QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – SECOND YEAR, 2022 OF 20 BATCH, B.S (CS)

SUBJECT: DISCRETE STRUCTURE

Dated: 26.05.2022 Maximum Marks: 60 Time Allowed: 3 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. 01 (a) Discuss the difference between permutations and Combinations. *06*

(b) A debating team consists of three boys and two girls. Find the n number of ways they can sit in a row if the boys and girls are each to sit together. *06*

Q. 02 (a) State Fundamental Theorem of arithmetic. *02*

(b) find the greatest common divisor (GCD) of *2740* and *1760* by Euclidean algorithm. *06*

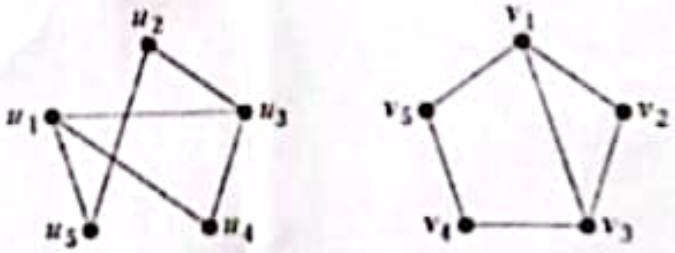
(c) Define the following *04*

i. Prime and Composite Numbers
ii. Relatively Prime Numbers

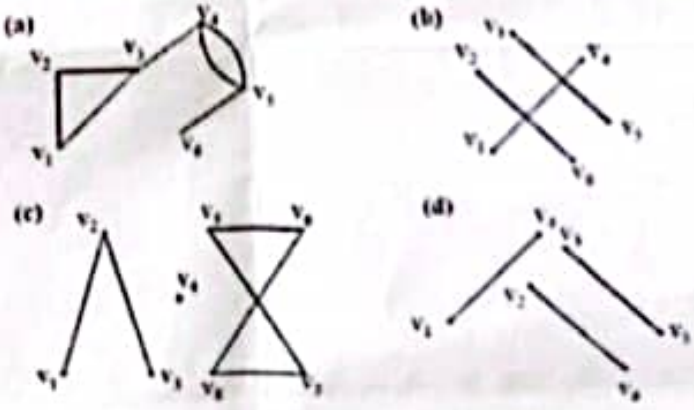
Q. 03 (a) Define the following terms with examples (graphically). *05*

a. Loop
b. Adjacent vertex
c. Incident edge
d. Isolated vertex and parallel edges
e. Bipartite Graph

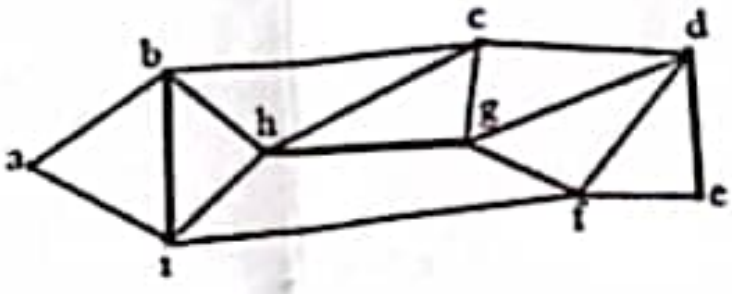
(b) Write all the conditions for defining isomorphism of two graphs, and check whether given graphs are isomorphic or not. *07*



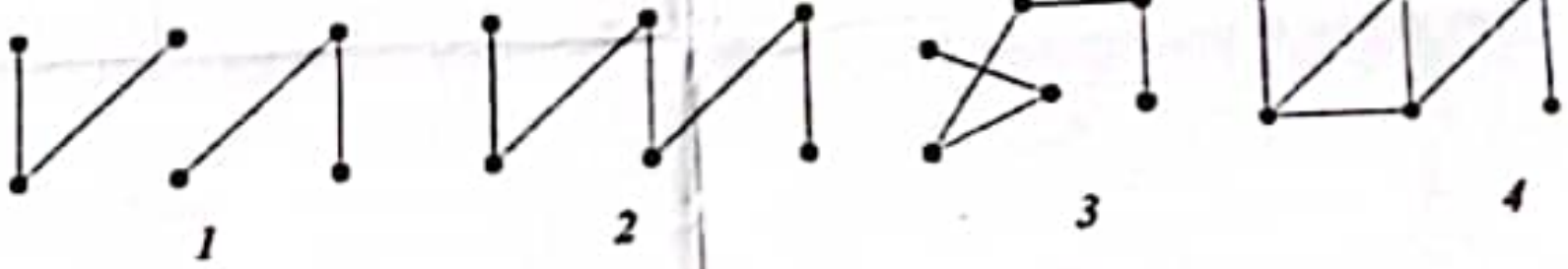
Q. 04 (a) Define connectedness. Which of the following graphs have connectedness. *04*



(b) Define (a) Euler Circuits (b) Euler Path, (c) Hamilton Circuit, (d) Hamilton path and check whether given graph is a, b, c, d, or none of these. 08



Q. 05 (a) Which of these graphs are trees?



(b) Discuss, can there be two different simple paths between the vertices of a tree?

(c) Draw a rooted tree with at least 6 vertices, where the degree of each vertex does not exceed 3. Identify the root, the parent of each vertex, the children of each vertex, the internal vertices, and the leaves.

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FIRST SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – SECOND YEAR 2022 OF 20-BATCH B.S (CS)

SUBJECT: COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE

Dated: 30.05.2022 Maximum Marks: 60 Time Allowed: 3 Hours.

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. 01 (a) What are the uses of Flags register? Discuss individual flags of the Flags register. 06

(b) What is instruction execution cycle? Explain instruction execution cycle for each of the following instructions. 06

```
MOV DL, 5
ADD DL, '0'
MOV result, DL
```

Q. 02 (a) What is flow control? Describe different instructions of branching with code examples. 06

(b) Write code to compare the value of registers BH and BL and print one which has greater value. 06

Q. 03 (a) Write code to print even numbers from 1 to 9 using a loop. 06

(b) Write assembly program to define an array of numbers and calculate sum of its elements. 06

Q. 04 (a) Discuss the shift instructions in assembly. Write code to multiply a number by 4 using shift instruction. 06

(b) Discuss stack and its uses in assembly language. Also discuss its operations. 06

Q. 05 (a) Briefly discuss different addressing modes of 8086 microprocessor with code examples. 06

(b) Write code for procedure that allocates two local variables and calculates their sum. 06

The End

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – SECOND YEAR, 2022 OF 20 BATCH, B.S (CS)

SUBJECT: PROFESSIONAL PRACTICES

Dated: 02.06.2022 Maximum Marks: 60 Time Allowed: 3 Hours

NOTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. 01 (a) How can intellectual property created by inventors be protected? Discuss intellectual property benefits for a business?

(b) Discuss any two factors that are considered for fair use doctrine against copyright law.

Q. 02 Explain common safety issues in the workplace. What tips would you follow to ensure personal safety at work?

Q. 03 (a) Write your own thoughts about the misuse of online social networking in our society.

(b) Identity theft is an ever increasing crime that involve the use of computers. Which measures/responses should be taken to lessen this kind of crime?

Q. 04 How can software engineering be practiced professionally? Explain your answer in context to IEEE and ACM code of conduct for software engineers.

Q. 05 Write short notes on any three of the following:

1) Hacking
2) Plagiarism
3) Software Piracy
4) Computers and Privacy threats
5) Employees Relationship law

Good Luck

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

FINAL SEMESTER REGULAR EXAMINATION OF FIRST SEMESTER – SECOND YEAR, 2022 OF 20-BATCH, B.S (CS)

SUBJECT: **DATA STRUCTURES & ALGORITHMS**

ated: **23.05.2022** Maximum Marks: **60** Time Allowed: **3** Hours.

OTE: ATTEMPT ALL QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

. 01 (a) Describe a few advantages of Hashing over linear and binary search with respect to time complexity and space complexity.

(b) Store the following set of keys in an array of size 10. Resolve the collision (if any) using the linear probing method.
26, 30, 45,23,25,43,74

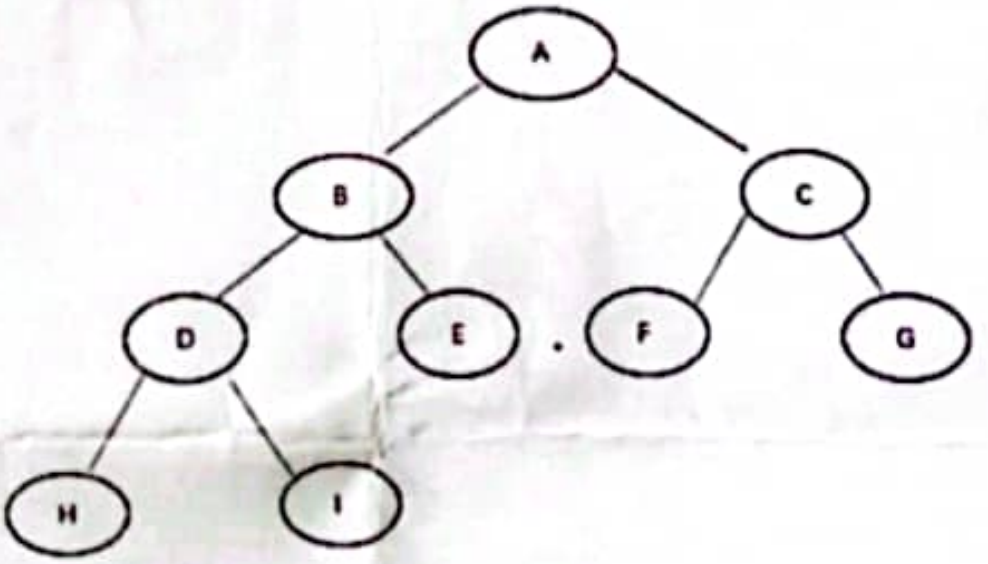
. 02 (a) Store the following set of keys in an array of size 10. Resolve the collision (if any) using the Chaining method.
16,12,25,39,6,122,5,68,75

(b) Store the following set of keys in an array of size 10. Resolve the collision (if any) using the Quadratic probing method.
23,43,13,27

. 03 (a) Sort the following set of elements by using bubble sort. Write down all the steps for sorting this data.
8,5,7,3,2

(b) What is divide and conquer strategy for sorting and data? Sort the following list of elements using quick sort and select last element of the list as a pivot.
50,70,60,90,40,80,10,20,30

. 04 (a) Write down the pre-order, In-order and post order traversal of the following tree.



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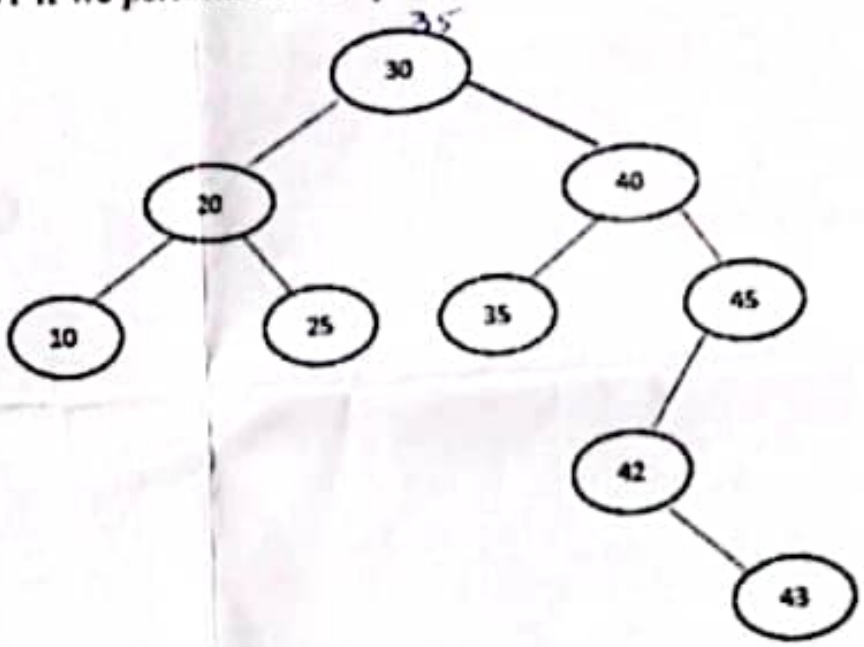
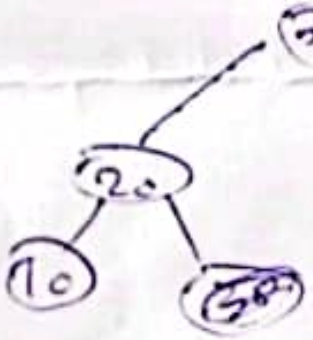
(b) What is BST? What are its properties?
Redraw the following BST if we perform delete operations, i-e-

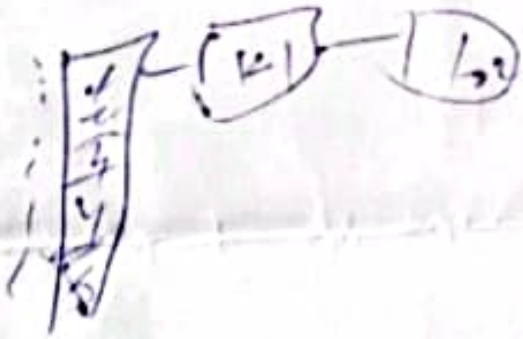
Delete= 42

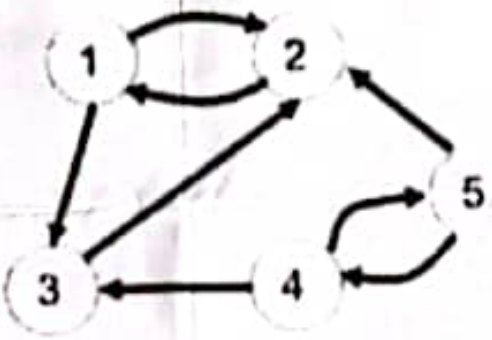
Delete= 30



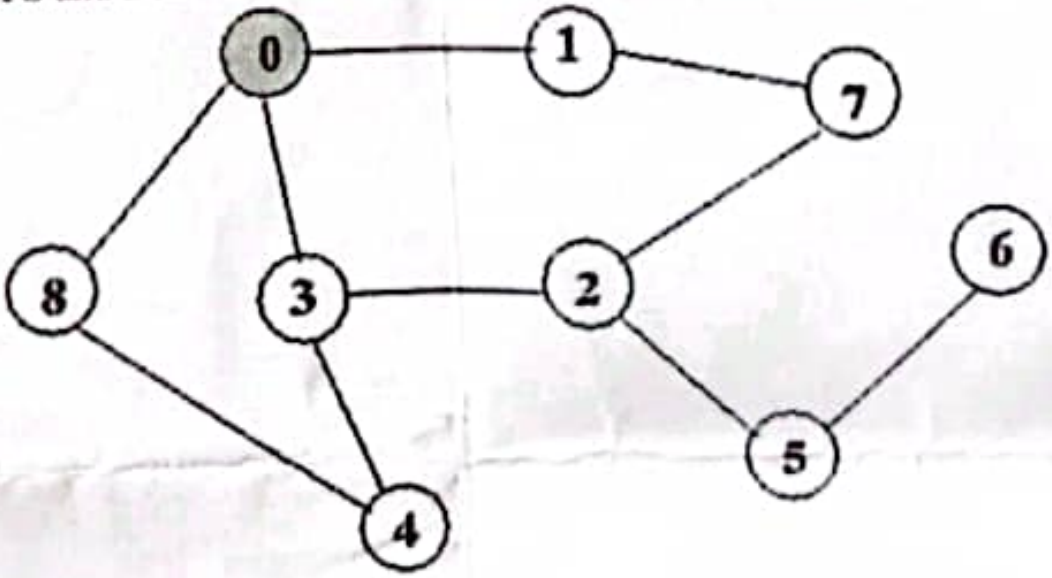


Q. 05 (a) What is graph? Write one example for, directed, undirected and weighted graphs. How can we represent following Graph using Linked list and Arrays.





(b) Perform BFS and DFS traversal of the graph using Queue and Stack.



The End

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – SECOND YEAR (3RD SEMESTER), 20-BATCH, B.S (CS)

SUBJECT: DISCRETE STRUCTURES

Dated: 15.02.2022 Maximum Marks: 20 Time Allowed: 1 Hour.

NOTE: ATTEMPT ANY TWO (02) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. 01 (a) Use the Truth table to prove that the following are logically equivalent. **03**

i. $\sim (p \vee (\sim p \wedge q)) \equiv \sim p \wedge \sim q$

ii. $p \vee q \equiv q \vee p$

(b) Suppose that $P(x)$ be the statement "$x = x^2$" If the domain consists of the integers, what are these truth values? **04**

i. $P(0)$

ii. $P(-1)$

iii. $\exists x P(x)$

iv. $\forall x P(x)$

(c) Let p and q be the propositions **03**

p : I bought a lottery ticket this week.

q : I won the million dollar jackpot.

Express each of these propositions as an English sentence.

i. $p \vee q$

ii. $\sim p \rightarrow \sim q$

iii. $\sim p \vee (p \wedge q)$

Q. 02 (a) i. There are four major auto routes from Boston to Detroit and six from Detroit to Los Angeles. How many major auto routes are there from Boston to Los Angeles via Detroit? **05**

ii. How many license plates can be made using either three English letters followed by three digits, or four English letters followed by two digits?

(b) Suppose that p and q are statements so that $p \rightarrow q$ is false. Find the truth values of each of the following: **03**

i. $\sim p \rightarrow q$

ii. $p \vee q$

iii. $q \leftrightarrow p$

(c) Define Pigeonhole principal with Example. **02**

Q. 03 (a) Distinguish between **06**

1. Exclusive OR and Inclusive OR
2. Tautology and contradiction
3. Floor Function and ceiling Function

(b) Prove the following using Venn Diagrams: **02**

(i) $(A \cap B)^c = A^c \cup B^c$

(ii) $A - B = A \cap B^c$

Construct circuits from inverters, AND gates, and OR gates to produce these outputs. **02**

a) $\bar{x} + y$

b) $\overline{(\bar{x} + z)(y + \bar{z})}$

Good Luck

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHAH

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – SECOND YEAR (3RD SEMESTER) 2022, 20-BATCH, B.S (CS)

SUBJECT: FINANCIAL ACCOUNTING & MANAGEMENT

Dated: 18.02.2022 Maximum Marks: 20 Time Allowed: 01 Hour.

NOTE: ATTEMPT ANY TWO (02) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. 01 (a) What is Financial Accounting? Define the scope of Financial Accounting. *05*

(b) Describe Barter Trading and Barter Transactions. *05*

Q. 02 A LLC performed following transactions for year 2021. *10*
Required to journalize the transactions, Ledger, trial balance and descriptive analysis.

Jan 1st, Mr. Ahmed commenced his business with Rs. 400,000 cash and building worth Rs. 300,000.
Jan 2nd, Sold merchandise to Ali on credit for Rs. 70,000.
Jan 3rd, Deposit cash into Bank Rs. 50,000.
Jan 4th, Paid Rent of the building Rs. 15,000.
Jan 5th, Commission received of Rs. 2,000.
Jan 6th, Bank charges made by the Bank of Rs.1,000.

Q. 03 (a) What is accounting equation? Explain the elements of accounting equation. *05*

(b) Prepare **accounting equation** and **balance sheet** from the transactions. *05*

1. Mr. ABC started his business with cash Rs. 350,000.
2. Purchased furniture on cash Rs. 50,000.
3. Sold merchandise at cost Rs. 10,500 on cash
4. Paid telephone bill to PTCL Rs. 3,500.
5. Sold building for cash Rs. 325,000 whose cost price was Rs. 200,000.
6. Received cheque of Rs. 25,000 from XYZ company.

Good Luck

QUAID-E-AWAM UNIVERSITY OF ENGINEERING, SCIENCE & TECHNOLOGY, NAWABSHA

MID-SEMESTER EXAMINATION OF FIRST SEMESTER – SECOND YEAR (3RD SEMESTER) 2022, 20 BATCH, B.S (CS)

SUBJECT: **DATA STRUCTURES & ALGORITHMS**

Dated: **14.02.2022** Maximum Marks: **20** Time Allowed: **01 Ho**

NOTE: ATTEMPT ANY TWO (02) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

Q. 01 (a) What are the main differences between the Linked List and Array? Describe what is Node in linked list and how can you define linked list node in C++?

(b) What is time complexity of Linear, Binary and interpolation searching algorithms? Justify

Q. 02 (a) Define Stack and its applications? Write pseudocodes for the PUSH and POP operation.

(b) Convert following infix expressions into postfix

A * (B + C) * D

(A + B) * (C + D)

(AX + (B * C))

Q. 03 (a) Explain First in First out data structure in detail? How can we delete a node from it? Define its operations and write their pseudocodes?

(b) A= { 10, 12, 13, 16, 18, 19, 20, 21, 22, 23, 24, 33, 35, 42, 47 }

Apply Binary and interpolation searching methods over given data for:

X=33

X=13

X=19

Good Luck