

DATE: 26/11/2022

TIME: 7.15 am TO 9:45 am

PROGRAM: F.Y.B.Sc. (IT) –SEM I

MARKS: 75

COURSE: Technical Communication Skills

Q.1 Attempt Any THREE from following:**15 M**

- a) What are the different kinds of non-verbal communication? Explain any five in detail.
- b) Define Technical Communication. Explain the process in the communication cycle.
- c) Explain organizational barriers. Different types of organizational barriers in detail.
- d) 'Gestures are observed actions'. Explain the statement.
- e) Explain the different types of flow of communication.
- f) Discuss how communication plays a crucial role in the progress of an organization.

Q.2 Attempt Any THREE from following:**15 M**

- a) Explain the 7 C's of effective communication?
- b) Explain in detail the process for leading to effective meetings.
- c) What are the benefits of a Group Discussion?
- d) Explain functional and non-functional roles in Group Discussion.
- e) What are the modern methods of conferencing?
- f) Define Email. Explain the advantages and disadvantages of Email.

Q.3 Attempt Any THREE from following:**15 M**

- a) Define Listening. Types of Listening in detail.
- b) List and explain the points that should be looked after when preparing for a professional presentation.
- c) What are the ways in which the understanding nuances of delivery can be done?
- d) What are the stages of a job interview a candidate must go for?
- e) Explain the traits of a Good Listener.
- f) What to bring to a Job Interview.

P.T.O.

Q.4 Attempt Any THREE from following:

15 M

- a) Explain different types of Business Writing in detail.
- b) What are the different parts of the report? Explain in detail.
- c) What are the types of resumes available?
- d) What is career building? Explain the benefits of it.
- e) What do you mean by video resume? Tips to create a video resume.
- f) Explain the parts of a memo.

Q.5 Attempt Any THREE from following:

15 M

- a) Define financial communication. Tips to be used for the elements of financial communication.
- b) What is ethical communication? Explain the key principles of ethical communication.
- c) Explain visual aids along with the preparation of visual aids.
- d) Write a short note on MIS.
- e) Explain the types of visual aids in detail.
- f) Explain the following terms:-
 - i) Values
 - ii) Ethics
 - iii) Communication

DATE: 25/11/2022

TIME: 7.15am to 9.45 am

PROGRAM: F.Y.B.Sc. (IT) – SEM I

MARKS: 75

COURSE: Computational Logic and Discrete Structure

Q.1 Attempt any three of the following questions.

(15 Marks)

A. Find the power sets of $A = \{a, b, c, d\}$ B. Let $A = \{1, 2, 3, 4\}$, $B = \{3, 4, 5, 6, 7\}$, $C = \{2, 3, 8, 9\}$ Then find1. $A \cup B$ 2. $A \cap B$ 3. $B \cap C$ 4. $A - B$ 5. $B - C$

C. Suppose a list A contains the 30 students in a mathematics class, and a list B contains the 35 students in an English class, and suppose there are 20 names on both lists. Find the number of students: (a) only on list A, (b) only on list B (c) in list A or B

D. Define following terms.

1. Reflexive relation 2. Symmetric relation 3. Equivalence relation

E. Given the relation R on set $A = \{1, 2, 3, 4\}$, such that $R = \{(1, 2), (2, 2), (2, 4), (3, 2), (3, 4), (4, 1), (4, 3)\}$

a) Draw arrow diagram of relation R.

b) Find matrix of R.

F. Whether the following relation defined on set $A = \{1, 2, 3\}$ are reflexive, symmetric or transitive. $R = \{(1, 1), (1, 2), (1, 3), (3, 3)\}$ Q.2 Attempt any three of the following questions.

(15 Marks)

A. Let $A = \{a, b, c, d\}$, $B = \{1, 2, 3\}$ Suppose f is function from A to B such that $f(a) = 1, f(b) = 2, f(c) = 3, f(d) = 3$

a) Write domain of function f

c) Find image set of function

e) Is f one-one?

b) Is f onto?

d) What is image of a under f

B. Let $A = \{a, b, c\}$, $B = \{x, y, z\}$, $C = \{r, s, t\}$, Let the functions $f: A \rightarrow B, g: B \rightarrow C$ defined by $f = \{(a, y), (b, x), (c, y)\}$, $g = \{(x, s), (y, t), (z, r)\}$ Find a) $(g \circ f)(a)$ b) $(g \circ f)(c)$ C. Show that function $f: R \rightarrow R$ such that $f(x) = 2x + 1$ is one-one and onto.

D. Find sample space for the following random experiment.

a) Two coins tossed simultaneously.

b) A die and a Coin are thrown.

E. A single card is drawn from pack of cards. What is probability that card drawn

Is a) King of spade

b) Red card

c) King or Queen

F. For the following probability distribution, find the expected value of variable X, $(E(x))$

X	2	3	4	5	6
P(x)	$\frac{1}{9}$	$\frac{2}{9}$	$\frac{3}{9}$	$\frac{2}{9}$	$\frac{1}{9}$

Q.3 Attempt any three of the following questions.

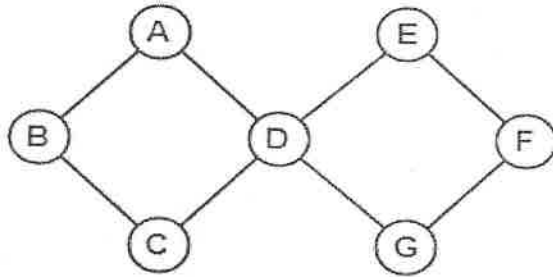
(15 Marks)

- A. Suppose a college has 3 different history courses, 4 different literature courses, and 2 different sociology courses.
- The number of ways a student can choose one of each kind of courses is
 - The number of ways a student can choose just one of the courses is
- B. Find the value of following
- $9C4$
 - $8C2$
 - $5!$
- C. Find the number of distinct permutations that can be formed from all the letters of each word:
- THOSE
 - SUNDAY
 - USUAL
- D. A class contains 10 students with 6 men and 4 women. Find the number n of ways to: Select a 4-member committee with 2 men and 2 women.
- E. A restaurant has 6 different desserts. Find the number of ways a customer can choose: (a) 1 dessert; (b) 2 of the desserts.
- F. Find the minimum number n of integers to be selected from $S = \{1, 2, \dots, 9\}$ so that:
- The sum of two of the n integers is even.
 - The difference of two of the n integers is 5

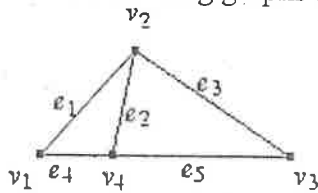
Q.4 Attempt any three of the following questions.

(15 Marks)

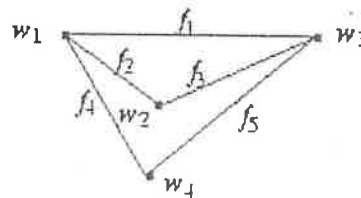
- Draw all possible graph of size 4.
- For given graph, find degree of each vertex.



- C. Show that following graphs are isomorphic.

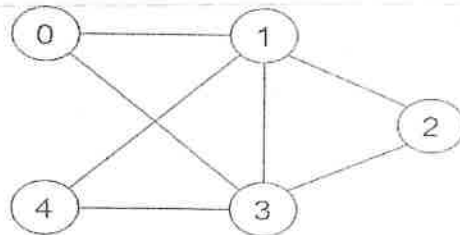


G_1

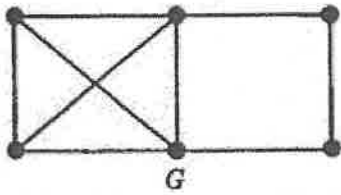


G_2

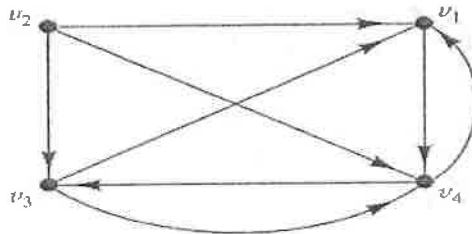
- D. Check whether the given graph is Eulerian or Hamiltonian?



E. Draw all possible spanning tree for the connected graph.



F. Find adjacency matrix of the given directed graph.



Q.5 Attempt any three of the following questions.

(15 Marks)

A. Draw diagram of complete tree T_{26} .

B.

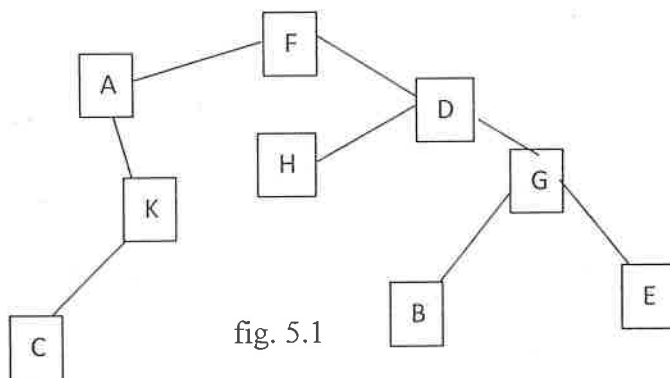


fig. 5.1

Consider given binary tree shown in fig. 5.1, find

a) depth d of binary tree T b) Traverse T using the preorder algorithm.

C. Define the following terms.

- | | | |
|-------------------------|-----------------------|-------------|
| a) Ordered Set | d) Comparable element | c) Supremum |
| b) Linearly ordered set | e) Infimum | |

D. Let $N = \{1, 2, 3, \dots\}$ be ordered by divisibility. State whether each of the following subsets of N are linearly (totally) ordered.

- (a) $\{24, 2, 6\}$ (b) $N = \{1, 2, 3, \dots\}$ (c) $\{7\}$ (d) $\{3, 15, 5\}$ (e) $\{2, 8, 32, 4\}$

E. Show that if L be a bounded distributive lattice, then complements are unique if they exist.

F. Write the dual of each statement:

- (a) $(a \wedge b) \vee c = (b \vee c) \wedge (c \vee a)$ (b) $(a \wedge b) \vee a = a \wedge (b \vee a)$.

DATE: 24/11/2022

TIME: 7.15am to 9.45am

PROGRAM: F.Y.B.Sc. (IT) –SEM I

MARKS: 75

COURSE: Fundamentals of Database Management Systems

Q.1 Attempt Any THREE from following: 15 M

- What is DBMS? Explain the advantages of DBMS.
- What is data abstraction? Explain different levels of abstraction.
- What are database keys? Explain any five keys with examples.
- Explain any five relational algebra operations with examples.
- What is a data model? Explain types of data models.
- Explain structure of DBMS.

Q.2 Attempt Any THREE from following: 15 M

- What is an attribute? Explain types of attributes.
- What are constraints? Explain types of constraints.
- Explain generalization and specialization in detail.
- Explain ER diagram and its components.
- Explain the role of the information system in organization.
- What is a database? Explain six steps of the implementation process.

Q.3 Attempt Any THREE from following: 15 M

- What is normalization? Explain types of normalization.
- What is decomposition? Explain types of decomposition.
- What is functional dependency? Explain in detail.
- Find 3NF decomposition of given relational schema (cust_no ,cust_name, cust_address,cust_phone,artist_id,artist_name,artist_title,prize).
- Explain 2NF and 3NF in detail.
- Explain the phases of database design.

Q.4 Attempt Any THREE from following: 15 M

- What is SQL? Explain components of SQL.
- Explain DDL and DML statements with examples.
- Explain aggregate functions in detail.
- What are joins? Explain different types of joins with examples.
- What is VIEW? Also create and update views with examples.
- What is the trigger? Explain with examples.

P.T.O.

Q.5 Attempt Any THREE from following:

15 M

- a) What is a transaction? Explain different states of transaction.
- b) Explain ACID properties in detail.
- c) Explain timestamp ordering protocol.
- d) What is a two phase locking protocol?
- e) What is a deadlock?. Explain two principles of deadlock.
- f) Write a short note on the database recovery system.

Q.1 Attempt Any THREE from following: 15 M

- a) Convert:
1. 45.75 decimal no to binary no 3 marks
 2. 3AB hexadecimal no to Decimal 2 marks
- b) Explain Logic gates with symbol and truth tables.
- c) Convert:
1. 36 decimal to BCD 2 marks
 2. 623 decimal to excess -3 2 marks
 3. 1010 binary to Gray 1 mark
- d) Explain unsigned and signed binary numbers.
- e) Write a short note on Alphanumeric codes.
- f) Perform subtraction (9 - 5) using 4-digit binary number using 2's Complement.

Q.2 Attempt Any THREE from following: 15 M

- a) Explain and Prove De-Morgan's Theorems.
- b) Explain Universality of NAND gate.
- c) Prove that $A+AB+A'B=A+B$
- d) List any five Boolean theorems and explain.
- e) Simplify $y=\sum m(0,2,5,7,8,10,13,15)$ using K map reduction technique.
- f) Simplify $Y=\sum m(0,4,6,7)$ using K map and draw circuit.

Q.3 Attempt Any THREE from following: 15 M

- a) Design a combinational circuit for three inputs where output is high when maximum input is high.
- b) Design combinational logic circuit for Binary to Gray Code converter.
- c) Design and Implement Half adder using basic gates.
- d) Design a one bit comparator.
- e) What is Multiplexer? Explain Types of Multiplexers.
- f) Design and implement full adder using 8:1 Mux.

Q.4 Attempt Any THREE from following:

15 M

- a) Write a short note on a clocked SR Flip flop.
- b) Explain D flip flop and advantages of D flip flop.
- c) Explain T Flip Flop. What are its applications?
- d) Convert S-R Flip Flop to D Flip Flop.
- e) Design a 3-bit ripple counter.
- f) What is a register? Explain different types of registers.

Q.5 Attempt Any THREE from following:

15 M

- a) Explain the role of ALU as a part of the computer system.
- b) Write a short note on Booth's Multiplication Algorithm.
- c) Explain Carry look ahead generator.
- d) Explain Binary Multiplication Algorithm.
- e) Draw and explain the flowchart of the binary division algorithm.
- f) Using Booth's algorithm multiply the followings:
 - a. Multiplicand = +15
 - b. Multiplier = -6

GES/SBVC/BVL

SEMESTER END/EXAM/ November2022

DATE: 22/11/2022

TIME: 7.15 am TO 9.45am

PROGRAM: F.Y.B.Sc. (IT) –SEM I

MARKS: 75

COURSE: Programming Principles with C.

Q.1 Attempt Any THREE from following: 15 M

- a) What is flowchart? Explain the symbols used in it.
- b) What is an algorithm? Explain characteristics of it.
- c) Explain the rules for constructing variable names.
- d) Explain the structure of the C program.
- e) Explain the data types available in C.
- f) What is the keyword? Explain it with an example.

Q.2 Attempt Any THREE from following: 15 M

- a) What is a loop? Explain the types of loops in C.
- b) Distinguish between break and continue.
- c) Explain goto statements in C.
- d) Explain unary operators in C.
- e) Explain if-else statements in C.
- f) What are switch case statements? Explain it with an example .

Q.3 Attempt Any THREE from following: 15 M

- a) What is a function? Explain types of it.
- b) Explain the use of void in function declaration.
- c) Write a short note on Recursion.
- d) Explain header files in C with example.
- e) Explain the difference between declaration and definition of function.
- f) Explain storage class with one programming example.

P.T.O.

Q.4 Attempt Any THREE from following:

15 M

- a) Distinguish between call by value and call by reference.
- b) What is Array? Explain types of it.
- c) What is String? Explain any FIVE string functions.
- d) What is a pointer? Explain the operators used in it.
- e) Write a program to demonstrate pointers.
- f) Explain how to declare and initialize an array with examples.

Q.5 Attempt Any THREE from following:

15 M

- a) Distinguish between Array and Structure.
- b) Explain the need for structure.
- c) What is structure? Explain it with an example.
- d) What are the different file operations? Explain.
- e) Explain the advantages of union in C.
- f) Distinguish between structure and union.
