DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

COURSE FILE

OF

Database management system

(PCC CS 501)

Semester: V

Faculty Name:

Mr. Akhilesh Kumar
ASSISTANT PROFESSOR

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

विज्ञान एवं प्रावैधिकी विभाग
Department of Science and Technology
Government of Bihar

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

I N D E X

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

SCHEME

OF EXAMINATION

&

SYLLABUS

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

SCHEME

AKU Curriculum for Undergraduate Degree in Computer Science and Engineering

Semester V (Third year)

Sl. No.	Type of course	Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
1	Professional Core Courses	PCC CS 501	Database Management Systems	3	0	4	5
2	Professional Core Courses	PCC CS 502	Formal Language & Automata Theory	3	1	0	4
3	Professional Core Courses	PCC CS 503	Artificial intelligence	3	0	0	3
4	Professional Core Courses	PCC CS 504	Software Engineering	3	0	0	3
5	Humanities &Social Sciences including Management courses	HSMC 501	Professional Skill Development	3	0	0	3
6	Mandatory Courses	MC 501	Constitution of India-Basic Features and Fundamental Principles	3	0	0	0
7	Massive Open Online Courses	MOOC CS 501	MOOCs / SWAYAM / NPTEL etc. Courses - 1	3	0	0	3
8	Summer Industry Internship	SI 501	Summer Industry Internship - 2	-	-	-	4
9	Project and Seminar	PNS CS 501	Seminar	-	-	2	1
						Total credits	**26**

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

SYLLABUS

AKU Curriculum for Undergraduate Degree in Computer Science and Engineering

PCC CS 501	Database Management Systems	3L:0T:4 P	5 Credits

Objectives of the course

1. To understand the different issues involved in the design and implementation of a database system.
2. To study the physical and logical database designs, database modeling, relational, hierarchical, and network models
3. To understand and use data manipulation language to query, update, and manage a database
4. To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server (Database Server), Data Warehousing.
5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Detailed contents

Module 1 **Lecture 6 hrs.**

Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML).

Data models: Entity-relationship model, network model, relational and object oriented data models, integrity constraints, data manipulation operations.

Module 2 **Lecture 10 hrs.**

Relational query languages: Relational algebra, Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server.

Relational database design: Domain and data dependency, Armstrong's axioms, Normal forms, Dependency preservation, Lossless design.

Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms.

Module 3 **Lecture 4 hrs.**

Storage strategies: Indices, B-trees, hashing.

Module 4 **Lecture 8 hrs.**

Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp based schedulers, Multi-version and optimistic Concurrency Control schemes, Database recovery.

Module 5 **Lecture 6 hrs.**

Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection.

Module 6 **Lecture 6 hrs.**

Advanced topics: Object oriented and object relational databases, Logical databases, Web databases,

Distributed databases, Data warehousing and data mining.

Suggested books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill

Suggested reference books:

1. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer SciencePress.
2. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education

3. For a given specification construct the SQL queries for Open source and Commercial DBMS - MYSQL, ORACLE, and DB2.

4. For a given query optimize its execution using Query optimization algorithms

5. For a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.

6. Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling.

PCC CS 501P	Database Management Systems Lab

Hands-on experiments related to the course contents of PCC CS 501.

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

TIME TABLE

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Darbhanga College of Engineering

5th Semester w.e.f:

DAY	Dept.	09:00-11:00	11:00-01:00	01:00-02:00	02:00-5:00
MONDAY	EEE	CS	PS-I	LUNCH	√. PE Lab
	CE	EE-1	MOM		√. HE LAB
	CSE	REMIDAL CLASSES	DBMS		MOOC
	ME	HT	F M/C		
TUESDAY	EEE	√. CS Lab	ADC		Intership
	CE	H & WRE	HE		√. Geo Tech Lab
	CSE	AI	DBMS		REMIDAL CLASSES
	ME	MP	√.REMIDAL LAB		
WEDNESDAY	EEE	PE	CS		√. PS-I Lab
	CE	ADCS	MOM		√. TRE LAB
	CSE	SWE	AI		√. DBMS Lab
	ME	HT	EIKT		
THURSDAY	EEE	REMIDAL CLASSES	PS-I		√. CS Lab
	CE	GEO TECH-1	TRE		√. EE-1 LAB
	CSE	√. DBMS Lab	SWE		Seminar
	ME	KOM	V. REMIDAL LAB		
FRIDAY	EEE	√. PE Lab	PE		√. ADC lab
	CE	COI	ADCS		GEO TECH-I
	CSE	PS	FLAT		Intership
	ME	MP	F M/C		
SATURDAY	EEE	Intership	ADC		REMIDAL CLASSES
	CE	EE-1	TRE		√. H & WRE LAB
	CSE	PS	FLAT		MC 501
	ME	KOM	V. REMIDAL LAB		

EEE (5th Sem)

SN.	Subject	Faculty
1	PS-I	Mr. Tabish Shanu
2	CS	Mr. Sanjay Kumar
3	PE	Mr. Abhishek Sharma
4	ADC	Dr. Ravi Ranjan
5	Intership	All Faculty
6	MOOC	All Faculty

ME (5th Sem)

SN.	Subject	Faculty
1	HT	Mr. Madhav Ram
2	F M/C	Mr. Prabhakar Kumar
3	MP	Mr. Rajat Gupta
4	KOM	Mr. Prashant Kr. Singh
5	EIKT	Mr. Prashant Kr. Singh
6	MOOC	Mr. Vikash Kumar

CE (5th Sem)

SN.	Subject	Faculty
1	MOM	Mr. Ravi Ranjan Kumar
2	HE	Mr. Loknath Kumar
3	ADCS	Mr. S. S. Chhoudhary
4	Geo Tech -I	Mr. Ahsan Rabbani
5	H & WRE	Mr. Prashant Kumar
6	EE-I	Mr. Jitendra Kumar
7	TE	Mr. Aditya Kumar
8	COI	Mr. Loknath Kumar
9	Intership	All Faculty

CSE (5th Sem)

SN.	Subject	Faculty
1	DBMS	Mr. Akhilesh Kumar
2	SWE	Mr. Sunil Kumar Sahu
3	AI	Mr. Dhirendra Kumar
4	FLAT	Mr. Ajit Kumar Gupta
5	PS	
6	MOOC	Anand Kamal
7	Intership	Mr. Sunil Kumar Sahu
8	MOOC	Mr Anand Kamal

15/07/2020
HOD (EEE)

15/07/2020
HOD (CE)

V. Singh 15/07/2020
HOD (ME)

15/07/2020
HOD(CSE)

15/7/2020
Routine Incharge

15/07/2020
DCE

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

LECTURE PLAN

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

LECTURE PLAN

Subject: **DBMS / PCC CS 501** Semester: V
Branch: CSE Session: **2020 – 21**

Unit	No. of Lecture	Brief Description of Topic to be Covered	Teaching Aid to be used	Date of Lecture
Module – I	L – 1	Database system architecture	Board	
	L – 2	Data Abstraction, Data Independence	Board	
	L – 3	Data Definition Language (DDL), Data Manipulation Language (	Board	
	L – 4	Data models: Entity-relationship model	Board, PPT	
	L – 5	network model, relational and object oriented data models	Board	
	L – 6	TUTORIAL – 1		
	L – 7	integrity constraints, data manipulation operations.	Board	
	L -12	TUTORIAL – 2		
	L – 13	UNIT TEST # 01		
Module – II	L – 1	Relational query languages: Relational algebra	Board	
	L – 2	Tuple and domain relational calculus	Board, PPT	
	L – 3	SQL3, DDL and DML constructs	Board	
	L – 4	Open source and Commercial DBMS - MYSQL, ORACLE, DB2, S server	Board	
	L – 5	Relational database design: Domain and data dependency		
	L – 6	Armstrong's axioms, Normal forms	Board	
	L –7	Dependency preservation, Lossless design	Board, PPT	
	L –8	Query processing and optimization: Evaluation of relational alg expressions	Board	
	L – 9	Query equivalence, Join strategies	Board	
	L – 10	Query optimization algorithms.		
	L – 11	TUTORIAL – 3 UNIT TEST # 02		
MID SEMESTER – 1				
Module – III	L – 1	Storage strategies	Board	
	L – 2	Indices	Board, PPT	
	L – 3	B-trees	Board	
	L – 4	hashing	Board	
	L – 5	TUTORIAL – 5		
	L – 6	UNIT TEST # 03		
Module – IV	L – 1	Transaction processing	Board	
	L – 2	Concurrency control	Board, PPT	
	L – 3	ACID property	Board	
	L – 4	Serializability of scheduling	Board	
		TUTORIAL – 6		
	L –5	Locking and timestamp based schedulers	Board, PPT	
	L – 6	Multi-version	Board	
	L – 7	optimistic Concurrency Control schemes	Board	
	L – 8	Database recovery	Board, PPT	
	L –9	TUTORIAL – 7		
	L – 10	UNIT TEST # 04		
Module – V	L – 1	Database Security	Board, PPT	
	L – 2	Authentication	Board	
	L – 3	Authorization and access control	Board	
	L – 4	DAC, MAC and RBAC models	Board, PPT	
		TUTORIAL - 8		
	L – 5	Intrusion detection	Board	
	L – 6	SQL injection	Board	
		TUTORIAL – 9		
		UNIT TEST # 05		
Module – VI	L- 1 L- 2	Object oriented and object relational databases		
	L – 2	Logical databases		

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	L – 3	Web databases		
	L- 4	Distributed databases		
		TUTORIAL – 10		
	L- 5	Data warehousing		
	L - 6	data mining		
		UNIT TEST # 06		

Faculty **HOD**

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

TUTORIAL SHEETS

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

TUTORIAL SHEET

SUBJECT NAME & CODE: *DATABASE MANAGEMENT SYSTEM / PCC CS 501*

SESSION: *2020-21* ***UNIT NO.:*** *01*

TUTORIAL SHEET NO.: *01* ***DATE OF SUBMISSION:*** *----------*

Q No.	Question	Bloom's Level	CO
Q.1	Classify any four disadvantages of file systems and the corresponding advantages of database systems	**L-3**	**CO 1**
Q.2	Classify the different levels of data provided by DBMS. Draw and explain the three-level architecture of the database system.	**L-3**	**CO 1**
Q.3	Discuss the role of Database Administrator.	**L-2**	**CO 1**
Q.4	Examine the importance of logical data independence with an example	**L-3**	**CO 1**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:01

TUTORIAL SHEET NO.: 02

Q No.	Question	Bloom's Level	CO
Q.1	Construct an ER diagram for multi-specialty hospital management	L-5	**CO 1**
Q.2	Determine the method of converting E-R Diagrams into tables. How will you draw E-R diagrams?	L-5	**CO 1**
Q.3	Distinct between primary key, candidate key and super key	L-2	**CO 1**
Q.4	Comparison between object-oriented data model, network data model, and relational data model.	L-4	**CO 1**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:02

TUTORIAL SHEET NO.: 03

Q No.	Question	Bloom's Level	CO
Q. 1	List different relational algebraic operations.	**L-1**	**CO 2**
Q. 2	Write the entity integrity and referential integrity rules. Give suitable examples	**L-1**	**CO 2**
Q. 3	Distinguish between relational algebra and relational calculus.	**L-4**	**CO 2, CO1**
Q. 4	For the Employee Database with the following entities and attributes Employee : Name, Ssn, Addr,Sal, Supussn, Dno Project : Pname, Pno, Plocation, Dnum Works on : Essn, Pno, Hours Dependent : Essn, Dep_name, Sex, Bdate Write a relations algebraic expression to retrieve the names of the employee who work on all projects that "john smith" works on Write a relational algebraic expression to retrieve name of employees who have no dependents.	**L-5**	**CO 2, CO1**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:02

TUTORIAL SHEET NO.: 04

Q No.	Question	Bloom's Level	CO
Q. 1	Construct SQL queries, Consider the relations Country (name, continent, population, GDP, life-expectancy) River (name, origin, length) City (name, country, population) GDP and population in million (i)Find all countries whose GDP is greater than $400 Billion but less than $1 trillion. (ii) List the life expectancy in countries that have river originating in them . (iii) Find all cities that are either in china or whose population is less than 2 million. (iv) List all cities which are not in India.	**L-5**	**CO2, CO1**
Q. 2	Distinguish between tuple oriented and domain oriented relational calculus.	**L-4**	**CO2, CO1**
Q. 3	Explain with examples in SQL the following i. Aggregate functions (6) ii. GROUP BY (2) iii. ORDER BY (2) iv. Trigger. (3)	**L-2**	**CO2**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:03

TUTORIAL SHEET NO.: 05

Q No.	Question	Bloom's Level	CO
Q.1	Compare and contrast BCNF with 3NF?	**L-4**	**CO 3**
Q.2.	Illustrate fully functional dependency with example?	**L-3**	**CO 3**
Q.3	Classify in detail about Normal Forms.	**L-3**	**CO 3**
Q.4	Consider a relation scheme R = (A, B, C, D, E, H) on which the following functional dependencies hold: {A–>B, BC–> D, E–>C, D–>A}. **Write** the candidate keys of R?	**L-4**	**CO 3**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:03

TUTORIAL SHEET NO.: 06

Q No.	Question	Bloom's Level	CO
Q.1	Differentiate between heuristic and cost estimation-based optimization method	**L-4**	**CO 3**
Q.2	Consider the following relational schemes for a library database: *Book (Title, Author, Catalog_no, Publisher, Year, Price)* *Collection (Title, Author, Catalog_no)* the following are functional dependencies: a. Title Author -->Catalog_no b. Catalog_no --> Title Author Publisher Year c. Publisher Title Year --> Price d. Assume {Author, Title} is the key for both schemes. **Apply** the appropriate normal form for Book and Cancellation?	**L-4**	**CO 3**
Q.3	Consider a schema R (A, B, C, D) and functional dependencies A -> B and C ->D. **Solve** and find whether the decomposition of R into R1 (A, B) and R2(C, D) belongs to which one or both (dependency preserving and loss less join)?	**L-4**	**CO 3**
Q.4	Discuss the steps of query optimization.	**L-2**	**CO 3**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:04

TUTORIAL SHEET NO.: 07

Q No.	Question	Bloom's Level	CO
Q.1	Describe the ACID properties of a transaction.	**L-2**	**CO 4**
Q.2	Explain the different techniques of serializability with example	**L-4**	**CO 4**
Q.3	Give the purpose of a recovery scheme. What is meant by log-based recovery?	**L-5**	**CO 4**
Q.4	Compare the features of OODBMS and RDBMS	**L-4**	**CO 4, CO 1**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:04

TUTORIAL SHEET NO.: 08

Q No.	Question	Bloom's Level	CO
Q.1	Identify the Two-Phase locking protocol when it should be used?	**L-4**	**CO 4**
Q.2	Illustrate about Times Stamp Ordering protocol with your own example. What is Timestamp Ordering protocol?	**L-3**	**CO 4**
Q.3	Illustrate the principles of immediate database modification in database recovery with an example.	**L-3**	**CO 3,CO 2 ,CO 4**
Q.4	Illustrate an efficient concurrency control technique for a Airline Reservation System with a database.	**l-5**	**CO 3, CO 2,CO 1**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:05

TUTORIAL SHEET NO.: 09

Q No.	Question	Bloom's Level	CO
Q.1	Differentiate between nested and parameterized cursors.	**L-4**	**CO 2**
Q.2	Discuss exception handling mechanism	**L-2**	**CO 2**
Q.3	Define (i)Data Dictionary (ii)user defined function (ii)segments	**L-1**	**CO 1**

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TUTORIAL SHEET

SUBJECT NAME & CODE: Database Management System (PCC CS 501)

SESSION: *2020-21*

UNIT NO.:05

TUTORIAL SHEET NO.: 10

Q No.	Question	Bloom's Level	CO
Q.1	Define trigger and explain its three parts? Differentiate knowledge row level and statement level triggers?	**L-1**	**CO 2**
Q.2	Illustrate Group by and Having clauses with examples?	**L-5**	**CO 2**
Q.3	Differentiate between Hierarchical queries, inline queries, flash back queries.	**L-5**	**CO 2**
Q.4	Define Dedicated server and multi-threaded server.	**L-4**	**CO 2**

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Unit No. - 01

UNIT TEST

Branch: CSE | Session: *2020-21*

Semester: 5th | Date: _____

Subject: Database Management System | Sub. Code: PCC CS 501

Max. Marks: 40 | Allotted Time: 50 mins.

NOTE: Attempt any 4 Question. All Question Carry equal marks

QNo.	Question	BTL	CO
1	Classify any four disadvantages of file systems and the corresponding advantages of database systems.	L-3	CO-1
2.	List out the functionalities of DBA.	L-1	CO-1
3.	Construct anEntity Relationship Diagram for an Educational institute.	L-3	CO-1
4.	Explain the various levels of database schema based on data abstraction. How does the schema support different type of data independence?	L-2	CO-1
5.	Explain about DBMS Architecture with neat diagram.	L-4	CO-1
6.	Distinct between primary key, candidate key and super key with example.	L-3	CO-1 /CO-2

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Unit No. - 02

UNIT TEST

Branch: CSE Session: *2020-21*

Semester: 5th Date: _____

Subject: Database Management System Sub. Code: PCC CS 501

Max. Marks: 40 Allotted Time: 40 mins.

NOTE: Attempt Any 4questions. All question carries equal marks

Q No.	Question	BTL	CO
1	Differentiate procedural and non-procedural query languages.	L-4	CO-2
2.	Consider the following relation schema: Student *(ssn, name, address, project)* Course (*code, title)* Registered *(ssn, code)* Solve the following using relational algebra (i) List the codes of courses in which at least one student is registered. (ii) List the titles of registered courses. (iii) List the code of courses for which no student is registered. (iv) List the name of students who have registered for course code 'C106'.	L-5	CO-2
3.	Consider the following schema: Suppliers (sid:integer, snmae: string, address: string) Parts (pid: integer, pnmae: string, color: string) Catalog (sid: integer, pid:integer, cost: real) Write the following queries in SQL (i)Find the names of suppliers who supply red parts (ii)Find the sids of suppliers who supply some red part or are at Chennai.	L-5	CO-2
4.	Define the characteristics of relation. Also explain the relational database.	L-2	CO-2
5.	Construct SQL queries, Consider the relations Country (name, continent, population, GDP, life-expectancy) River (name, origin, length) City (name, country, population) GDP and population in million (i)Find all countries whose GDP is greater than $400 Billion but less than $1 trillion. (ii) List the life expectancy in countries that have river originating in them. (iii) Find all cities that are either in china or whose population is less than 2 million. (iv) List all cities which are not in India.	L-5	CO-2
6.	Differentiate between tuple relational calculus and domain relational calculus with example.	L-4	CO-2

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Unit No. - 03

UNIT TEST

Branch: CSE Session: *2020-21*

Semester: 5th Date: _____

Subject: Database Management System Sub. Code: PCC CS 501

Max. Marks: 40 Allotted Time: 40 mins.

NOTE: Attempt any 4questions. All Questions carries equal marks.

Q	Question	BT	CO
1	Classify in detail about Normal Forms.	L-3	CO-3
2.	Define Canonical cover? How to find equivalent canonical cover from a given of functional dependency? Explain with example.	L-4	CO-3
3.	Discuss about decomposition of a relation? Consider the relation scheme: R (A, B, C, D, E, F) and FD (A→BC, C→A, D→E, F→A, E→D) Is the decomposition of R into R1(A, C, D), R2(B, C, D) and R3(E, F, D) lossless?	L-5	CO-3
4.	Define heuristic query optimization? Discuss the main heuristics that are applied during query optimization.	L-1	CO-3/ CO-2
5.	Describe with an example the steps involved in processing a query	L-1	CO-3/ CO-2
6.	Write algorithm of SELECT operation in relational algebra for cost-based quer optimization	L-2	CO-1 /CO-2

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Unit No. - 04

UNIT TEST

Branch: CSE Session: *2020-21*

Semester: 5th Date: _____

Subject : Database Management System Sub. Code : PCC CS 501

Max. Marks: _40 Allotted Time: 40 mins.

NOTE: Attempt all questions.

Q No.	Question	BTL	CO
1	Define Transaction. Describe the ACID properties of a transaction.	L-2	CO-4
2.	Contrast an alternative technique for replacement of log-based crash-recov technique.	L-4	CO-4
3.	State two phase locking theorem. Explain how two-phase locking deals with RW, WR and WW conflicts.	L-3	CO-4
4.	compare and contrast the feature of log-based recovery mechanism versus check point-based recovery. Suggest application where you prefer log-bas recovery scheme over check point. Give an example of check point-based recovery scheme. Discussed the recoverable schedule also.	L-3	CO-4
5.	Illustrate the principles of immediate database modification in database recovery with an example.	L-3	CO-4
6.	Investigate why concurrency control is needed? Give suitable example. What is meant by the concurrent execution of database transactions in a multi-user system?	L-4	CO-4 /CO-2

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Unit No. - 05

UNIT TEST

Branch: CSE Session: *2020-21*

Semester: 5th Date: _____

Subject: Database Management System Sub. Code: PCC CS 501

Max. Marks: _40 Allotted Time: 40 mins.

NOTE: Attempt all questions. All question carries equal marks

Q N	Question	BTL	CO
1	Illustrate Group by and Having clauses with examples?	L-2	CO 2
2.	Why PL/SQL exception handling is needed?	L-2	CO 2
3.	Define triggers? Explain with suitable example. How can they help in building robus database?	L-2	CO 2
4.	Define (i)Data Dictionary (ii)user defined function (ii)segments	L-1	CO 1 CO 2
5.	Define Dedicated server and multi-threaded server	L-1	CO 1
6.	Differentiate between Hierarchical queries, inline queries, and flash back queries.	L-4	CO 2

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Mid Semester Test Question Papers

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Darbhanga College of Engineering, Darbhanga

Department of CSE

B.Tech [SEM V (CSE)]

Mid. Sem Exam

(Session: 2019-20)

Course Code–051509

DATA BASE SYSTEM

Time: 2 Hours ***Max. Marks: 20***

Information for You

1. This Examination paper contains **6-Questions**.
2. Attemt any five questions**.**

Advices to you

1. You should write your answers clearly in your own words.
2. Draw the figures whenever it is required.

Note: CO–Course Outcomes, BL–Bloom Level

S. No.	Questions	Marks	CO	BL
1.	Describe the main components of a DBMS.	**4**	**3**	**L6**
2.	Draw an E-R diagram for your college.	**4**	**4**	**L4**
3.	What do you understand by attribute closure? Give an example.	**4**	**3**	**L3**
4.	With example, Explain super key, candidate key, primary key and foreign key.	**4**	**3**	**L1**
5.	Describe the three Schema Architecture with diagram.	**4**	**2**	**L4**
6.	Find the No. of candidate keys? R(A B C D E F G H) CH ---→G, A----BC, B-----CFH, E-----A, F----FG	**4**	**3**	**L3**

DARBHANGA COLLEGE OF ENGINEERING, DARBHANGA

Pre University Test Question Papers

Each Course File must contain at least three years

Pre University Question Papers – **Actual Question Papers**

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University Question Papers

Each Course File must contain at least **SIX** University question papers – consecutive semesters

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Course Material

Each Course File must contain

1. Minimum **TWENTY** transparencies (typed only) OR PPTs (as sample) **from each unit**
2. Notes (typed)

NOTE: *Try to avoid hand written notes.*

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Material beyond Syllabus

You can add notes / PPT / Transparencies etc. of material, you think, is necessary, but is not in the syllabus. The material should enhance the knowledge of the student in this course. Mention new experiments that you have designed in this course.