

# **STID 3014**

## **FINAL EXAM REVIEW - SEMESTER A172**

### **DATE: 2/6/2018**

There are two section:

- Section A (Structure) – Sixteen (13) main questions.
- Section B (Case Study) – Three (3) main questions.

All topics are covered, EXCEPT topic 8 (Application).

At least 1 topic will have 1 question.

Officially, time given is 2.30 hours.

All answers are written in available sheets. No extra sheets required. If required, the blank sheets are provided by request.

Calculator not required, and hand phone (smart or not) is prohibited.

Please avoid any kind of notes enter the examination hall.

# QUESTION 1 – 4

## Database Design Concept

- File-based system concept and definition
- Database design definition, model, phase, advantage and disadvantage, three-schema architecture
- Database Management System (DBMS), what are the components involved?
- Concept entity, attribute, relationship, mapping, cardinality, primary key, foreign key
- Remember the figure/flow?

# QUESTION 1 – 4



12  
marks

## Database Design Concept

- Phases of database design – conceptual, logical and relational model
- Activities in database development life cycle (DBDL)
- Three-Level ANSI-SPARC Database Architecture
- Data Independence concept
- Tasks involved in each of database design phase – requirement analysis, conceptual, logical, physical design

## QUESTION 5-7

### **Entity Relationship Modeling (ER, EER)**

- Basic concept data model: entity, attribute, and relationship
- Attributes on relationship (single, multi-value, etc ..)
- Structural constraints (participation, cardinality)
- Problems with ER Model – Fan, Chasm Traps
- Enhanced Entity-Relationship Modeling (EER)

# QUESTION 5-7 (+1 QUESTION SEC B)



## Entity Relationship Modeling

- Design the conceptual or logical of the database by given the scenario
- Identify the proper entity type, attributes, relationships, keys
- Define the constraints, cardinality, multiplicity
- Understanding the terms entity type, relation type, attribute domain, ... etc.
- Create, alter, drop database, table, attribute, ... etc.

## QUESTION 8-9 (+1 QUESTION SEC B)

4  
marks

### The Relational Model

- Concept of relational database model and terminology
- Integrity constraints
- Purpose of View
- Mapping ER/EER diagram to relational model

10  
marks

# QUESTION 10 (+1 QUESTION SEC B)

## Normalization

- Purpose of Normalization
- Data Redundancy & Anomalies
- Functional dependencies
- Process of Normalization
- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)



10  
marks



10  
marks

## QUESTION 11-13 (+ 1 QUESTION SEC B)

12  
marks

### SQL Statement

- Using SQL statements for creating, updating, deleting, querying, drop
- Apply some conditions using DISTINCT, ORDER by, GROUP by, HAVING, Wildcard Search, aggregation such as COUNT, SUM, ..
- Define relations from the given EER model, identify PK, AK, FK, Reference FK->PK
- Sub-query, using IN, BETWEEN, ... etc.
- By given structure tables or example of output, write a query

10  
marks



## QUESTION 14



### Constraint and Trigger

- Value Constraint
- Global Constraints
- Constraints Updates
- Triggers in SQL. How to:
  - Create
  - Update
  - Delete
- What is syntax to create, update and delete Triggers

## QUESTION 15-16



### SQL System Aspect

- Security (Grant, Revoke)
- Transaction Management (Evaluation of Output Transaction)
- Properties of Transactions, COMMIT, ROLLBACK, log)
- Concurrency Control (The Need for Concurrency Control, Control Technique, Deadlock)
- Database recovery

**PREPARE FOR YOUR FINAL EXAM  
SMILE AND HAPPY ANSWERING  
PRAY TO GOD  
FOR GOOD RESULTS**

