
DATE	:	2021

INSTRUCTIONS TO CANDIDATES:

1. AnswerFOUR questions only.
2. Each question carries 25 Marks.