Parts(pid: integer, pname: string, color: string)
Catalog(sid: integer, pid: integer, cost: real)
Write the relational algebra for the following queries

1.Find the names of suppliers who supply some red part.

2.Find the sids of suppliers who supply some red or green part.

3.Find the Supplier names of the suppliers who supply a red part that costs less than 100 dollars.

4.Find the pids of parts supplied by at least two different suppliers.

5.Find the sids of suppliers who supply every red part or supply every green part

[3] [3] [3] [10]

OR

4a. Consider the following relations containing airline flight information:
Flights(flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time)
Aircraft(aid: integer, aname: string, cruisingrange: integer)
Certified(eid: integer, aid: integer, flno:integer)
Employees(eid: integer, ename: string, salary: integer)
Write the relational algebra for the following queries

1.Find the eids of pilots certified for some Boeing aircraft.

2.Find the names of pilots certified for some Boeing aircraft.

3.Find the names of aircrafts, flown by the pilot " Viaks"

4.Find the source and destination of flights flown by the pilot " Viaks"

5.Find the salaries of all employees who flight numbers are '2' and '6' and '9'.

[3] [3] [3] [10]

4b. Consider the two tables T1 and T2 shown below:

Table T1			Table T2		
P	Q	R	A	B	C
10	A	5	10	B	6
15	B	8	25	C	3
25	A	6	10	B	5

Identify the results of the following operations:

T1 U T2 T1 ∩ T2

T1 ⍁T1.P=T2.A T2

T1 ⍁T1.Q=T2.B T2

T1 X T2

[1] [3] [1, 2] [10]

MODULE 3

5a. Draw a state diagram and explain the typical states that a transaction goes through during execution.

[2] [5] [1] [5]

5b. Explain the desirable properties of transactions.

[2] [5] [1] [5]

5c. List and explain the Informal Design Guidelines for Relation Schemas.

[2] [3] [1] [10]

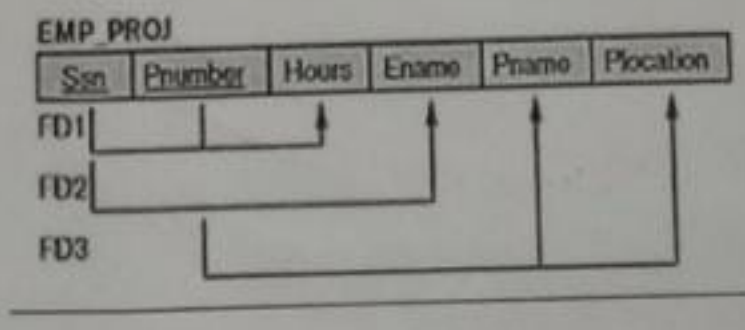
OR

6a. Is the following relation in 1 NF? If not, explain and apply the various ways for converting the same into 1NF.

STUD_NO	STUD_NAME	STUD_PHONE	STUD_STATE	STUD_COUNTRY
1	RAM	9716271721, 9871717178	HARYANA	INDIA
2	RAM	9898297281	PUNJAB	INDIA
3	SURESH		PUNJAB	INDIA

[3] [3] [2] [10]

6b. Consider the following relation schema:
i) Examine the given relation schema to identify and explain the highest normal the given relation is in?
ii) Apply normalization until you cannot decompose the relations further. State the reasons behind each decomposition.



[3] [3] [1] [10]

USN : 2GI20IS001

Course Code : 18CS/IS45

Fourth Semester B.E. Semester End Examination, JULY_SEPTEMBER_2022

SOFTWARE ENGINEERING

Time: 3 hrs.

Max. Marks :100

Instructions :1. Answer any FIVE Full Questions selecting at least ONE Question from Each Unit.

MODULE 1

	L	CO	PO	M
1a. As a Software developer you are asked to develop a software for UK-27 five-star hotel in Belgaum. The hotel is planning to develop an automated food preparation system. It is based on each customer requirement which will prepare exact quantity of food defined by restaurant for each dish and check the quality of food using aroma sensors (sensor used to sense the smell). Draw the general block diagram for the same.	[3]	[3]	[3]	[7]
1b. List and explain the Software Engineering (ACM/IEEE) Code of Ethics and Professional Practices.	[2]	[1]	[8]	[8]
1c. Differentiate between Generic software product and customized software product with relevant examples for each and also classify the following software as generic or customized product. a. Apollo pharmaceuticals system b. Weather monitoring system c. Income tax software d. Attendance management system for GIT	[2]	[4]	[1]	[5]

OR

2a. Explain Incremental development model with neat diagram. Discuss the benefits of this model as compared to Waterfall Model?	[2]	[4]	[1]	[10]
2b. With a neat diagram briefly explain the process of prototype development model and also list its benefits.	[2]	[3]	[1]	[10]

MODULE 2

3a. List and explain types of non-functional requirements.	[2]	[1]	[1]	[10]
3b. Explain the structure of a requirements document.	[2]	[1]	[1]	[10]

OR

4a. List and explain the different ways of writing a system requirement specification.	[2]	[1]	[1]	[10]
4b. Explain the advantages and disadvantages of specifying requirements using natural language.	[2]	[1]	[2]	[10]

MODULE 3

5a. Design a sequence diagram for Bill payment use case in Amazon e-commerce web application.	[3]	[2]	[3]	[10]
5b. Consider Computer E-mail system i) List any three actors. Explain the relevance of each actor. ii)List any four use cases summarize the purpose of each use case with a sentence. iii)Prepare use-case diagram for a computer email system.	[3]	[2]	[3]	[10]

USN : 2GI20IS001 (6) Course Code : 18CS/IS 43

Fourth Semester B.E. FASTTRACK Examination, Nov. / Dec. 2022

DATABASE MANAGEMENT SYSTEM

Time: 3 hrs Max. Marks :100

Instructions: 1. Answer any FIVE full Questions selecting at least ONE Question from Each Unit.

MODULE 1

	L	CO	PO	M
1a. Define DBMS. Explain the characteristics of DBMS.	[2]	[1]	[2]	[10]
1b. Suppose that you are a database designer and you have been approached to design a Hospital Database. Mention appropriate assumptions made and list out: a. The various entities and their attributes (minimum of 4 entities) b. The key attributes of each entity type c. The various relationships between the entities d. The structural constraints on each relationship type Model the same conceptually using an E-R diagram.	[3]	[1]	[3]	[10]

OR

2a. List and Explain the advantages of using DBMS approach.	[2]	[1]	[2]	[10]
2b. Explain Different types of attributes along with example.	[2]	[1]	[2]	[10]

MODULE 2

3a. Explain the various Unary relational operations in Relational Algebra along with an example.	[2]	[1]	[2]	[10]
3b. Consider the following schema and write the relational algebra expressions for the queries given below: Suppliers (sid, sname, address) Parts(pid, pname, color) Catalog(sid, pid, cost) a. Find the names of suppliers who supply some red parts. b. Find the sids of suppliers who supply some red parts or at who stays at 221 packer street. c. Find the sids of suppliers who supply some red part and some green part.	[4]	[2]	[4]	[10]

OR

4a. Consider the following schema and write the relational algebra expressions for the queries given below: Student(USN,Name,Branch,Percentage) Faculty (FID,Fname,Dept,Designation,Salary) Course(CID,Cname,FID) Enroll(CID,USN,Grade) a. Retrieve the name and percentage of all students for the course 18CS43 b. List the Departments having an average salary of the faculties above Rs.30,000. c. List name of the course having students grade 'A' maximum	[4]	[2]	[4]	[10]
4b. List and explain the characteristics of relations.	[2]	[2]	[1]	[10]

MODULE 3

5a. Define Normalization. Explain 1NF, 2NF and 3NF with an example.	[2]	[3]	[1]	[10]
5b. Consider the following schema: EMPLOYEE (emp_id, emp_name, SSN, dept_id, DOB). For the above schema: 1.Identify all the super keys. 2.Identify all the candidate keys. 3.Identify the primary key. 4.Identify all the alternate keys.	[3]	[3]	[1]	[10]

USN : 2GI2015001

Course Code : 18CS/IS43

Fourth Semester B.E. Semester End Examination, JULY_SEPTEMBER_2022

DATABASE MANAGEMENT SYSTEM

Time: 3 hrs.

Max. Marks :100

Instructions :1. Answer any FIVE Full Questions selecting at least ONE Question from Each Unit.

MODULE 1

	L	CO	PO	M
1a. Differentiate between a database and a DBMS. List and explain the important functions provided by a DBMS	[2]	[1]	[1]	[5]
1b. With a neat diagram, explain the three-schema architecture.	[2]	[1]	[1]	[5]

1c. A music company has decided to store information on the musicians who perform for its albums in a database. The following describes the situation on which the company database must be modelled--.

1.Each musician who records at this company has an SSN, a name, an address, and a phone number.

2.Each instrument that is used in the songs has a name (e.q., guitar, synthesizer, flute) and a musical key.

3.Each album that is recorded on the company label has a title, a copyright date, a format (e.q., CD or MC), and an album identifier.

4.Each song recorded at the company has a title and an author.

5.Each musician may play several instruments and several musicians may play a given instrument.

6.Each album has a number of songs on it, but no song may appear in more than one album.

7.One or more musicians perform each song, and a musician may perform in a number of songs.

8.Each album has exactly one musician who acts as is producer. A musician may produce several albums.

Analyze the given situation and model the same conceptually using an ER diagram. Indicate all key and cardinality constraints and any assumptions that are made.

[4] [2] [2] [10]

OR

2a. Define data independence. Compare logical and physical data independence.	[2]	[1]	[1]	[5]
2b. Can a collection of words that make up a page in a text book constitute a database? Explain why?	[2]	[1]	[1]	[5]

2c. Consider the following scenario whose data requirements are summarized as follows:A salesperson may manage many other salespeople. A salesperson is managed by only one salespeople. A salesperson can be an agent for many customers. A customer is managed by one salespeople. A customer can place many orders. An order can be placed by one customer. An order lists many inventory items. An inventory item may be listed on many orders. An inventory item is assembled from many parts. A part may be assembled into many inventory items. Many employees assemble an inventory item from many parts. A supplier supplies many parts. A part may be supplied by many suppliers. Analyze the given scenario and model the same conceptually using an ER diagram. Indicate all key and cardinality constraints and any assumptions that are made.

[4] [2] [2] [10]

MODULE 2

3a. Demonstrate the various types of joins with suitable examples.	[2]	[3]	[1, 2]	[10]

3b. Consider the following schema: [L3, CLO2, PO1]
Suppliers(sid: integer, sname: string, address: string)

KLS Gogte Institute of Technology, Belagavi

Department of Information Engineering — Academic Year: 2021-22(EVENSEM)

Program: B.E Semester:4

IA Test – II

Course Title: Software Engineering — Code: 18IS45

Max. Marks:25 marks — Duration:1 hrs — Date:12-08-2022

Instructions: 1. Answer any 5 out of 7 questions

Q. No.		|L|	|CO|	|PO|	|M|
1	What is requirement elicitation and analysis process? Explain	1,2	3	1	05
2	Software has to be developed for MHS-PMS (Mental Health Care-Patient Monitoring system). Explain the context model for MHS-PMS.	2	3	1	05
3	Write the Tabular description of the 'Transfer data' use case for MHS-PMS.	1	3	1	05
4	List and explain quality attributes of design.	1,2	2	1	05
5	List and explain the principles of agile methods.	1,2	2	1	05
6	With diagram explain extreme programming release cycle.	2	2	1	05
7	List and explain factors affecting software pricing.	1,2	3	1	05

ಕರ್ನಾಟಕ ಕಾನೂನು ಸಂಸ್ಥೆ, ಗೋಗಟೆ ತಾಂತ್ರಿಕ ಮಹಾವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

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ವಿಷಯ : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
ಸಮಯ : 1 ಘಂಟೆ

ದಿನಾಂಕ :29. 06. 2022.
ಗರಿಷ್ಠ ಅಂಕ : 10

(ಪ್ರಥಮ ಆಂತರಿಕ ಕಿರು ಪರೀಕ್ಷೆ)

Part -A

I. ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಸರಿಯಾದ ಉತ್ತರವನ್ನು ಆಯ್ಕೆ ಮಾಡಿ (ಬೇಕಾದ 5) (5*1=5)

1.ಕಬ್ಬಿಗರ ಕಾವ್ಯ ಕೃತಿಯನ್ನು _____ ಇವರು ರಚಿಸಿದ್ದಾರೆ.

ಅ) ರತ್ನಾಕರ ವರ್ಣಿ ಆ) ಆಂಡಯ್ಯ ಕವಿ ಇ) ಹಂಪನಾ ಈ) ಸಿದ್ಧಲಿಂಗಯ್ಯ

2. ಕನಾಟಕ ಸಂಸ್ಕೃತಿ ಪಾಠದ ಲೇಖಕರು_____ ಆಗಿರುವರು

ಅ) ಪಂಪಕಕವಿ ಆ) ರನ್ನಕವಿ ಇ) ಹಂ.ಪ. ನಾಗರಾಜಯ್ಯ ಈ) ಕುವೆಂಪು

3. ಕವಿರಾಜಮಾರ್ಗದ ರಚನೆ _____ ರಲ್ಲಿ ಆಯಿತು.

ಅ) 6 ನೇ ಶತಮಾನ ಆ) 7 ನೇ ಶತಮಾನ ಇ) 8 ನೇ ಶತಮಾನ ಈ) 9 ನೇ ಶತಮಾನ

4. ತ್ಯಾಗ - ಭೋಗಗಳ ಸಮತೋಲನ ಕುರಿತು _____ ಕವಿ ವಿವರಿಸಿದ್ದಾರೆ.

ಅ) ಶ್ರೀ. ರಂಗ ಆ) ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ ಇ) ಪಂಪಕವಿ ಈ) ಬಿ. ಎಂ. ಶ್ರೀ.

5. ಅರಸನಿಗೆ ಗಂಡುಮಗುವಾದರೆ _____ಕೊಟ್ಟು ಪ್ರಾಣ ಬಿಟ್ಟಿದ್ದುಂಟು.

ಅ) ಕೋಳ್ಗಂಟೆ ಆ) ಸಿಡಿತಲೆ ಇ) ಕಾಣಿಕೆ ಈ) ಜಮೀನು

6. ಧರ್ಮ ಸಹಿಷ್ಣುತೆ ಕುರಿತು _____ಶಾಸನದಲ್ಲಿ ಉಲ್ಲೇಖ ಇದೆ.

ಅ) ಬೇಲೂರು ಆ) ನಾಗಪುರ ಇ) ಮೈಸೂರು ಈ) ಬೆಂಗಳೂರು

II. ಕೆಳಗೆ ನೀಡಿದ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ (ಬೇಕಾದ 1 ಕ್ಕೆ) (1*5=5)

Part-B

1. ಆಂಡಯ್ಯಕವಿ ಕನ್ನಡನಾಡನ್ನು ಕುರಿತು ವಿವರಿಸಿದ ಬಗೆಯನ್ನು ತಿಳಿಸಿ?

2. ಸರ್ವಧರ್ಮ ಸಮದೃಷ್ಟಿ ಎಂದರೇನು/ ವಿವರಿಸಿ.

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KLS Gogte Institute of Technology, Belagavi

Department of Mathematics — Academic Year: 2021-22 (EVEN SEM)

Program: B.E (CS, IS)(Regular and Lateral entry) — Semester: IV

Compensatory IA Test

Course: Discrete Mathematical Structures and Graph Theory — Course Code: 18MATCS/IS41 & 18DMATCS/IS41

Max. Marks: 25 — Duration: 1 hr. — Date: 26-08-2022

Instruction: **Answer any FIVE full questions.**

Q. No.		[L]	[CO]	[PO]	[M]
1.	Write the converse, inverse, and contrapositive of the following quantified statement for which set of real numbers is the universal set. Also indicate their truth values. $\forall x \in R, [\{x^2 + 4x - 21 > 0\} \rightarrow \{(x > 3) \vee (x < -7)\}]$.	01	01	01	05
2.	A relation R on a set of all integers Z define aRb is and only if $a^2 = b^2$. Verify that R is an equivalence relation. Determine the partition induced by this relation.	02	02	01	05
3.	Suppose A and B are any two finite sets having the same number of elements and f is function from A *to* B. Then prove that f is one-one if and only if f is onto.	01	02	01	05
4.	Solve the homogeneous linear recurrence relation $a_{n-2} + a_{n-1} - a_n = 0, \forall n \geq 2$ given that a_1=1 and a_2=3, by using generating function.	02	03	01	05
5.	Explain divide and conquer algorithm. Sort the following list in ascending order by using merge sort algorithm. 5, 7, 1, 12, 15, 10, 9, 2, 7	01	03	01	05
6.	Solve the following simultaneous congruence relations by the Chines remainder theorem. $x \equiv 3 \pmod 5; x \equiv 1 (mod\ 7); x \equiv 6 (mod\ 8)$	02	05	01	05
7.	Show that GF(7) is a finite filed.	01	05	01	05

KLS Gogte Institute of Technology, Belagavi

Department of Information Science Engineering — Academic Year: 2021-22(EVEN SEM)

Program: B.E (Information Science Engineering) — Semester: IV

IA Test – Compensatory

Course Title: DATABASE MANAGEMENT SYSTEM — Code: 18IS43

Max. Marks: 25 Duration: 1 Hr. 15 Mins. Date: 27-08-2022

Note-Answer any 5 Complete questions for 25 marks

Q. No.	PART B	[L]	[CO]	[PO]	[M]
1	Define ACID properties of a transaction. Explain the dirty read problem with an example.	2	4	2	5
2	Given the following database schema: **STUDENT** (USN, ST_FNAME, ST_LNAME, DOB, DNO) **DEPARTMENT** (DNO, DNAME, DLOC, HOD_FID, BUDGET) **FACULTY** (FID, FAC_FN, FAC_LN, DESIGNATION, DNO, SALARY) **SUBJECT** (SUB_CODE, SNAME, CREDITS, HOURS_PER_WEEK, TYPE) **ENROLLMENT** (USN, SUB_CODE, CIE, SEE, GRADE) **SUBJECT_TAUGHT** (FID, SUB_CODE, CLASS_ROOM,TIME) (i) Identify the Primary and Foreign keys (ii) Write DDL statements to create any three tables	3	3	2	5
3	With respect to above schema, (Q2) i. Write DML command to insert one record in STUDENT and DEPARTMENT relations ii. Write a DML statement to update the salary of all employees of department number 5. iii. List all faculties who are working in CSE department. iv. List all faculty who are engaging 'DBMS' subject (Assume 4 divisions) v. List names of the faculty who are engaging classes in room number 'AS-11'	3	3	3	5
4	List and explain the various aggregate functions supported in SQL.	2	3	2	5
5	With syntax and example, explain the relational algebraic operations SELECT and PROJECT.	2	3	2	5
6	Demonstrate conditional join, natural join, cross product operations with suitable examples.	2	3	2	5
7.	Consider the two tables T1 and T2 shown below: Table T1 P | Q | R 0 | A | 5 15 | B | 8 Table T2 A | B | C 10 | B | 6 25 | C | 3 Identify the results of the following operations: 1) T1 U T2 2) T1 ∩ T2 3) $T1 \bowtie_{T1.P=T2.A} T2$ 4) $T1 \bowtie_{T1.Q=T2.B} T2$	2	3	2	5

Faculty Incharge

Stream coordinator

KLS Gogte Institute of Technology, Belagavi

Department of Information Engineering
Program: B.E

Academic Year: 2021-22(EVEN SEM)
Semester: 4

IA Test – I

Course Title: Software Engineering
Max. Marks: 25 marks

Duration: 1 hrs

Code: 18IS45
Date: 29-06-2022

Instructions: 1. Answer any 5 out of 7 questions

Q. No.		[L]	[CO]	[PO]	[M]
1	What is Software Engineering? Explain essential attributes of good software.	1,2	1	1	05
2	Software has to be developed for MHS-PMS (Mental Health Care-Patient Monitoring system). Suggest the software development model applicable to the above requirement with proper justification.	3	1	3	05
3	Explain benefits of incremental development compare to the waterfall model and also list the problems with incremental model.	2	1	1	05
4	With neat diagram explain requirements engineering process.	2	1	1	05
5	Compare Functional requirements with Non-functional requirements.	2	1	1	05
6	Explain the structure of a requirements document.	2	1	1	05
7	Explain the advantages and disadvantages of specifying requirements using natural language.	2	1	1	05

OBA 2

~~7~~ 28 24 ~~78~~ 249

1) Solve the recurrence relation by generality function

$a_{n+2} - 9\,a_{n+1} + 14a_n = 0$ $\qquad$ $a_0 = 1$ & $a_1 = 2$

2) Find the gcd of (232,870) & hence write it as a linear combination

3) Solve the congruence

$x = 1 \pmod{11}$

$x = 2 \pmod{5}$

$x = 8 \pmod{6}$

KLS Gogte Institute of Technology

Department of Information Science & Engineering

Internal Assessment- I(fast track)

Subject: DBMS

Semester: IV

Date:03-11-2022

Code: 18IS43

Max. Marks: 25

Duration: 1 Hour

Note: Each question carries 12.5 marks. Answer any two FOR 25 MARKS

1. List and explain any 5 main characteristics of Database approach. Explain the following terms related to DBMS with suitable example:

a. Entity b. Composite primary-key c. Foreign Key d. Tuple e. Cardinality ratio [L2, CO1, PO8]

2. Explain 3 schema architecture with neat diagram. Explain the following types of attributes with examples (i) composite (ii) multivalued (iii) simple [L2 ,CO1,PO8]
3. Identify the entities, suitable attributes, relational constraints and draw the ER diagram for University database [L1 ,3,CO1,PO8]