M.Tech IT (2)

Reg.No.:								

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 6027

M.E./ M.Tech. DEGREE END-SEMESTER EXAMINATIONS – FEB. 2023

First Semester

Information Technology

P19IT103 – ADVANCED DATABASE TECHNOLOGY

(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What is data model?	2	K1	CO1
2.	List the differences between file systems and database systems.	2	K2	CO1
3.	What is intra query parallelism?	2	K1	CO2
4.	List the methods used for naming the data items in distributed data storage.	2	K1	CO2
5.	Define ODMG model.	2	K1	CO3
6.	Write short notes on OQL.	2	K1	CO3
7.	Create one suitable trigger to enforce any Library constraint.	2	K1	CO4
8.	What is temporal database?	2	K1	CO4
9.	List the issues in mobile databases.	2	K2	CO5
10.	What is HTTP Cookies? Where it is used for?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Consider a university database for the scheduling of classrooms for final exams. This database could be modeled as the single entity set exam, with attributes course-name, section-number, room-number, and time. Alternatively, one or more additional entity sets could be defined, along with relationship sets to replace some of the attributes of the exam entity set, as • course with attributes name, department, and c-number • section with attributes s-number and enrollment, and dependent as a weak entity set on course • room with attributes r-number, capacity, and building Show an E-R diagram illustrating the use of all three additional entity sets listed. Explain what application characteristics would influence a decision to include or not to include each of the additional entity sets.	13	K4	CO1
		(OR)			
	b)	Consider the relation schema R(ABCDEFGH) with the set of functional dependencies {AB → C, AC → B, AD → E, B → D, BC → A, E → G}. Decompose the Relation R till BCNF.	13	K3	CO1
12.	a)	Explain 2-Phase Commit protocol for distributed environment. How failures are handled using this protocol?	13	K1	CO2
		(OR)			
	b)	List, explain and compare the various partitioning techniques for I/O Parallelism. Briefly explain the ways of executing sorting operation in parallel.	13	K2	CO2
13.	a)	Explain object identity and reference types in Object Relational databases with neat examples.	13	K1	CO3
		(OR)			
	b)	Discuss in detail about object structure, object classes and inheritance in Object oriented databases with respect to employee database.	13	K3	CO3
14.	a)	Consider the following DTD <! DOCTYPE bibliography [<! ELEMENT book (title, author+, year, publisher, place?)> <! ELEMENT article (title, author+, journal, year, number, volume, pages?)> <! ELEMENT title (# PCDATA)> .....similar PCDATA declarations for year, publisher, place, journal, year, number, volume, pages, author)]>		K3	CO4

i. Give a detailed description on the various elements of this DTD. Show how to map this DTD to a relational schema. 7

ii. Create a XML document for this DTD 6

(OR)

b) Discuss in detail about multimedia databases. 13 K1 CO4

15. a) Give the general architecture of a mobile database. Explain in detail about mobile transactions. 13 K1 CO5

(OR)

b) Discuss in detail about Web scripting languages. 13 K1 CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	A car-rental company maintains a vehicle database for all vehicles in its current fleet. For all vehicles, it includes the vehicle identification number, license number, manufacturer, model, date of purchase, and color. Special data are included for certain types of vehicles: •Trucks: cargo capacity •Sports cars: horsepower, renter age requirement •Vans: number of passengers •Off-road vehicles: ground clearance, drivetrain (four- or two-wheel drive). Construct an object-oriented database schema definition for this database. Use inheritance where appropriate.	15	K6	CO2

(OR)

b) Consider the E-R diagram in the following Figure, which contains composite, multivalued and derived attributes. 15 K3 CO2

i. Give an ORDBMS schema definition corresponding to the E-R diagram. Use an array to represent the multivalued attribute, and appropriate constructs to represent the other attribute types.

ii. Give constructors for each of the structured types defined above.