



# MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Name of Examination: B.Tech Mid Semester Examination 2022			
Branch:	CSE	Semester:	6 <sup>th</sup>
Subject Name:	COMPILER DESIGN	Subject Code:	
Time:	2 hours	Full Marks: 20	Roll NO. 1 2 3 3 0

## Instruction:

ANIKET KR. SINGH

- There are four questions in this Paper. Question No. 1 is compulsory.
- Students have to attempt either part (a) or (b) from remaining questions. The marks are indicated in the right-hand margin.
- Draw the necessary neat and clear diagram wherever applicable.

- Q. 1 (a)** Consider the following augmented grammar with  $\{\#, @, <, >, a, b, c\}$  as the set of terminals  
 $S' \rightarrow S$   
 $S \rightarrow S \# c' \mid S@ \mid <S> \mid a \mid b \mid c$   
 Let  $I_0 = \text{CLOSURE}(\{S' \rightarrow .S\})$  the number of items in the set  $\text{GOTO}(I_0, <)$  \_\_\_\_\_ 1
- (b)** YACC builds up \_\_\_\_\_ parsing table. 1
- (c)** Consider the following grammar 1  
 $S \rightarrow aSB \mid d$   
 $B \rightarrow b$   
 The number of reduction steps taken by a bottom-up parser while accepting the string "aadb" is \_\_\_\_\_
- (d)** Define left recursion with example. 1
- (e)** In some programming languages, an identifier is permitted to be a letter followed by any number of letter or digits. If  $L$  and  $D$  denote the set of letters and digits respectively, then regular expression for the identifier is \_\_\_\_\_ 1
- Q. 2 (a)** Explain different phases of compiler in details. 5
- OR
- (b)** Write down the algorithm to find the FIRST and FOLLOW set of a context free grammar. 5
- Q. 3 (a)** Differentiate between Top-down and Bottom-up parser. 5
- OR
- (b)** Compute FIRST and FOLLOW of each Non-terminals (S, A, B, C) of the following grammar 5  
 $S \rightarrow ACB \mid CbB \mid Ba$   
 $A \rightarrow da \mid BC$   
 $B \rightarrow g \mid \epsilon$   
 $C \rightarrow h \mid \epsilon$
- Q. 4 (a)** Consider the following grammar 5  
 $S \rightarrow Aa \mid bBa \mid Ba \mid bAc$   
 $A \rightarrow c$   
 $B \rightarrow d$   
 Find LR(1) collection of items for the above grammar and construct LALR parsing table.
- OR
- (b)** Consider the following grammar 5  
 $S \rightarrow (L) \mid a$   
 $L \rightarrow L, S \mid S$   
 Find LR (0) collection of items for the above grammar and construct LR (0) parsing Table.



# MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Name of Examination: B.Tech Mid Semester Examination 2022			
Branch:	CSE	Semester:	VI
Subject Name:	Computer Network	Subject Code:	
Time:	2 hours	Full Marks:	20

19330/ANIKET KR. SINGH

Q1. Attempt all questions (short answer question) (1x5=5)

- (a) Bridge
- (b) Hamming code
- (c) Firewall
- (d) DHCP
- (e) FTP

Q2-Q4 Attempt all question. (5x3=15)

Q2. (a) Draw the OSI network architecture and explain the functionalities of each layer in details.

OR

(b) Compare TCP/IP with OSI Layers

Q3. (a) What is hamming and parity check code. Suppose you want to send a 7 bit ASCII code to a receiver then explain how in this case error is detected and corrected.

OR

(b) Explain Go-Back-N Automatic Repeat Request Protocol with example.

Q4. (a). Explain addressing of Internet protocol version 4 (IPv4). Explain how you build a three different network of Class C private IP with nodes of 52, 129 and 258. Clearly indicate range of IP with subnet. Also indicate first and last IP.

OR

(b). Leaky Bucket and Token Bucket Algorithm

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# MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Name of Examination: B.Tech Mid Semester Examination 2022				
Branch:	CSE	Semester:	6 <sup>th</sup>	
Subject Name:	Cryptography and Network Security	Subject Code:		
Time:	2 hours	Full Marks: 20	Roll NO.	19330

## Instruction:

ANURAG KUMAR SINGH

- There are four questions in this Paper. Question No. 1 is compulsory.
- Students have to attempt either part (a) or (b) from remaining questions. The marks are indicated in the right-hand margin.
- Draw the necessary neat and clean diagram wherever applicable.

- Q. 1
- Explain Non-Repudiation. 1
  - Define hash Function with example. 1
  - Elaborate the term block cipher. 1
  - Define cryptanalysts. 1
  - What do you mean by Euler theorem? 1
- Q. 2
- Describe Diffie-hellman key exchange algorithm and generate secret key. 5
- OR
- Explain OSI security architecture 5
- Q. 3
- Elaborate play fair technique with suitable example 5
- OR
- Describe digital signature with suitable example *diagram* 5
- Q. 4
- Describe data encryption standard. 5
- OR
- Using RSA-algorithm find private and public key for two prime numbers 17 and 23 5

Total nos. of printed pages: 2

Roll No: 

1	9	3	3	0
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 ANIKET KUMAR SINGH



# MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI

Sixth Semester

Session 2021-22

Mid Semester Exam

B. Tech. 6<sup>th</sup> Semester, Computer Science & Engineering

Graph Theory (Code - 105604)

Time: 2 Hrs.

Maximum Marks 20

## Section A

Q1. Attempt all questions:

(1x5 = 5 Marks)

- Define a pendant vertex. How many minimum number of pendant vertices for a tree (having two or more vertices) ?
- A simple graph is having 100 vertices. What will be the maximum number of edges in the graph ?
- Define Isomorphic graph and its three important properties.
- Differentiate between open and closed walk. Define Euler graph, Euler line, and Hamiltonian Circuit.
- A connected planar graph with 10 vertices and 15 edges has how many regions ?

## Section B

Q2-Q4 Attempt all questions [either (i) or (ii)]:

(5x3 = 15 Marks)

- Q2 i) Define Fundamental Circuit and Fundamental Cut-Set. What is the maximum degree of any vertex in a simple graph with  $n$  vertices. [5]

OR

- ii) What is the total number of labeled trees with 5 vertices ? What is the rank and nullity of Kuratowski's second graph ? [5]

- Q3 i) Define Edge Connectivity and Vertex Connectivity of a graph. What is a separable graph ? [5]

OR

- ii) Explain Max Flow-Min Cut Theorem. When two graphs are said to be Homeomorphic Graph ? [5]





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**MOTIHARI COLLEGE OF ENGINEERING, MOTIHARI**

Name of Examination: B. Tech. Mid Semester Examination 2022			
Branch :	CSE	Semester :	6 <sup>th</sup>
Subject :	Machine Learning	Subject Code :	PCC-CS 602
Duration of Exam :	2 Hours	Full Marks :	20

**Instructions :**

- (a) There are four questions in this Paper.
- (b) Q1 is compulsory.
- (c) Students have to attempt either (A) or (B) from remaining questions.
- (d) The marks are indicated in the right-hand margin.

1. (a) Write down difference of machine learning and traditional programming.
- (b) I am the marketing consultant of a leading e-commerce website. I have been given a task of making a system that recommends products to users based on their activity on Facebook. I realize that user-interests could be highly variable. Hence I decide to
- i. First, cluster the users into communities of like-minded people and
  - ii. Second, train separate models for each community to predict which product category (e.g. electronic gadgets, cosmetics, etc.) would be the most relevant to that community.
- The first task is a/an ..... learning problem while the second is a/an ..... learning problem.
- (c) We have seen methods like Ridge and lasso to reduce variance among the co-efficients. We can use these methods to do feature selection also. Which one of them is more appropriate?
- (d) Discuss the necessity of dimensionality reduction in machine learning.
- (e) Logistic regression is regression or classification technique. Justify your answer.
- {1 × 5}
2. (A) Explain the concept of Overfitting and Underfitting model with suitable diagrams. And identify the suitable learning method in each case and explain it.
- (a) Grouping people in a social network
  - (b) Training a robotic arm

Or

(B) What are the different methods for measuring classifier performance? your objective is to predict whether a pet is a dog or a cat, based on some physical and behavioral attributes. If you have a test data-set that contains 30 dogs and 20 cats, the confusion matrix might resemble the following illustration. Based on confusion matrix table 1, calculate the

- (a) Precision
- (b) Recall
- (c) Accuracy

	Dog	Cat
Dog	24	6
Cat	2	18

Table 1: confusion matrix

{2+3}