

IT-710

B.E. VII Semester

Examination, December 2016

Advanced Concepts in Database System

Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Give any two advantages of DBMS approach on traditional file system approach.
b) What is Instance of a Database?
c) What is Data Dictionary?
d) Discuss the following, with suitable example:
Weak entity set; Generalization; Aggregation.

OR

Draw a ER model for an University database application where:

A university has many departments. Each department has multiple instructors; one among them is the head of the department. An instructor belongs to only one department. Each department offers multiple courses, each of which is taught by a single instructor. A student may enroll for many courses offered by different departments. Show the mapping cardinality and total participation constraints clearly. Take suitable assumptions wherever necessary.

2. a) What do you understand by Tuning of Database?
- b) What is Query Optimization?
- c) What is Clustering?
- d) What is the purpose of Indexing? Discuss about:
 - Primary and secondary indices
 - Dense and sparse indices

OR

Discuss about query evaluation plans in details.

3. a) What is data fragmentation?
- b) What is a blind-write?
- c) Discuss about semi join and theta join.
- d) Consider the following locking protocol. Before a transaction T writes a data object A T has to obtain an exclusive lock on A. For a transaction T, we hold these exclusive locks until the end of the transaction. If a transaction T reads a data object A, no lock on A is obtained. State which of the following properties are ensured by this locking protocol: Serializability, conflict-serializability, recoverability, avoids cascading aborts, avoids deadlock.

OR

What is Serializability? Is the following schedule serializable? If yes, then find its equivalent serial schedule:

T1	T2	T3
	R(D3) R(D2) W(D2)	
		R(D2) R(D3)
R(D1) W(D1)		
		W(D2) W(D3)
	R(D1)	
R(D2) W(D2)		
	W(D1)	

4. a) What is Temporal Database?
- b) Briefly discuss about data integration and data transformation.
- c) What are the need of a maintaining multimedia database?
- d) Discuss about web databases in details.

OR

Discuss about data generalization and summarization based on characterization in detail.

5. a) What is the Purpose of JavaScript?
- b) What is XPath?
- c) What are the differences between HTML and XML?
- d) What is JDBC? Discuss about the steps of database connectivity in context of JDBC.

OR

Discuss about following types of distributed databases:

- Homogeneous distributed databases
- Heterogeneous distributed databases
