INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

Course Name	Advanced Data Base Management System
Course Code	BCS005
Class	I M. Tech II Sem
Branch	Computer Science Engineering
Year	2017 – 2018
Team of Instructors	Mr. C Raghavendra, Assistant Professor, CSE.

OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

PART – A (SHORT ANSWER QUESTIONS)

S. No	QUESTIONS	Blooms taxonomy level	Course outcome
	UNIT – I INTRODUCTION		
1.	List the advantages of DBMS?	Knowledge	1
2.	List the database Applications?	Knowledge	2
3.	Define (i) Database (ii) DBMS	Knowledge	2
4.	Give a brief note on Database storage structure?	Understand	2
5.	Discuss about wild card operators.	Understand	2
6.	What is the Query Processor?	Understand	2
7.	Define the terms i) Entity ii) Entity set	Knowledge	1
8.	Define weak and strong entity sets?	Knowledge	2
9.	Write about stored and derived attributes?	Understand	2
10.	Discuss how can you change the data in the table?	Understand	1
11.	List various types of Integrity Constraints?	Knowledge	2
12.	Discuss How can you alter and destroy tables?	Understand	1
13.	Define database Languages?	Understand	2
14.	List the disadvantages of file processing system?	Knowledge	2
15.	Give the levels of data abstraction?	Understand	2
16.	Define instance and schema?	Knowledge	1

PART – B (LONG ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – I INTRODUCTION		
1.	Discuss additional features of the ER-Models.	Understand	1
2.	Explain the Concept Design with the ER Model?	Understand	1
3.	Write about views and updates on views?	Knowledge	2
4.	Explain Integrity constraint over relations?	Understand	1
5.	List and explain DDL commands with examples?	Understand	2
6.	Discuss about the logical database Design?	Understand	2
7.	Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set?	Apply	2
8.	Explain Group by and Order by queries with suitable example.	Understand	1
9.	Describe Inheritance. Illustrate with example?	Apply	2
10.	Describe various operations on structured data?	Understand	1

PART – C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – I INTRODUCTION		
1.	Let E1 and E2 be two entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one- to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. Calculate the minimum number of tables required to represent this situation in the relational model?	Apply	2
2.	Analyze and find whether View exists if the table is dropped from the database?	Analyze	2
3.	We can convert any weak entity set to strong entity set by simply adding appropriate attributes. Analyze why, then, do we have weak entity sets?	Analyze	1

PART – A (SHORT ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – II ORDBMS		
1.	Define Parallel database System?	Knowledge	3
2.	What is distributed database System?	Knowledge	3
3.	What are the Issues that motivate Data distribution?	Knowledge	3
4.	Define Parallel Query Optimization?	Knowledge	3
5.	What is Relational Query Execution Plan?	Knowledge	3
6.	How Data Partitioned in Parallel Evaluation?	Knowledge	3
7.	Describe Data Partitioning?	Understand	3
8.	Give a brief note on architectures to build parallel DBMS?	Understand	3
9.	Define the terms Speed up, Scale up?	Understand	3
10.	What is pipelined Parallelism?	Understand	3

PART – B (LONG ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – II ORDBMS		
1.	Explain Parallel Evaluation of Relational Query in DBMS?	Understand	3
2.	Explain Round-Robin Partitioning?	Understand	3
3.	Explain Bulk Loading and Scanning?	Understand	3
4.	Differentiate between RDBMS and ORDBMS?	Knowledge	3
5.	What are the storage distinctions' between reference and non-reference types?	Knowledge	3
6.	Explain implementation challenges of ORDBMS?	Understand	3
7.	Define Query Optimization?	Knowledge	7
8.	Explain Object Data Language and Object Query Language?	Understand	3
9.	Differentiate between ORDBMS and OODBMS?	Knowledge	3
10.	Discuss how a DBMS exploits encapsulation in implementing support for ADT	Knowledge	3

PART – C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – II ORDBMS		
1.	You are given a two-dimensional, n x n array of objects. Assume that you can fit 100 objects on a disk page. Describe a way to layout (Chunk) the array into pages so that retrievals of square m x m sub regions of the array are efficient.	Apply	3
2.	For the relations Emp(name, fname, address, dno) Dept(deptno, dname, address) And the query P fname, ename, address (s dname= 'Research' AND d,deptno=e. dno(EMP_Dept)) (i) Draw the initial query tree. (ii) Optimize the query write(X) operation and X resides on the 1 page.	Apply	3
3.	Describe data partitioning and parallelizing sequential operator evaluation code with relevant examples.	Analyze	3
4.	State parallel databases and design the architecture of parallel databases. Explain how to run parallel databases for big data?	Analyze	3

PART – A (SHORT ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – III DISTRIBUTED DATABASES		
1.	Define Distributed Database?	Knowledge	4
2.	List Out features of Distributed Database?	Knowledge	5
3.	List Out software components which are required for building a Distributed Database?	Knowledge	5
4.	Define Global Schema and Fragmentation Schema?	Knowledge	4
5.	What are types of Data Fragmentation?	Understand	5
6.	Define Replication Transparency?	Understand	4

7.	Define fragmentation	Understand	4
8.	List Out the rules for defining fragments?	Knowledge	5
9.	Define Mixed Fragmentation?	Knowledge	4
10.	What is Location Transparency?	Understand	4

PART – B (LONG ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – III **DISTRIBUTED DATABASES**		
1.	Explain Distributed Database on geographically dispersed network?	Knowledge	4
2.	Differentiate between Distributed Database and Centralized Database?	Knowledge	5
3.	Explain features of Distributed Database?	Knowledge	4
4.	Why Distributed Databases? Explain?	Knowledge	5
5.	Explain Distributed Database Management Systems?	Understand	4
6.	Explain services supported by DDBMS?	Understand	4
7.	Explain Architecture for Distributed Databases?	Understand	5
8.	Explain Different Types of Data Fragmentation?	Understand	4
9.	Explain Objectives which motivate architecture of Distributed Database?	Knowledge	5
10.	Explain Different levels of Distribution Transparency?	Understand	4

PART – C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – III **DISTRIBUTED DATABASES**		
1.	Explain heterogeneous distributed database without transparency with an example?	Analyze	4
2.	Explain distribution transparency for update applications with example?	Analyze	5
3.	Consider the global relations: PATIENT (NUMBER,NAME,SSN,AMOUNT DUE,SEPT,DOCTOR,MED-TRETMENT) DEPARTMENT(DEPT,LOCATION,DIRECTOR) STAFF(STAFF NUM,DIRECTOR,TASK) Define their fragmentation as follows: a) DEPARTMNET has a horizontal fragmentation by LOCATION, with two locations ;each department is conducted by one DIRECTOR b) There are several staff members for each department led by department director. STAFF has horizontal fragmentation derived from that of DEPARTMENT and a semi join on the DIRECTOR attribute .Which assumption is required in order to assure completeness?	Apply	4
4.	Explain Integrity Constraints in Distributed Database?	Apply	5

PART – A (SHORT ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – IV **DISTRIBUTED DATABASE DESIGN**		
1.	List out the Objectives of Design of Data Distribution?	Knowledge	6

2.	What are the approaches for designing Data Distribution?	Understand	6
3.	List out requirements to design a Distributed Database?	Knowledge	6
4.	Define Distributed Join?	Understand	6
5.	Define Vertical Fragmentation?	Understand	6
6.	What is Equivalence Transformation for Queries?	Understand	6
7.	What is Distributed Grouping?	Knowledge	6
8.	What is Aggregate Function Evaluation?	Knowledge	6
9.	Define Canonical Expression?	Understand	6
10.	What are the Properties of Group By Operation?	Knowledge	6

PART – B (LONG ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – IV **DISTRIBUTED DATABASE DESIGN**		
1.	Explain Objectives of the Design of Data Distribution?	Understand	6
2.	Explain Top Down and Bottom Up Approaches for Designing of Data Distribution?	Understand	6
3.	Explain how to design Database fragmentation?	Apply	6
4.	Explain general criteria for fragment allocation?	Understand	6
5.	What are the measures of costs and benefits of fragment allocation?	Understand	6
6.	Explain operator tree of a query with an example?	Understand	6
7.	Explain how to transform global queries into fragment queries?	Understand	6
8.	Explain the rules to define relational algebra to Qualified Relations?	Understand	6
9.	Explain simplification of joins between horizontally fragmented relations?	Understand	6
10.	Explain Read only application SUPINQUIRT at different levels of distribution transparency?	Understand	6

PART – C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – IV **DISTRIBUTED DATABASE DESIGN**		
1.	Give an example of bank application, accessing a database which is distributed over the branches of the bank, in which the relevant predicates for data distribution or not in the text of the application program.	Analyze	6
2.	Give an example of global schema, fragmentation schema and additional semantic knowledge such that all this information can be used for deducing the simplification of a query?	Apply	6
3.	Consider the following two allocations of fragments 1:R1 at site 1;R2 at site 2 ;R3 at site 3 2:R1 and R2 at site1;R2 and R3 at site 3 With the following applications(all with the same frequency of activation): A1,issued at site 1,reads 5 records of R1 and 5 records of R2 A2,issued at site 3,reads 5 records of R3 and 5 records of R2 A3 issued at site 2,reads 10 records of R2 (a).If we take locality of reference as objective which solution is best? (b).If we take complete locality of applications as objective, which solution is the best? (c).Assume now that A3 updates 10 records of R2.Taking the locality of reference as objective, which solution is the best?	Apply	6
4.	Determine the common sub expression the following global queries. Do step by step transformations indicating which rule is applied at each step. Apply criteria 1 and 2 to simplify the global queries. a)$PJ_{NAME,TAX}$((EMP JN $_{DEPTNUM=DEPTNUM}$ SL $_{AREA=\text{"}NORTH\text{"}}$ DEPT)	Apply	6

	DF(EMP JN $_{DEPTNUM=DEPTNUM}$ SL $_{DEPTNUM<10}$ DEPT)) b)(SL$_{DEPTNUM=10}$DEPT NJN(SL $_{PNUM=}$"$_{P1}$" SUPPLY DF SL $_{PNUM=}$"$_{P2}$" SUPPLY)) UN($_{SL\ DEPTNUM=}$"$_{10}$" DEPTNJNSL $_{PNUM=}$"$_{P1}$" SUPPLY)		

PART – A (SHORT ANSWER QUESTIONS)

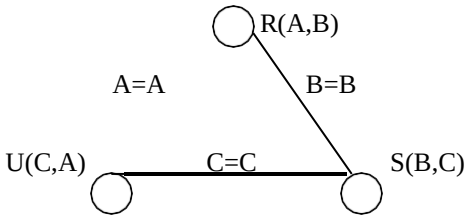
S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – V QUERY OPTIMIZATION		
1.	Define Information Retrieval	Understand	7
2.	List out problems in Query Optimization?	Understand	7
3.	What is Vector Space Model?	Knowledge	8
4.	Difference between ranked query and Boolean query	Understand	7
5.	What is Length Normalization?	Knowledge	8
6.	Define Inverted Index?	Understand	8
7.	Define query Optimization?	Understand	7
8.	Define Join Queries?	Understand	8
9.	What is a Signature File?	Knowledge	7
10.	List out issues for evaluating queries efficiency?	Knowledge	8

PART – B (LONG ANSWER QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – V QUERY OPTIMIZATION		
1.	Explain problems in Query Optimization?	Understand	7
2.	Objectives in Query Processing Optimization?	Knowledge	8
3.	Explain the importance of query optimization in Distributed Database?	Understand	8
4.	Explain uses of semi join programs for join queries	Understand	7
5.	Difference between Database Management Systems and Information Retrieval Systems?	Knowledge	8
6.	Explain Term Frequency and Inverse Document Frequency?	Understand	7
7.	Explain the criteria to evaluate IRS?	Understand	8
8.	Explain Two indexing Techniques that support evaluation of Boolean and Ranked queries?	Understand	7
9.	What is Path Expressions?	Knowledge	8
10.	Explain FLWR expressions? How can we order output of query?	Understand	7

PART – C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)

S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT – V QUERY OPTIMIZATION		
1.	Explain the effects of commuting Joins and Unions?	Analyze	7
2.	Construct a reducer for R using using semi-join programs having the join graph in the figure: With R={(0,1),(3,4),(6,7),(7,1)} S={(1,2),(4,5),(6,6),(7,7)} U={(2,3),(5,0),(6,6),(7,7)}	Apply	8

	Discuss the good or bad properties of your reducer program.  		
3.	Explain the relational of semi-join reduction in distributed databases.	Analyze	8
4.	Describe how XML can be stored in a relational DBMS .How do we map XML data to relations? Can we use query processing infrastructure of the relational DBMS? How do we publish relational data as XML?	Analyze	7
5.	How do we index collections of XML documents? What is the difference between indexing on structure versus indexing on Value? What is the path index?	Apply	8

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