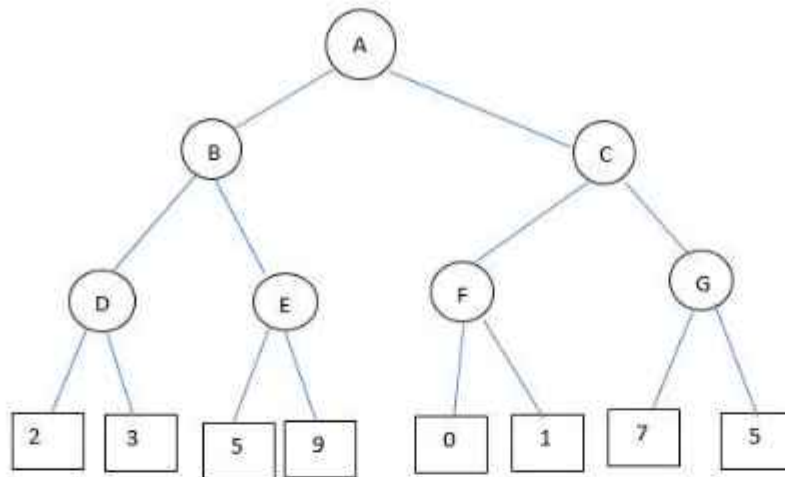


(3 Hours)

[Total Marks: 80]

- Note:** i) Question no. 1 is compulsory
 ii) Attempt any three from remaining
 iii) Assume necessary data

- 1 Solve any four of the following:
- | | |
|--|----|
| (a) Define term AI. List down all components of AI Program. | 5 |
| (b) Explain Hill Climbing algorithm with an example. | 5 |
| (c) Give PEAS descriptors for Vacuum cleaner | 5 |
| (d) Convert following into predicate form. | 5 |
| 1. All vehicles have wheels.
2. Some -one speaks some language in class.
3. Everybody loves somebody sometimes
4. All software engineer develops software.
5. Virat is software engineer | |
| (e) Explain utility based agent architecture with diagram. | 5 |
| 2 (a) Describe different types of environments of AI agents | 10 |
| (b) Explain A* search algorithm with suitable example. | 10 |
| 3 (a) Explain different Language models of Natural Language Processing | 10 |
| (b) What do you understand by $\alpha - \beta$ pruning? Apply alpha beta pruning on following graph | 10 |



- 4 (a) The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy of America, has some missiles, and all of its missiles were sold to it by Colonel West, who is American. Prove that Col. West is a criminal! 10
- (b) Explain Partial-order planning with suitable example. 10
- 5 (a) Enumerate Classical “Water jug Problem”. Describe the state space for this problem and also give the solution. 10
- (b) What is planning in AI? Discuss some of the major approaches used in planning 10
- 6 Write short notes on any Two of following:
- (a) Reinforcement Learning 10
- (b) Wumpus world Environment 10
- (c) Genetic Algorithms, 10

Duration: 3 hours

[Max Marks:80]

- N.B. : (1) Question No 1 is Compulsory.
 (2) Attempt any three questions out of the remaining five.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it clearly.

- 1 **Attempt any FOUR** [20]
 - a Describe different attacks in system security. 5
 - b Find gcd of 270 and 192 using the Euclidean algorithm. 5
 - c List the benefits of MAC over message digest. compare HMAC and CMAC. 5
 - d What is the purpose of S-boxes in DES? Explain the avalanche effect. 5
 - e Explain buffer overflow attack. 5
- 2 a Explain man in middle attack on Diffie Hellman. Explain how to overcome the same. [10]

b Explain AES algorithm. Discuss the parameters which make AES better than DES. [10]
- 3 a What is DDOS Attack and how it is launched? [10]

b How is security achieved in Transport and Tunnel modes of IPSEC? Explain the role of AH and ESP. [10]
- 4 a Encrypt and decrypt the message "ENEMY ATTACKS TONIGHT" with a keyed columnar transposition cipher with encryption key 25134 and decryption key 31452. [10]

b Use the Play fair cipher with the key "CRYPTOGRAPHY" to encrypt the message "INSPIRE HUMAN" [10]
- 5 a In the RSA system the public key (E,N) of user A is defined as (7,33). Implement RSA digital signature algorithm to find the private keys of user A. User A wishes to send the message 'C' to user B . Examine the message signing and verification process using RSA digital signature algorithm. [10]

b Explain different types of firewalls. [10]
- 6 a Differentiate between DES & AES algorithms with respect to various operations. [10]

b Draw and describe X.509 digital Certificate format. [10]

Time: 3 Hours

Marks:80

Instructions to Candidates

1. Question Number 1 is Compulsory, solve any 3 from Remaining Questions
2. Please Specify your answers with neat sketch wherever Necessary
3. Assume any suitable Data and Mention the same in your answer.

- Q1. a) Explain Function of Each unit of GPRS Architecture in detail. Draw a neat sketch for the same. 10
- b) Explain in detail, How Agent Registration Takes Place? 05
- c) Why the size of the cells is kept smaller in Cellular network? Explain. 05
- Q2. a) Explain A3, A5 and A8 algorithm in detail 10
- b) Describe on Wireless Security in reference to WEP, WPA, Wireless LAN Threats 10
- Q3 a) what is Tunnelling and Encapsulation? List Various Encapsulation Schemes in detail 10
- b) What happens when a Mobile Node shifts from one region to another Region? Explain various Handover Mechanisms in GSM. 10
- Q4 a) Draw the neat sketch of the GSM system? Explain each unit of GSM in detail 10
- b) Explain in detail Mobile Terminated and Mobile Originated Call. 10
- Q5 a) Explain the problems such as Hidden Station, Exposed Station, Near Terminal and Far Terminal with Possible solutions for the same. 10
- b) What are various Day to Day services that are enhanced with the existence of Mobile Communication? Discuss at least 2 such services in detail 10
- Q6 a) Write a Short Note on the following (Any 2) 10
- 1) Bluetooth 2)IP Mobility 3)UMTS 4) Snooping TCP
- b) Explain IP Packet Delivery to and From Mobile Node with neat sketch 10

(3 Hours)

Total Marks: 80

N.B: (1) Question No. 1 is compulsory.

(2) Attempt any three questions out of the remaining five questions.

(3) Make suitable assumptions wherever necessary.

- Q.1.** A. With a neat diagram, explain the sequence of system programs involved from writing source code to executing a program. 5
- B. Explain the process of loading and linking with a neat diagram. 5
- C. Write the structure of a simple macro definition and a corresponding macro call with suitable example. 5
- D. What are tokens, lexemes, and patterns in lexical analysis? Give examples.. 5
- Q.2.** A. Consider the following Assembly Program: - 10
- ```

START 100
READ N
MOVER BREG, '=1'
MOVEM BREG, TERM
A: MULT BREG, TERM
LTORG
MOVER CREG, '=2'
MOVEM BREG, '=5'
LTORG
N DS 1
TERM DS 1
END

```
- Generate Pass-1 and Pass-2 and show the content of Database table involved in it.
- B. What are the different types of intermediate code representations in compilers? Explain with examples. 10
- Q.3.** A. Explain Macro calls within the Macros with appropriate example? 10
- B. Design a Predictive Parser for the given grammar. Mention all the steps. 10
- ```

E → TQ
T → FR
Q → +TQ | -TQ | E
R → *FR | /FR | E
F → (E) | id
    
```
- Q.4.** A. List and describe the data structures used in the design of a two-pass macro processor with suitable example. 10
- B. Explain the operator precedence parser with a suitable example. 10

- Q.5. A. Define Code Optimization. What are the different types of code optimization techniques used in compilers? Provide an example of each. 10
- B. Explain the role of a code generator in a compiler. What are the issues to be considered in the design of a code generator? 10
- Q.6. A. Discuss the concept of "Relocation" in loaders. Explain the various methods of handling relocation during the loading process with examples. 10
- B. Explain the phases of compiler with suitable example. 10
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