18/11/2022

SKM's L. M. PATEL COLLEGE OF COMMERCE, GOREGAON WEST

TIMING: 150Min MAX. MARKS: 75

Instructions: 1. All Questions are compulsory and carries 15 Marks
2. Attempt any three sub questions and all sub questions of respective unit must be written together. Each sub question carries 05 Marks

Q-1 Attempt any three. 15M

A Answer the following (Any two)
- I. $(184)_8 = (\ ?\ )_2$
- II. $(1011)_2 = (?)16$
- III. $(C1A)_{16} = (?)_2$

B Solve the following (Any two)
- I. $(11110.11)_2 + (1110.01)_2 = (?)_2$
- II. $(11101)_2 \times (10)_2 = (?)_2$
- III. $(110101)_2 - (1101)_2 = (?)_2$

C Explain following coding system (Any two)
- I. Gray
- II. ISCII
- III. 8421

D Prove NAND gate as a Universal gate.

E How Binary Addition can be done of given binary numbers? Explain with rules and steps and example.

F Differentiate between Analog vs Digital System.

Q-2 Attempt any three. 15M

A Prove the following using truth table. (a+b)' = a' * b'

B Write a short note on Perfect Induction Method.

C Explain output status of Ex-Nor Gate with reference to input with circuit diagram and truth table.

D How Complex Expression can be simplified using SOP and POS techniques

E Using Boolean Algebra Laws Simplify : (X / Y) * (S)

F What is meant by Bubbled Gate? Explain with diagram and example.

Q-3 Attempt any three 15M

A Explain Time Dependent Logic circuit and its classification with diagram.

B Explain with circuit diagram how BCD code can be converted into Grey Code

C Write a short note on full Adder.

D How Gray code can be obtain from Binary code? Explain with truth table.

E With demonstration, Explain Excess-3 subtractions method.

F Write a short note on Binary subtraction using 10th complements.

Q-4 Attempt any three 15M

A What is meant by De-Multiplexer? Explain with circuit diagram construction and working of 1:4 De-Multiplexer.

B Explain working of Encoder circuit with demonstration of 10 to 4 decoder.

C What is meant by Flip-Flop circuit? Explain working and construction of S-R Flip-Flop.

D With reference to R-S Flip-Flop Explain following:
- i. Truth Table
- ii. Logical Circuit diagram
- iii. Timing Diagram

E Write a short note on D Flip-Flop.

F What is meant by T- flip-flop? Explain it with one example.

SKM's J. M. PATEL COLLEGE OF COMMERCE, GOREGAON WEST

TIMING: 150Min MAX. MARKS: 75

Q-5	Attempt any three.	15M
A	Enlist Working of synchronous counter circuit.	
B	With diagram, explain working of shift register.	
C	With reference to PISO , draw internal circuit diagram and explain its workinng	
D	Write a short note on SISO Shift Register.	
E.	Differentiate between Jhonson counter vs. ring Counter..	
F	Write a short note on serial in parallel out shift register	

11/11/2022

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: F.Y.B. Sc.IT | **Marks: 75**
Course: Programming Principles with C | **Duration: $2^{1/2}$ Hrs**
Semester: I

Note:1. All questions are compulsory.
2.Figures to right indicate full marks.
3.Answer to same questions must be written together.
4.Make suitable assumption wherever necessary and state the assumptions made.

Q.1.Attempt any 3 among the following. **[15 M]**

1. Draw and explain various symbols used in flowchart.
2. Explain the structure of C program.
3. Write an algorithm to find largest among three numbers.
4. Explain types of programming languages.
5. Difference between algorithm and flowchart.
6. Short note on type casting.

Q.2.Attempt any 3 among the following. **[15 M]**

1. Write a short note on arithmetic operators along with its types.
2. Explain conditional operator with help of example.
3. Write a program to generate following pattern

   5
   5 4
   5 4 3
   5 4 3 2
   5 4 3 2 1
4. Difference between while and do while loop.
5. Explain break and continue statement with help of example.
6. Explain goto statement with help of example.

Q.3.Attempt any 3 among the following. **[15 M]**

1. Explain concept of recursion with help of example.
2. Explain local and global variable with the help of an example.
3. Explain call by reference with help of example.
4. State the types of function on the basis of parameter passing and return type and Explain function with return type and with arguments.
5. Explain the following terms:(i)scanf() (ii)printf() (iii)gets() (iv)puts() (v)getchar()
6. Short note on header files. List and explain header files and their uses.

Q.4.Attempt any 3 among the following. **[15 M]**

1. What is array? What are the characteristics and various types of arrays.
2. Write a C program to find minimum number using array.
3. Explain how to pass array to function with help of example.
4. Demonstrate the use of malloc() function in dynamic memory allocation.
5. What is the use of sizeof()?Explain it with the help of an example.
6. Explain incrementing a pointer with help of an example.

Q.5.Attempt any 3 among the following. **[15 M]**

1. Difference between structure and union.
2. Short note on bit fields.
3. What you meant by structure? How to declare and initialize it.
4. Explain opening and closing of a file in C with help of example.
5. Explain any 5 functions used for Input/Output operations on file in C.
6. Explain various error numbers and their respective error message.

12/11/2021

SKM's J. M. PATEL COLLEGE OF COMMERCE, GOREGAON WEST

PROGRAM: FYBSc.I.T. SEM-1 TIMING: 150Mins

SUB: DIGITAL ELECTRONICS MAX. MARKS: 75

Instructions: 1. All Questions are compulsory and carries 15 Marks
2. Attempt any three sub questions and all sub questions of respective unit must be written together. Each sub question carries 05 Marks

15M

Q-1 Attempt any three.

A Explain analog and digital system with demonstration/example.

B How Binary Addition can be done of given binary numbers? Explain with rules and steps and example.

C Explain how error detection and correction done for data transfer from source to destination with demonstration and diagram.

D Answer the following (Any two)

I. $(562)_8 = (\ ?\ )_{16}$

II. $(11101)_2 = (?)_8$

III. $(1FA)_{16} = (?)_2$

E Solve the following (Any two)

I. $(1111.11)_2 + (101.01)_2 = (?)_2$

II. $(10101)_2 \times (11)_2 = (?)_2$

III. $(11101)_2 - (1100)_2 = (?)_2$

F Explain following coding system (Any two)

I. Gray Code

II. ASCII

III. Binary CodedDecimal

15M

Q-2 Attempt any three.

A State and Explain De Morgan's theorems with boolean circuit and truth table.

B Write a short note on Perfect Induction Method.

C Explain output status of Ex-NOr Gate with reference to input with circuit diagram and truth table.

D Write a short note on K-Map used to solve complex expression.

E Using Boolean Algebra Laws Simplify : (P) * (Q/R)

F What is meant by Bubbled Gate? Explain with diagram and example.

15M

Q-3 Attempt any three

A Explain Combination Logic circuit and its classification with diagram.

B Explain with circuit diagram how BCD code can be converted into Grey Code

C Write a short note on Half Adder.

D Compare and contrast between Binary sum vs. BCD sum with tabular representation of numbers from zero (0) to nineteen (19)

E With demonstration, Explain Excess-3 adder method.

F Write a short note on Binary Comparator.

15M

Q-4 Attempt any three

A What is meant by Multiplexer? Explain with circuit diagram construction and working of 4:1 Multiplexer.

B Explain difference between latches and flip flop.

C What is meant by Flip-Flop circuit? Explain working and construction of S-R Flip-Flop.

P.T.O

D With reference to J-K Flip Flop Explain following
   i. Truth Table
   ii. Logical Circuit diagram
   iii. Timing Diagram

E With diagram, explain working of shift register

F With reference to SIPO, draw internal circuit diagram and explain its working.

15M

Q-5 Attempt any three

A Enlist different applications based on electronic counter circuit.

B. Write a short note on Binary Multiplication performed using circuit using half adders

C. What is meant by Carry Look Ahead Adder? Explain with circuit diagram and demonstration

D Write a short note on PIPO Shift Register.

E. What is meant by Counter circuit? Explain ripple counter with circuit/symbol diagram.

F Draw a pin diagram of 74181 Arithmetic Logic Unit.

15/11/2022

Skm's Jashbhai Maganbhai Patel College of Commerce

Regular Semester End Examination November 2022-23

Program: F. Y. B. Sc. I. T. (Sem-I) Max. Marks : 75

Course: Computational Logic & Discrete Structure Duration: 2 ½ hours

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Instructions: **1.** All questions are compulsory.

2. Answer to the same question must be written together.

3. Non-Programmable calculator is allowed.

4. Figures to the right indicates full marks.

5. Make suitable assumption wherever necessary and state the assumption made.

Q.1 Attempt any three from the following. **(5 x 3 =15)**

A. Let P= {22,23,24,25,26,27}, Q={26, 28, 29, 20, 22}, R= {21,22}, S= {22, 23,24}, then find

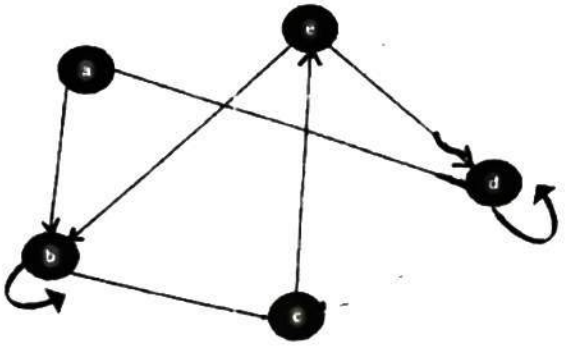
(i) Q-P (ii) R× R (iii) P U S (iv) (PUS) ∩ Q (v) $|(Q - P) \cap S|$

B. All boys in a class of 30 at least one of the three sciences: Physics, Chemistry and Biology. 14 study Biology, 15 study Chemistry, 6 study Physics & Chemistry, 7 study Biology and Chemistry, 8 study Biology & Physics and 5 study all three. Use a Venn diagram to work out how many study (i) Physics (ii) Only Physics

C. Show that $1+ 3 + 5 + \ldots + (2n-1) = n^2$ for all positive integers.

D. Let R be a relation defined on set A={1,2,3,4} for the given diagraph,

(i) Enlist in-degree and out degree of each vertex (ii) Write matrix of R



E. Show that relation R defined on ℤ is equivalence relation. Where xRy iff 3x+2y is divisible by 5 for x in ℤ.

F. Find the transitive closure for given $M_R = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 1 & 1 \end{bmatrix}$

Q.2 Attempt any three from the following. **(5 x 3 =15)**

A. Show that $f: \mathbb{Z} \to \mathbb{Z}$ defined as f(x) = 4x+7 is bijective for all x in $\mathbb{Z}$, hence find f^{-1}.

B. Let $f: \mathbb{Z} \to \mathbb{Z}$, $g: \mathbb{Z} \to \mathbb{R}$, $h: \mathbb{R} \to \mathbb{Z}$ are defined as f(x)= 3x-2 and g(y)= y/4 and h(z)= $\lceil z \rceil$ then find $(i)\ f \circ f\ (7)$ $(ii)\ g \circ f(-1)$ $(iii)\ h(1.8)$

C. What is an algorithm, explain any four characteristics of it.

D. If 70% of all business startups in the IT industry report that they generate a profit in their first year. If a sample of 10 new IT business startups is selected, find the probability that

(i) Exactly seven will generate a profit in their first year.

(ii) At least 2 will generate a profit in their first year.

E. The probability distribution of random variable X is given as follows, find the mean and variance for r. v. X

X	:	1	2	3	4	5	6
P(X=x):		1/6	1/6	1/6	1/6	1/6	1/6

F. A family is having three children, draw the possibility tree and hence find the probability that family is having 2 boys and one girls.

Q. 3 Attempt any three from the following. **(5 x 3 =15)**

A. Five books on Mathematics, three books on English & two books on science are to be put in a shelf in a row. In how many possible ways can this be done so that,

(i) Books of same subjects are always together

(ii) Only English books are together

B. State tower of Hanoi puzzle.

C. Find solution of $a_n - 7\,a_{n-1} + 10a_{n-2} = 4$, for all integers $n \geq 2$, $a_0 = 1$ and $a_1 = 2$.

D. Show that if 5 points are selected inside the square of unit side length then show that there are at least two points which are the most $1/\sqrt{2}$ unit a part.

E. Suppose that automobiles license plate has three letters followed by three digits

(i) How many license plates could begin with AB and ends on 5

(ii) How many license plates are possible in which all digits are distinct

F. (i) Find the number of permutations that can be formed from all the letters of the word :

SUCCESSFULL

(ii) Determine how many 3-letters word can be formed using the letters of the word

AMBITION

Q.4 Attempt any three from the following. **(5 x 3 =15)**

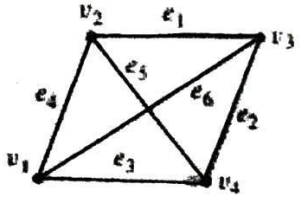
A. For the given graph find

(i) Adjacency matrix

(ii) Degree of each vertex

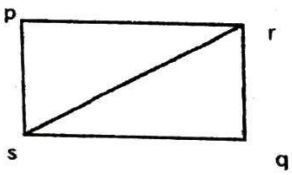
(iii) Is it Multi-Graph?

G



B. Determine which of the following graphs complete or regular graph are.

G:



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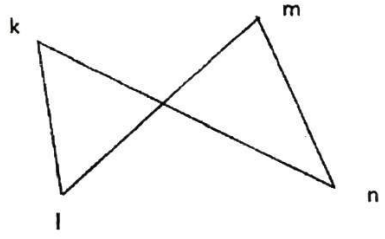
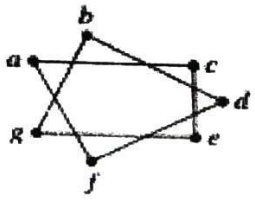


C. Identify which of the following is connected / disconnected graph.



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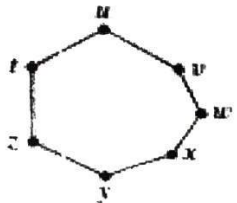
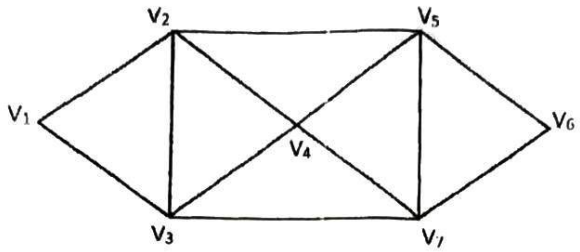


G'

made.

[15]

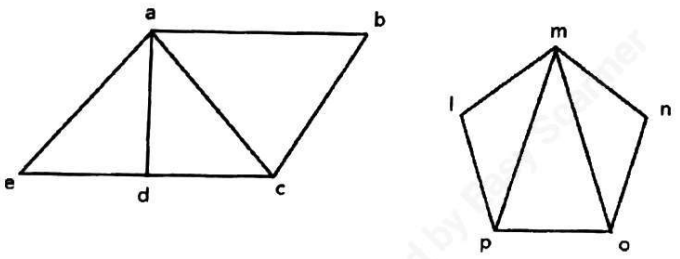
D. For the given graph find out the traversal by using Breadth first search and Depth first search traversal. (Start with node v_1)



M]

E. Define the following: (i) Simple graph (ii) Hamiltonian graph (iii) walk (iv) path (v) trail

F. Show that given graphs are isomorphic



Q.5 Attempt any three from the following. **(5 x 3 =15)**

A. Answer the following by observing the given tree

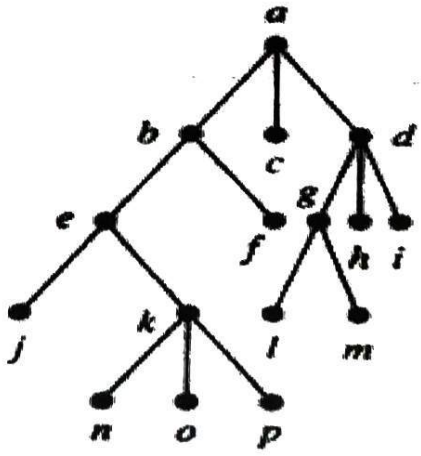
(i) Height of tree

(ii) Root of tree

(iii) Sibling of b and h

(iv) Parent of g

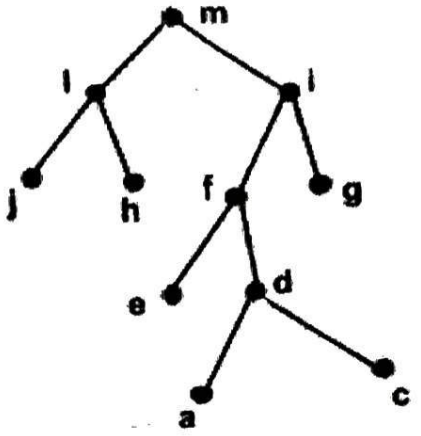
(v) Compute T(d)



B. Write the following traversal for the given binary tree

(i) Preorder traversal

(ii) Postorder traversal



C. A file contains the following characters with the frequencies as shown. If Huffman Coding is used for data compression, determine-

(i) Huffman's tree (ii) Huffman Code for each character

Character	P	Q	R	S	T
Frequency	10	6	2	1	7

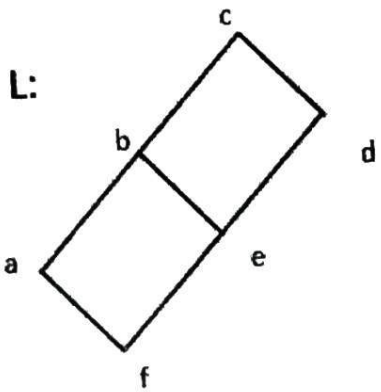
D. Answer the following

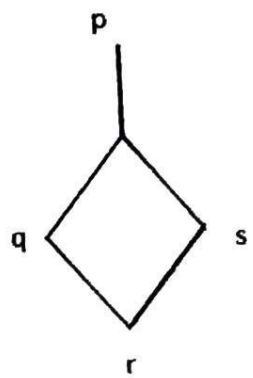
(i) Explain what is Lattice

(ii) Define: Upper and Lower bounds for POSET.

E. Draw the Hasse diagram for D_{16}.

F. Which of the following given Hasse diagram are Lattice.





SKM's J. M. Patel College of Commerce, Goregaon, Mumbai 15/11/2022

Semester -End & ATKT Examination – November 2022

Program: FYB.Sc.IT **Marks: 75**

Course: Technical Communication Skills **Duration: $2^{1/2}$ Hrs.**

Semester: I

Note: 1. All questions are compulsory.
2. Figures to the right indicates full marks.
3. Answer to the same question must be written together.
4. Make suitable assumption wherever necessary and state the assumption mode.

1. Attempt any three of the following **(5*3=15M)**

1. Write a short note on Classification of Barriers.
2. Explain Flow of communication.
3. Differences between Downward communication and Upward Communication.
4. Write a short note on the process of Communication.
5. Explain Non-verbal communication in detail.
6. What is the importance of technical communication?

2. Attempt any three of the following **(5*3=15M)**

1. Explain advantages of Email.
2. Write a short note on Functional roles in GD.
3. Write a short note on Teleconferencing.
4. Write a short note on Seven Cs of effective communication.
5. Which points are important before scheduling a meeting.
6. List and explain Email Etiquette rules.

3. Attempt any three of the following **(5*3=15M)**

1. Explain stages of Job interview.
2. Differentiate between Active and Passive listening.
3. Write a short note on Visual Aids.
4. Write a short note on Types of Listening.
5. Explain Nervousness and stage fright.
6. Which are the steps to get success in an interview?

4. Attempt any three of the following **(5*3=15M)**

1. State and explain advantages and disadvantages of online recruitment.
2. Explain Career building and its benefits.
3. Explain strategies for writing business messages.
4. Explain different types of Corporate reports.
5. What is the importance of business writing?
6. Write a short note on types of Resume format.

5. Attempt any three of the following **(5*3=15M)**

1. Explain elements of Financial Communication.
2. What is the role of MIS in an organization?
3. Explain Ethical issues faced by managers.
4. Explain charts and graphs in detail.
5. Explain Financial communication in detail.
6. Write a short note on Ethical communication.

17/11/2022

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: F.Y.B. Sc.IT
Course: Operating Systems
Semester: I

Marks: 75
Duration: 2½ Hrs

Note:1. All questions are compulsory.
2.Figures to right indicate full marks.
3.Answer to same questions must be written together.
4.Make suitable assumption wherever necessary and state the assumptions made.

Q.1.Attempt any 3 among the following. [15 M]

1. Explain various function of Operating System?
2. Explain Process with its various states?
3. Explain Different types of Schedulers?
4. Explain FCFS scheduling algorithm with example.
5. Explain User Level Threads and Kernel Level Threads with their advantages and disadvantages?
6. Short note on IPC?

Q.2.Attempt any 3 among the following. [15 M]

1. What is compaction? Explain with example.
2. Short note on paging with diagram.
3. What is segmentation? Explain it with example.
4. Short note on Thrashing.
5. Explain various file attributes and file operations in brief.
6. Explain Contiguous, Linked List and indexed Allocation.

Q.3.Attempt any 3 among the following. [15 M]

1. Explain Goals of I/O Software.
2. Write short note on: Direct Memory Access (DMA). Explain steps of DMA transfer.
3. Explain RAID level .
4. What is deadlock? What are the necessary conditions required to occur deadlock?
5. Explain banker's algorithm for deadlock avoidance with an example.
6. Explain deadlock recovery in detail.

Q.4.Attempt any 3 among the following. **[15 M]**

1. What are the requirements for virtualization? Explain.
2. What are Type 1 and Type 2 hypervisors? Explain.
3. Explain steps in RPC operation.
4. What is distributed system? What are its characteristics? Explain.
5. Explain Distributed shared memory in multicomputer system.
6. Explain load balancing in multicomputer system

Q.5.Attempt any 3 among the following. **[15 M]**

1. Explain process scheduling in Linux.
2. Explain Goals of Linux OS.
3. Explain File, directory system calls in Linux.
4. Explain architecture of Android.
5. Explain process, thread in windows.
6. Explain security in Windows

14/11/2022

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: FYB.Sc.IT **Marks: 75**

Course: Fundamentals of DBMS **Duration: 2½ Hrs.**

Semester: I

Note: 1. All questions are compulsory.
2. Figures to the right indicates full marks.
3. Answer to the same question must be written together.
4. Make suitable assumption wherever necessary and state the assumption mode.

1. Attempt any three of the following **(5*3=15M)**

1. Explain the concept of Hierarchical Model.
2. What are the problems with File system data management?
3. Explain Database, DBMS in detail
4. Consider the given table
   Library (book_no, title, category, price, year, pages)
   answer the following using MYSQL queries:
   a) List the Book Number and Title of the book.
   b) List the details when price is greater than 250.
   c) List the title of the books when year is 2022 and category is DBMS.
   d) Rename the table as Book table.
   e) Delete the book when book number is 100.
5. Write a short note on Relational Algebra Operations.
6. Differentiate between Commit and Rollback.

2. Attempt any three of the following **(5*3=15M)**

1. Explain the phases of database design and implementation process.
2. Define attributes with its types.
3. Construct an E-R diagram for College management system. Show the relationship between entities and attributes.
4. Explain Macro life cycle.
5. Explain different E-R diagram symbols with name and description.
6. Explain different types of diagram in UML.

3. Attempt any three of the following **(5*3=15M)**

1. Write a short note on MVD.
2. Explain the concept of Functional dependency.
3. Explain 2NF with example.
4. Explain types of Decomposition.
5. Explain Inclusion dependency.
6. Explain advantages and disadvantages of Normalization.

4. Attempt any three of the following **(5*3=15M)**

1. Write select statement in different style.
2. Explain different steps in Query processing.
3. Explain aggregate function with example.
4. Explain Group by and Order by clause with example and syntax.
5. What are the Triggers? explain with example and syntax.
6. Create table Student with constraint and Insert five records.
   (roll_no, name, phone_no, gender, age, division, remark)

5. Attempt any three of the following **(5*3=15M)**

1. Write a short note on Concurrency control.
2. Explain properties of Transaction.
3. Describe different methods of recovery from deadlock.
4. Explain Two Phase Locking protocol.
5. Explain different states of Transaction.
6. Explain Lock based protocol.

SKM's J. M. PATEL COLLEGE OF COMMERCE, GOREGAON WEST

06/12/2021

PROGRAM: FYBSc.I.T. SEM-1 TIMING: 150Mins

SUB: DIGITAL ELECTRONICS MAX. MARKS: 75

Instructions: 1. All Questions are compulsory and carries 15 Marks
2. Attempt any three sub questions and all sub questions of respective unit must be written together. Each sub question carries 05 Marks

Q-1 Attempt any three. 15M

A Answer the following (Any two)
- I. $(254)_8 = (\ ?\ )_2$
- II. $(1011)_2 = (?)16$
- III. $(C1A)_{16} = (?)_2$

B Solve the following (Any two)
- I. $(11110.11)_2 + (1110.01)_2 = (?)_2$
- II. $(11101)_2 \times (10)_2 = (?)_2$
- III. $(110101)_2 - (1101)_2 = (?)_2$

C Explain following coding system (Any two)
- I. Gray
- II. ISCII
- III. 8421

D Prove NAND gate as a Universal gate.

E How Binary Addition can be done of given binary numbers? Explain with rules and steps and example.

F Differentiate between Analog vs Digital System.

Q-2 Attempt any three. 15M

A Prove the following using truth table. (a+b)' = a' * b'

B Write a short note on Perfect Induction Method.

C Explain output status of Ex-Nor Gate with reference to input with circuit diagram and truth table.

D How Complex Expression can be simplified using SOP and POS techniques

E Using Boolean Algebra Laws Simplify : (X / Y) * (S)

F What is meant by Bubbled Gate? Explain with diagram and example.

Q-3 Attempt any three 15M

A Explain Time Dependent Logic circuit and its classification with diagram.

B Explain with circuit diagram how BCD code can be converted into Grey Code

C Write a short note on full Adder.

D How Gray code can be obtain from Binary code? Explain with truth table.

E With demonstration, Explain Excess-3 subtractions method.

F Write a short note on Binary subtraction using 10^{th} complements.

Q-4 Attempt any three 15M

A What is meant by De-Multiplexer? Explain with circuit diagram construction and working of 1:4 De-Multiplexer.

B Explain working of Encoder circuit with demonstration of 10 to 4 decoder.

C What is meant by Flip-Flop circuit? Explain working and construction of S-R Flip-Flop.

D With reference to R-S Flip-Flop Explain following:
- i. Truth Table
- ii. Logical Circuit diagram
- iii. Timing Diagram

P.T.O.

E Write a short note on D Flip-Flop.

F What is meant by T- flip-flop? Explain it with one example.

Q-5 Attempt any three. 15M

A Enlist Working of synchronous counter circuit.

B With diagram, explain working of shift register.

C With reference to PISO , draw internal circuit diagram and explain its workinng

D Write a short note on SISO Shift Register.

E. Differentiate between Jhonson counter vs. ring Counter..

F Write a short note on Pseudo-random binary sequence generator

07/12/2022

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: F.Y.B. Sc.IT
Course: Programming Principles with C
Semester: I

Marks: 75
Duration: $2^{1/2}$ Hrs

Note:1. All questions are compulsory.
2.Figures to right indicate full marks.
3.Answer to same questions must be written together.
4.Make suitable assumption wherever necessary and state the assumptions made.

Q.1.Attempt any 3 among the following. [15 M]

1. List and explain features of C.
2. Explain different symbols used in flowchart.
3. What are variables. State the rules for assigning variable names? How to declare and initialize a variable.
4. Explain type of constants used in C.
5. Write an algorithm and draw a flowchart for checking whether number is even or odd
6. Difference between compiler and interpreter.

Q.2.Attempt any 3 among the following. [15 M]

1. Write short note on logical operators.
2. Write a program to swap two numbers without using third variable.
3. Explain switch statement with the help of an example.
4. Explain if else statement with the help of an example.
5. Write a program to generate following pattern

```
1
2 3
4 5 6
7 8 9 10
```

6. Explain do while loop with syntax and flowchart.

Q.3.Attempt any 3 among the following. [15 M]

1. Explain call by value with help of example.
2. What is a function? Explain function elements and explain the syntax of function prototype.
3. State the types of function on the basis of parameter passing and return type and Explain function without return type and without arguments.
4. Write a program to reverse a number using recursion.
5. Explain error handling with Stderr and Exit.
6. Write a program to calculate factorial of a number with help of recursion.

(4)

Q.4.Attempt any 3 among the following. **[15 M]**

1. Short note array.
2. Write a C program to find maximum number using array.
3. Demonstrate the use of realloc() and free() function in dynamic memory allocation.
4. Write a C program to perform addition of two matrix.
5. What is pointer? What are the benefits of pointer. Explain how to declare and initialize a pointer
6. Short note on function pointer with help of example.

Q.5.Attempt any 3 among the following. **[15 M]**

1. Difference between structures and union.
2. Explain the concept of union with the help of example.
3. What are the way to access union members.
4. Demonstrate the use of how to open and close file in C with help of example.
5. Short note on error handling in C.
6. Explain the function used for input and output operations on file in C.

25/10/22

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: F.Y.B. Sc.IT
Course: Programming Principles with C
Semester: I

Marks: 75
Duration: $2^{1/2}$ Hrs

Note:1. All questions are compulsory.
2.Figures to right indicate full marks.
3.Answer to same questions must be written together.
4.Make suitable assumption wherever necessary and state the assumptions made.

Q.1.Attempt any 3 among the following. [15 M]

1. What are constants in 'C'. Explain its different types.
2. Explain different symbols used in flowchart.
3. What is pseudo code. Explain with an example.
4. Write an algorithm and draw a flowchart for finding smallest among three numbers
5. Explain the structure of C program.
6. Difference between compiler and interpreter.

Q.2.Attempt any 3 among the following. [15 M]

1. Explain arithmetic operators along with its types.
2. Explain Ternary operator with help of example.
3. Explain while loop with syntax and flowchart.
4. Write a program to generate following pattern

   ABCD
   ABC
   AB
   A
5. Explain goto statement with help of example
6. Write a program to implement calculator with following operations:
   Add, Subtract, Multiply and Divide two numbers.

Q.3.Attempt any 3 among the following. [15 M]

1. Explain local and global variable with help of example
2. Explain call by value with help of example.
3. Write a program to reverse a number using recursion.
4. Write a Short note on header files.
5. State the types of function on the basis of parameter passing and return type and Explain function with return type and without arguments.
6. Explain the following terms: (i) scanf() (ii)printf() (iii)gets() (iv)getchar() (v)putchar()

Q.4.Attempt any 3 among the following. [15 M]

1. Write a C program to sort array in ascending order.
2. Explain 2D array with help of example.
3. What is pointer? Benefits of using pointer. Demonstrate the use of pointer with help of example.
4. Short note on function pointer with help of example.
5. Short note on incrementing pointer with help of example.
6. Short note on dynamic memory allocation.

Q.5.Attempt any 3 among the following. [15 M]

1. Write a short note on type def.
2. What is meant by Nested structure.
3. Explain the concept of union.
4. Explain the following input/output functions on file in C
   (i)fprintf() (ii)fscanf() (iii)fgets() (iv)fputs() (v)fgetc()
5. Write a program in C to demonstrate how to open and close a file in C.
6. Explain error handling in C.

2/10/23

SKM's J. M. Patel College of Commerce

Subject : Digital Logic & Applications **Total Marks : 75** **Duration : 2Hrs. 30 Mins**

Instruction : Attempt all questions and each question carries 15 Marks

Q-1 **Attempt any three. (05 Marks each)** **15M**

A Explain Octal and Hexadecimal Numbering system with example.

B Convert the following. (Any two)

1. $(10011.01)_2 = (\_\_\_\_\_)_{10}$
2. $(A10)_{16} = (\_\_\_\_\_)_{10}$
3. $(45)_8 = (\_\_\_\_\_)_2$

C Solve the following. (Any Two)

1. $(101011)_2 - (1101)_2$ using 2nd Complement method.
2. $(11011)_2 / (101)_2$
3. $(1100.11)_2 \mathbf{X} (11)_2$

D What is meant by binary floating-point number? Explain with example.

E Write a short note on following coding system. (Any two)

1. Weighted & non-Weighted Codes BCD
2. Excess 3
3. Hollerith

F Explain how Digital system is differentiated from analog system with diagram and example.

Q-2 **Attempt any three. (05 Marks each)** **15M**

A Prove that NAND gate is a Universal gate.

B Write a short note on K-Map.

C Prove the following with truth table and draw the diagram.

1. $(A + B)' = A' * B'$
2. $(A * B)' = A' + B'$

D What is meant by Prime Implicant method with reference to digital electronics. Explain with diagram.

E Explain Ex-Or gate with truth table and circuit diagram.

F Write a short note on Bubbled gate.

Q-3 **Attempt any three. (05 Marks each)** **15M**

A Explain the difference between sequential circuit vs. combinational circuit logic.

B What is meant by Binary Multiplier circuit? Explain with diagram.

C Explain difference between Half subtractor vs. Full Subtractor.

D Explain how Binary number can be converted in to Gray Code Number.

E Explain any two types of combinational circuit with example.

F Write a short note on Binary Comparator circuit.

Q-4 **Attempt any three. (05 Marks each)** **15M**

A What is meant by Flip-Flop circuit? Explain its utilisation in Digital Electronics.

B Write a short note on Multiplexer.

C Explain with diagram working of JK Flip-Flop.

D Explain how one kind of Flip Flop can be converted into the other type with one example.

E Write a short note on D Flip-Flop.

F Explain the difference between Encoder vs. Decoder circuit.

Q-5 **Attempt any three. (05 Marks each)** **15M**

A What is meant by Asynchronous counter? Explain how it can be created using Flip-Flop.

B Explain carry look ahead generator with diagram.

C What is meant by Shift Register circuit? Explain with diagram.
Explain any two types of modes of shift register circuits with diagram.

D Explain how binary division can be performed with example.

E Write a short note on Binary Multiplication with rules.

F Write a Program in any programming language to generate PBRS-7 sequence.

28/03/23

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: FYB.Sc.IT **Marks: 75**

Course: Fundamentals of DBMS **Duration: 2½ Hrs.**

Semester: I

Note: 1. All questions are compulsory.
2. Figures to the right indicates full marks.
3. Answer to the same question must be written together.
4. Make suitable assumption wherever necessary and state the assumption mode.

1. Attempt any three of the following **(5*3=15M)**

1. What is the Application of DBMS?
2. Explain the concept of Hierarchical Model.
3. What are the problems with File system data management?
4. Consider the given table
   Book (book_no, title, category, price, year, pages)
   answer the following using MYSQL queries:
   a) List the Book Number and Title of the book.
   b) List the details when price is greater than 250.
   c) List the title of the books when year is 2022 and category is DBMS.
   d) Rename the table as Library table.
   e) Delete the book when book number is 100.
5. Write a short note on Relational Algebra Operations.
6. What is Constraint? Explain all constraints in detail with examples.

2. Attempt any three of the following **(5*3=15M)**

1. Explain Micro life cycle.
2. Explain the phases of database design and implementation process.
3. Define attributes with its types.
4. Construct an E-R diagram for Bank system. Show the relationship between entities and attributes.
5. Explain different E-R diagram symbols with name and description.
6. Explain Weak Entity.

3. Attempt any three of the following **(5*3=15M)**

1. Explain 3NF with example.
2. Write a short note on MVD.
3. Explain Inclusion dependency.
4. Explain advantages and disadvantages of Normalization.
5. Explain the concept of Functional dependency.
6. Explain types of Decomposition.

4. Attempt any three of the following **(5*3=15M)**

1. Explain different types of joins in detail.
2. Write select statement in different style.
3. Explain different types of file organization.
4. Create table Employee with constraint and Insert five records.
   (emp_no, name, department, phone_no, gender, age, salary)
5. Explain aggregate function with example.
6. Explain Group by and Order by clause with example and syntax.

5. **Attempt any three of the following** **(5*3=15M)**

1. Explain Database recovery techniques.
2. Write a short note on Concurrency control.
3. Explain Validation based protocol.
4. Explain Two Phase Locking protocol.
5. Explain different states of Transaction.
6. Explain the concept of Serializability.

29/03/2023

SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End & ATKT Examination – November 2022

Program: FYB.Sc.IT **Marks: 75**

Course: Technical Communication Skills **Duration: $2^{1/2}$ Hrs.**

Semester: I

Note: 1. All questions are compulsory.
2. Figures to the right indicates full marks.
3. Answer to the same question must be written together.
4. Make suitable assumption wherever necessary and state the assumption mode.

1. Attempt any three of the following **(5*3=15M)**

1. Explain Levels of Communication in detail.
2. Write a short note on Classification of Barriers.
3. Differences between Downward communication and Upward Communication.
4. Explain Technical Communication in detail.
5. Explain Non-verbal communication in detail.
6. What is the importance of technical communication?

2. Attempt any three of the following **(5*3=15M)**

1. How can we make good conversation with Management?
2. Write a short note on Functional roles in GD.
3. Write a short note on Teleconferencing.
4. What are the problems in email communication?
5. Write a short note on Seven Cs of effective communication.
6. Which points are important before scheduling a meeting.

3. Attempt any three of the following **(5*3=15M)**

1. What are the categories of job interviews?
2. Differentiate between Active and Passive listening.
3. Write a short note on Visual Aids.
4. What are the guidelines for a Good Listener?
5. Explain Nervousness and stage fright.
6. Which are the steps to get success in an interview?

4. Attempt any three of the following **(5*3=15M)**

1. Write a short note on Types of Business Writing.
2. State and explain advantages and disadvantages of online recruitment.
3. Explain Career building and its benefits.
4. Explain strategies for writing business messages.
5. Explain parts of a report.
6. Write a short note on types of Resume format.

5. Attempt any three of the following **(5*3=15M)**

1. Write a short note on Types of visual aids.
2. Explain Ethical issues faced by managers.
3. Explain charts and graphs in detail.
4. Explain MIS with its objective.
5. Explain Financial communication in detail.
6. Write a short note on Ethical communication.

31/03/2023

Skm's Jashbhai Maganbhai Patel College of Commerce

Regular Semester End Examination November 2022-23

Program: F.Y.B.Sc.I.T. (Sem-I) Max. Marks : 75

Course: Computational Logic & Discrete Structure Duration: 2 ½ hours

Instructions: 1. All questions are compulsory

2. Figures to the right indicates full marks
3. Non-Programmable calculator is allowed
4. Answer to the same question must be written together.
5. Make suitable assumption wherever necessary and state the assumption made

Q.1 Attempt any three from the following. **(5 x 3 =15)**

A. Let P= {2,3,4,5,6,7}, Q={6, 8, 9, 10, 12}, R= {1,2}, S= {2, 3,4}, then find

(i) P-Q (ii) R × S (iii) P U R (iv) (PUR) ∩ S (v) $|(P - Q) \cap R|$

B. At Vicky's restaurant there is choice of up to three fillings: salad, chicken or cheese. One afternoon there were 80 customers 44 choose salad, 46 choose chickens and 35 choose cheese.22 choose salad and chicken, 14 choose chicken and cheese, 17 choose salad and cheese.

(i) How many choose all three ingredients

(ii) How many choose salad and chicken but not cheese.

C. Show that 1+2+3+…+n= n (n+1)/2 for all positive integers.

D. Let R be a relation defined on set A={1,2,3,4} as xRy if and only if x+y is even , then

(i) find R (ii) Draw diagraph of R (iii) and write matrix of R

E. Let R be a relation defined on P= { 2, 4, 6, 8,10} as xRy iff x divides y then find,

(i) Enlist R (ii) Is R is reflexive relation. (iii) Is R is transitive relation.

F. Find the transitive closure by using Warshall's algorithm. $\begin{pmatrix} 1 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix}$

Q.2 Attempt any three from the following. **(5 x 3 =15)**

A. For the following find (i) whether f is function, if it is then find (ii) domain of f (ii) range of f (iii) Is f is injective function.

a. F= {(1, 2), (2, 4), (3, 3), (4, 1)} on set A= {1, 2, 3, 4}

B. Let $f: \mathbb{Z} \to \mathbb{Z}$, $g: \mathbb{Z} \to \mathbb{R}$, $h: \mathbb{R} \to \mathbb{Z}$ are defined as f(x)= 2x+1 and g(y)= y^2+3 and h(z)= z then find $(i)\ f \circ f\ (2)$ $(ii)\ g \circ f(-3)$ $(iii)\ h(0)$

C. Write the characteristics of algorithm.

D. From a deck of 52 well shuffled pack two cards are drawn at random , find the probability that

(i) One card is of red color and another is black color

(ii) One is king of red color and other is jack of heart.

E. The probability distribution of random variable X is given find the mean and variance for r. v. X

X :	0	1	2	3	4	5
P(X=x):	0.2	0.01	0.44	0.05	0.1	0.2

F. Diabetes affects 5.5% of the population, according to the Department of Health and Human Services. Six different people are randomly selected. Find the probability that

a. Five randomly selected people have diabetes.

b. None of the six randomly selected people has diabetes.

Q.3 Attempt any three from the following. **(5 x 3 =15)**

A. Find solution of $a_k = a_{k-1} + 2a_{k-2}$ for all integers $k \geq 2$, $a_0 = 1$ and $a_1 = 8$.

B. Sate the Fibonacci sequence and formulate it.

C. Consider an equilateral triangle of side length one unit. If 5 points are selected inside the triangle then show that there are at least two points which are not more than ½ unit a part.

D. (i) How many ways three digits number can be formed by using six digits 2, 3, 4, 5, 7 and 9?

(ii) How many are even?

E. Suppose that automobiles license plate has three letters followed by three digits

(i) How many different license plates are possible

(ii) How many license plates could begin with X and ends on 2

F. (i) Find the number of permutations that can be formed from all the letters of the word : **MISSISSIPPI**

(ii) Determine how many 4-letters word can be formed using the letters of the word **COMPUTER.**

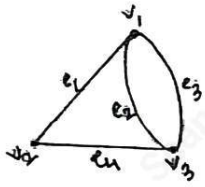
Q.4 Attempt any three from the following. **(5 x 3 =15)**

A. For the given information (G:V, E) where V={a, b, c, d, e} and where E={e_1 , e_2, e_3, e_4, e_5, e_6, e_7 }, e_1={a, b},e_2={a, e}, e_3={b, c}, e_4={c, d}, e_5={d, a}, e_6={e, b}, e_7={e, c}

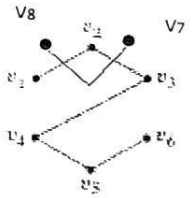
(i) Draw the graph (ii) write the adjacency matrix (iii) Is it simple graph?

B. Define the connected graph and also identify which of the following is connected or disconnected graph

(i) G

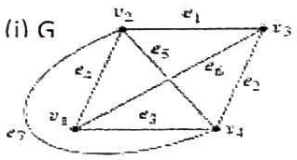


(ii)G'

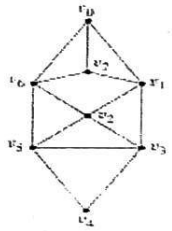


C. Identify which of the following is Euler or Hamiltonian graph.

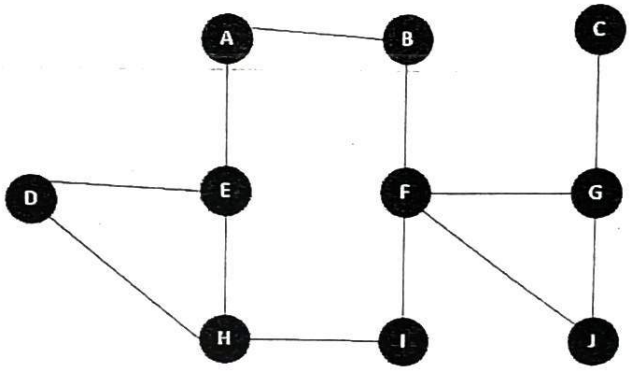
(i) G



(ii)G'

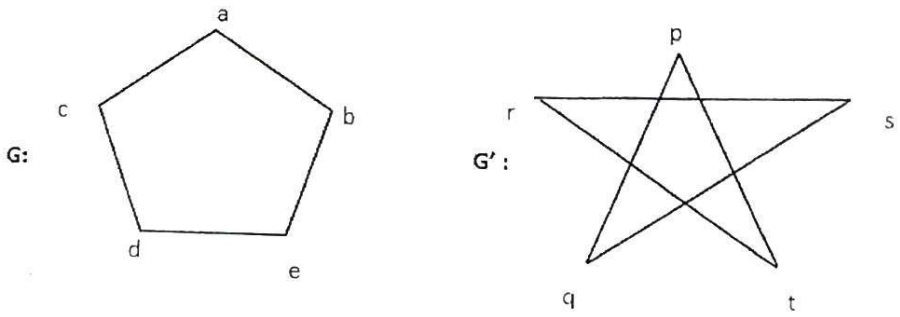


D. For the given graph find out the traversal by using Breadth first search and Depth first search traversal. (start with node A)



E. Define the following: (i) Multi graph (ii) Complete graph (iii) walk (iv) Circuit (v) Path

F. Show that given graphs are isomorphic.



Q.5 **Attempt any three from the following.** **(5 x 3 =15)**

A. Answer the following by observing the given tree

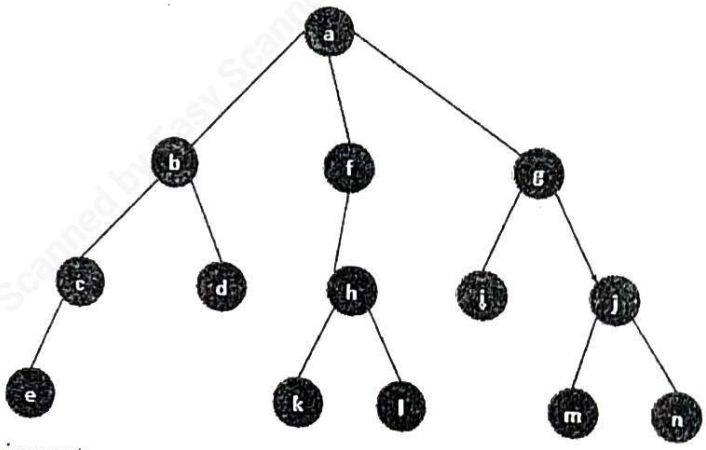
(i) Height of tree

(ii) Root of tree

(iii) Sibling of f

(iv) Parent of m

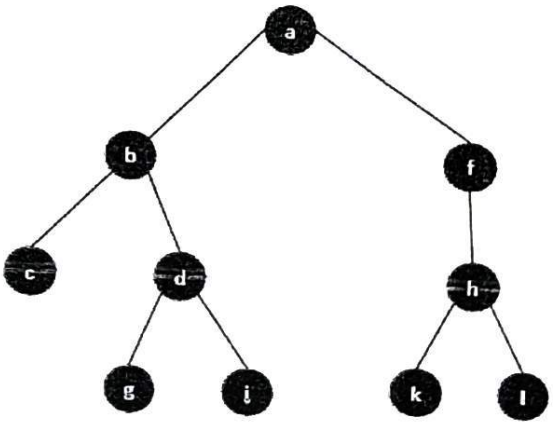
(v) Is it complete tree



B. Write the following traversal for the given binary tree

(i) Preorder traversal

(ii) Inorder traversal



C. A networking company use a compression technique to encode the message before transmitting over the network. Suppose the message contains the following characters with their frequency:

Character	Frequency
A	5
B	9
C	12
D	13
E	16
F	45

If the compression technique used is Huffman Coding, then find the Huffman's tree for the given data and coding.

D. Define the following

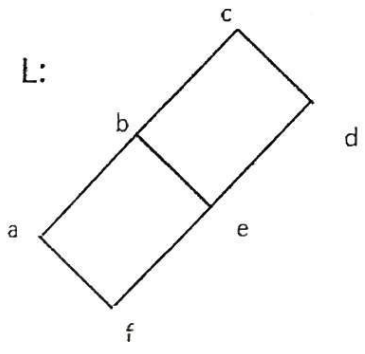
(i) POSET (iii) Maximal Element (v) Greatest Lower bound

(ii) Least upper bound (iv) Lattice

E. Draw the Hasse diagram for the given POSET. Where POSET (A,R) is given by A={1,2,3,6} and R= {(1,1), (1, 2), (1, 3), (1, 6), (2, 2), (2, 6), (3,3), (3, 6) }

F. Determine which of the following POSET shown are Lattice

L:



l'