

TE sem VI Computer R-19 Cscheme

Duration: 3hrs

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]
- Give examples of replay attacks. List three general approaches for dealing with replay attacks.
 - Compare and contrast keyed and keyless transposition ciphers.
 - Write short note on packet sniffing attack.
 - Explain transposition cipher with example.
 - What are computer viruses and worms? Write any four key differences between them.
- 2 a Find the shared secret key in a Diffie-Hellman scheme with a common prime 71 [10]
 and primitive root 7. Given the private keys of Alice and Bob are 5 and 12 respectively.
- b Explain AES. Compare and contrast AES vs DES. [10]
- 3 a What are different types of firewalls? How a firewall is different from an IDS. [10]
- b Explain layer wise TCP/IP Vulnerability. [10]
- 4 a Why are digital certificates and signatures required? What is the role of digital signature in digital certificates? Explain any one digital signature algorithm. [10]
- b How does PGP achieve confidentiality and authentication in emails? [10]
- 5 a Explain how you would use the MD5 hashing algorithm to verify the integrity of [10]
 the received message. Show all the steps of the algorithm with the help of a diagram.
- b Explain Kerberos. Why is it called an SSO? [10]
- 6 a Enlist the various functions of the different protocols of SSL. Illustrate the [10]
 connection establishment between client and server in SSL handshake protocol in detail.
- b What is Digital Signature? Explain RSA as a Digital Signature Scheme. [10]



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 (3) Figures to the right indicate full marks.
 (4) Make suitable assumptions wherever necessary.

- Q.1.** A. Explain the two-layered model of system software. Justify the need for machine-dependent and machine-independent system programs. 5
 B. Construct operator precedence Parser for the grammar: 5
 $E \rightarrow E + E \mid E * E \mid a.$
 Parse the string "a+a*a" using the same parser.
 C. Define Relocation and Linking. Why are they crucial functions of a linking loader? 5
 D. Define Ambiguous Grammar. How is ambiguity a problem in the design of a parser? 5
- Q.2.** A. With reference to the LR parsing family, differentiate between SLR (1), CLR (1), and LALR (1) parsers based on the size of the parsing table and the power of the grammar they can handle. 10
 B. Construct Three address code for the following program 10
- ```

i = 1;
x = 0;
while (i <= n)
{
 x = x + 1;
 i = i + 1;
}

```
- Q.3.** A. Explain the various data structures used in the Two-Pass Assembler design, specifically focusing on the Opcode Table, Symbol Table, and Literal Table. 10  
 B. Explain the various features of a Macro facility, such as nested macro calls and conditional macro expansion, with suitable examples. 10
- Q.4.** A. Explain the working of a Single-pass macro processor with neat flowchart. 10  
 B. What are the different ways of representing Intermediate code? Explain with suitable example. 10
- Q.5.** A. Explain any five code optimization techniques in compiler designing with suitable example 10  
 B. Explain design issues in code generation in detail. 10
- Q.6.** A. Differentiate between Machine-Dependent and Machine-Independent code optimization techniques. Give two distinct examples for each category. 10  
 B. Explain advanced macro facilities with suitable examples. 10

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TE - VI - Comp Engg -R-19 QP: 100934118

Time: 3 hours

Max. Marks: 80

**Instructions:**

- 1) Attempt any **Four** questions.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable additional data, if necessary and clearly state it.

- Q.1** Solve any **FOUR**.
- |     |                                                            |   |
|-----|------------------------------------------------------------|---|
| (a) | Discuss all the layers of IOTWF Standardized Architecture. | 5 |
| (b) | Define IoT. List out the different IOT Challenges.         | 5 |
| (c) | Explain Arduino with diagram.                              | 5 |
| (d) | What is smart object?                                      | 5 |
| (e) | Describe Zigbee protocol stack using IEEE 802.15.4         | 5 |
- Q.2**
- |     |                                                                                         |    |
|-----|-----------------------------------------------------------------------------------------|----|
| (a) | Explain the concept and hierarchy in Edge computing, Fog computing and Cloud computing. | 10 |
| (b) | Briefly explain Adapting SCADA for IP.                                                  | 10 |
- Q.3**
- |     |                                                                                                       |    |
|-----|-------------------------------------------------------------------------------------------------------|----|
| (a) | Write short note on- 1) Air pollution monitoring system using IoT<br>2)IoT applications in Smart city | 10 |
| (b) | Describe data vs network analytics for an IoT network.                                                | 10 |
- Q.4**
- |     |                                                                                                       |    |
|-----|-------------------------------------------------------------------------------------------------------|----|
| (a) | What are the basic components of IOT system? Explain the types of Actuators used in IoT applications. | 10 |
| (b) | Explain enabling IoT technologies in detail.                                                          | 10 |
- Q.5**
- |     |                                                                                |    |
|-----|--------------------------------------------------------------------------------|----|
| (a) | Describe various health & lifestyle domain specific IOT.                       | 10 |
| (b) | Explain in detail Gateways and Backhaul Sublayer in Core IoT Functional Stack. | 10 |
- Q.6**
- |     |                                                                       |    |
|-----|-----------------------------------------------------------------------|----|
| (a) | Discuss Generic Web based protocols.                                  | 10 |
| (b) | What are IOT software platform? Explain any 4 IOT software platforms. | 10 |



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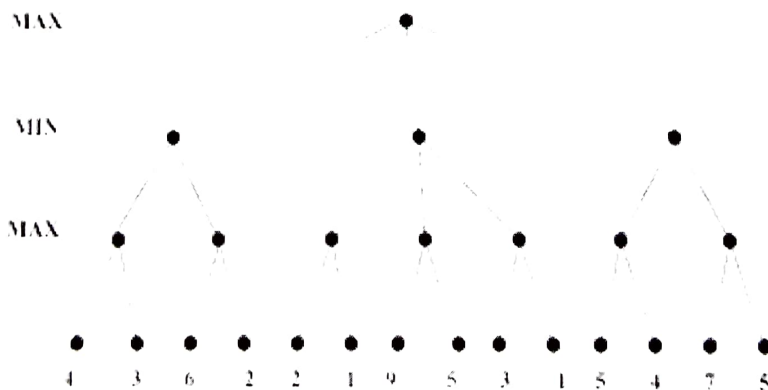
QP: 10093227

Time: 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) Differentiate between Model-Based Agents and Goal-Based Agents. 5
  - (b) Compare A\* search with Greedy Best-First Search 5
  - (c) Give the PEAS and State-Space description for an Interactive English Tutor. 5
  - (d) Give the types of Quantifiers. Translate the following sentences into First-Order Predicate Logic (FOPL) using quantifiers. 5
    - i) Every student who studies hard passes the exam.
    - ii) Some doctors are researchers.
    - iii) All humans are mortal.
    - iv) There exists a country where everyone loves cricket.
  - (e) Explain various methods of knowledge representation. 5
- 2 (a) Discuss the various properties of task environments in detail. Illustrate with an example of an Autonomous Delivery Drone. 10
- (b) Apply alpha beta pruning tree on following graph 10



- 3 (a) Illustrate forward-chaining algorithm with suitable example. 10
- (b) Explain the Simulated Annealing Algorithm. Compare it with Hill Climbing. Show with an example how annealing helps escape local maxima 10
- 4 (a) Explain the working of Unification and Resolution in FOPL. Prove by resolution: 10  
'If Anil eats peanuts and Harry eats everything that Anil eats, then Harry eats peanuts.'
- (b) Explain the STRIPS representation for planning. Give an example problem and show its STRIPS formulation. 10
- 5 (a) Explain Hierarchical Planning with a suitable example. How is it different from Partial-Order Planning?. 10
- (b) Define Belief Network. Describe the steps of constructing belief network with an example. 10
- 6 Write short notes on any Two of following:
- (a) Explain three modern AI applications in Robotics 10
- (b) Explain the role of Genetic Algorithms in optimization 10
- (c) Wumpus world Environment 10

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QP :- 10096006

Duration: 3hrs

[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 How we can resolve the Hidden Station and Exposed Station Problems? Explain in short. 5
- b What are various Handover Mechanisms describe in brief. 5
- c What are various Differences between Infrastructure Network and Ad-hoc Networks? 5
- d Write a brief Note on Frequency Hopping Spread Spectrum. 5
- e List Various Wireless LAN Threats. Give description in short for each threat. 5
- 2 a Explain GPRS System Architecture in detail. [10]
- b Explain Various Multiplexing Schemes that are beneficial in Communication. [10]
- 3 a Explain GSM Architecture in Details. Describe all interfaces of GSM System. [10]
- b Write a detailed comparison on Various Generations of Telecommunication. [10]
- 4 a What is significance of A3 A5 and A8 Algorithm. Explain in detail with neat sketch. [10]
- b Explain Tunneling and Encapsulation in detail. Describe all encapsulation schemes in brief. [10]
- 5 a Explain the following Terms in brief: [10]  
 i) Cellular Network ii) Snooping TCP.
- b Explain Mac management in IEEE 802.11. [10]
- 6 a Explain IP Packet Delivery to and from Mobile Node? [10]
- b What is Blue-tooth? Explain Bluetooth Architecture with neat Sketch. [10]

