

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE, Midterm Exam, 8th Semester, Spring 2022

Course Code: CSE 4845

Course Title: Distributed Database

Total marks: 30

Time: 1 hours 30 minutes

[Answer all the questions; in some questions, there are options;
Figures in the right-hand margin indicate full marks.]

1. a. Write down the Peer-to-Peer Architecture for DDBMS according to Data-based approach. 5
 - b. What are the characteristics of distributed database management system? Write down the functional goals of distributed database management system? 5
- OR**
- What do you know about the ANSI/SPARC Architecture of DBMS? Describe it.
2. a. What is Replication and Allocation? What is a reasonable unit of distribution? Relation or fragment of relation? Explain it. 5
 - b. What are the design problems of distributed systems? What is Fragment Allocation? How can we define the Horizontal and Vertical fragmentation? 5
- OR**
- Write down the steps of View Integration for a Unique Database? Discuss about the different types of Conflict analysis.
3. *MediaWiki* and *TikiWiki* are two wiki like content management systems with a DB backend. At the International Islamic University Chittagong some of the professors use *MediaWiki* while some other use *TikiWiki*. The university wants to allow the professor using one of the two systems to access the pages of the other one, while keeping unaltered the original applications. We report the two original relational schemas:- 10

MEDIAWIKI-DB

PAGE (pid, title, namespace)

REVISION (rid, page, text-id)

TEXT(tid, plain-text)

USER (uid, nickname, password)

PAGELINKS (from, title, namespace)

where *PAGE* contains the metadata about a page, *REVISION* contains different versions of the same page, *TEXT* contains individual text of each revision. *USER* contains the information about CMS users and *PAGELINKS* stores the

links between pages as an id of the source page and the title and namespace of the target page.

TIKIWIKI-DB

PAGES (**page-id**, version, page-title, text)

COMMENTS (**page-id, user-id**, comment)

USER (**user-id**, real-name, username, email, pwd, path-to-picture)

LINKS (**from-page, to-page**)

PAGES contains the information about pages (their versions and the actual texts), *COMMENTS* stores user comments to pages, *USER* contains information about users, *LINKS* represents the links between pages as id pairs of the source page and of the target page.

You are required to:-

- Propose a **data-integration solution based** on the requirements above.
- provide, for each input data source, the reverse engineering from the **logical to conceptual schema**.