(3 Hours) [Total Marks: 80]

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

1	(a)	Explain the Learning Agent with suitable block diagram.	5
	(b)	Give difference between Informed Search and Uninformed search Algorithms.	5
	(c)	Give PEAS and state space description for "Automobile Driver Agent"	5
	(d)	Explain different quantifiers with example.	5
2	(a)	Explain various properties of task environment with suitable examples	10
	(b)	What is Game Playing Algorithm? Draw a game tree for Tic-Tac-Toe problem.	10
3	(a)	Illustrate forward-chaining and backward-chaining algorithm with suitable example.	10
	(b)	Explain Hill Climbing Algorithm and problems that occurs in hill climbing algorithm?	10
4	(a)	What do you mean by Resolution? Also discuss the steps in Resolution.	10
	(b)	Consider problem of changing a flat tire. The goal is to have a good spare tire properly mounted on to the car's axle, where the initial state has a flat tire on the axle and a good spare tire in the trunk. Give the ADL description for the problem and also discuss the solution	10
5	(a)	Explain Partial-order planning with suitable example.	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 different applications of AI in Healthcare, Retail and Banking.	10
	(b)	Alpha Beta Pruning	10
	(c)	Wumpus world Environment	10

Paper / Subject Code: [illegible] / Cryptography & System Security

Duration: 3Hours [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 Explain Euclidean Algorithm.

b Explain RC4 stream cipher.

c Differentiate between SHA-1 and MD5.

d Explain worms and viruses.

e Discuss DSA as a digital signature algorithm.

2 a Explain Diffie Hellman key agreement algorithm. Also discuss the possible attacks on it. Consider the example where A and B decide to use the Diffie Hellman algorithm to share a key. They choose p=23 and g=5 as the public parameters. Their secret keys are 6 and 15 respectively. Compute the secret key that they share. [10]

b Explain Advanced Encryption Standards (AES) in detail. [10]

3 a Explain cryptographic hash functions with properties of secure hash function. [10]

b What is ICMP flood attack? Explain in detail. [10]

4 a Explain Public Key Distribution in detail. [10]

b Encrypt the string "The key is hidden under the door" with Play fair cipher using the keyword "domestic". [10]

5 a What are the different components of IDS? List and explain different approaches of IDS. [10]

b Explain Needham-Schroeder authentication protocol. [10]

6 a Write a short note on: [10]

1. Packet Sniffing.
2. ARP spoofing.

b Discuss various attacks on Digital signatures. [10]

T.E. | Sem VI | Computer | May 2024

22/05/2024

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.

Q1. Attempt any FOUR Questions 20

a) Explain the concept of frequency reuse with clustering.
b) Compare LTE and LTE advanced.
c) What is Hidden and Exposed station problem?
d) What are the roles of EIR and HLR entities in a GSM network?
e) Discuss about the mobile services and data services in GSM.

Q2 a) What do you mean by Self Organizing Networks. Explain the architecture of SON. 10

Q2 b) What is a need of Micro Mobility? Explain Cellular IP in detail. 10

Q3 a) What are the different Handover mechanism in GSM? Explain each handover mechanism in brief. 10

Q3 b) Explain the protocol architecture of IEEE 802.11 with diagram. 10

Q4 a) Explain the GPRS architecture, explain each block in detail. 10

Q4 b) Explain snooping TCP and mobile TCP with their merits and demerits. 10

Q5 a) What is spread spectrum? Why is it used? Explain any one of the spread spectrum techniques. 10

Q5 b) Explain Mobile Terminated Call and Mobile Originated Call. 10

Q6 a) Explain the mechanism for IP packet delivery using mobile IP. 10

Q6 b) Discuss in detail about Wi-Fi security protocol. 10

****

ICOE/Lib/T.E/Sem VI/Comp/MC/22/05/2024

T.E. | Comp. | Sem. VI | C-Scheme | May 2024

Paper / Subject Code: 89281 / System Programming & Compiler Construction

Date: 15/05/24

(3hours) **Total Marks: 80**

N.B: **(1) Question No. 1 is compulsory.**
(2) Attempt any three questions out of remaining five questions.
(3) Make suitable assumptions wherever necessary.

Q.1. a) Differentiate between System software & Application software. [05]

b) What is Left recursion? Check if the following grammar is left recursive, and take necessary action if it exists: [05]

$$S \rightarrow SS+ \mid SS* \mid a$$

c) Discuss the forward reference problem in assembler with suitable example. [05]

d) Explain different functions of loader in detail. [05]

Q.2. a) Explain any five code optimization in compiler designing with suitable example. [10]

b) Explain with the help of flow chart the working of two pass assembler along with databases used. [10]

Q.3. a) Explain Design of Direct Linking Loader. [10]

b) Construct LL(1) parsing table for the following grammar: [10]

$S \rightarrow aBDh$
$B \rightarrow cC$
$C \rightarrow bC \mid \varepsilon$
$D \rightarrow EF$
$E \rightarrow g \mid \varepsilon$
$F \rightarrow f \mid \varepsilon$

Q.4. a) Generate 3-address code for the following C program and construct flow graph with the help of basic blocks : (assume 4 memory locations for integer): [10]

```
min=a[0];
for (i=1;i<n;i++)
  if(a[i]>max)
    max=a[i];
flag=1;
```

b) With reference to MACRO, explain the following tables with suitable example: [10]
i) MNT ii) MDT iii) ALA

Q.5. a) Explain design issues in code generation in detail. [10]

b) Explain Phases of compiler with following example [10]

$$a = a * b - 5 * 3 / c$$

Q.6. Write short note on: [20]
a) Three address code representation
b) YACC
c) Parameterized Macros
d) Syntax directed translation

****

ICOE/Lib/T.E/CompP/Sem VI/C-Scheme/SPCC/15/05/2024

ICOE/Lib/T.E/comp/Sem-VI/ I07/ 29/05/2024

Paper / Subject Code: 89285 / Internet of Things (DLOC)

T.E | Comp | Sem-VI | May-2024

29-05-2024

Time: 3 Hours **Max. Marks: 80**

Instructions:

1) Attempt any **Four question out of six** questions.
2) All question carries equal marks.
3) Illustrate your answers with neat sketches wherever necessary.
4) Figures to the right indicate full marks.
5) Assume suitable additional data, if necessary and clearly state it.
6) All sub-questions of the same question should be grouped together.

Q.1	**(a)**	What is IoT? Compare with suitable criterion between Operational Technology (OT) and Information Technology (IT).	**10**
	(b)	With suitable examples, explain the types of sensors used in IoT systems.	**10**
Q.2	**(a)**	Explain the Smart Things: architectural classification considering Layer 1 Things-Sensors and Actuators Layer.	**10**
	(b)	Give the Categories of IoT application protocols and their transport methods. Describe the factors should be considered when selecting a transport layer for an IoT application layer protocol.	**10**
Q.3	**(a)**	Discuss the application of IoT in Cities.	**10**
	(b)	Compare with suitable factors Microsoft Azure IoT and Google Cloud IoT used as IoT Software platforms.	**10**
Q.4	**(a)**	Give the function of each layer of a seven-layer IoT architectural reference model published by IoTWF architectural committee.	**10**
	(b)	Explain the Enabling IoT Technologies.	**10**
Q.5	**(a)**	Explain Gateways and Backhaul Sublayer considering Layer 2: Communications Network Layer in IoT.	**10**
	(b)	Give the key components of a SCADA system. Describe CoAP message fields.	**10**
Q.6	**(a)**	Describe the application of IoT in Environment.	**10**
	(b)	Compare with suitable factors Particle Photon with ESP32 used for IoT application development.	**10**