Librarian, AIKTC

AIKTC/KRRC/SoET/ACKN/QUES/2022-23/ **Date:** 25/01/23

School: SoET-REV. C-Scheme **Branch:** COMP. ENGG. **SEM:** VI

To,
Exam Controller,
AIKTC, New Panvel.

Dear Sir/Madam,

Received with thanks the following **Semester/Unit Test-I/Unit Test-II (Reg./ATKT)** question papers from your exam cell:

Sr. No.	Subject Name	Subject Code	Format		No. of Copies
			SC	HC	
1	System Programming & Compiler Construction	CSC601		✓	
2	Cryptography & System Security	CSC62		✓	
3	Mobile Computing	CSC603		✓	
4	Artificial Intelligence	CSC604		✓	
5	Department Level Optional Course -2 Internet of Things			✓	

Note: SC – Softcopy, HC - Hardcopy

(Shaheen Ansari)

Co - Sem VI - CBGS - KT

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

Q.1.	A.	Differentiate between Application Software and System Software.	5
	B.	What are the functions of a Loader? Enlist the loader schemes.	5
	C.	Explain Macro and Macro Expansion with example.	5
	D.	Compare Bottom-Up and Top-Down Parser.	5
Q.2.	A.	Explain with flowchart design of two pass assembler.	10

	B.	Construct Three address code for the following program
		For(i=0;i<10;i++)
		{
		If (i<5)
		a=b+c*3;
		else
		x=y+z;
		}
			10

Q.3.	A.	Explain different features of macros with suitable example.	10
	B.	Design LL(1) parsing table for the given grammar: $S \rightarrow Ad$ $A \rightarrow aB \mid BC$ $B \rightarrow b$ $C \rightarrow e \mid \varepsilon$ Also state that whether the given grammar is LL(1) or not.	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 different issues in code generation phase of compiler.	10
	B.	Construct DAG for the following expression **x= m+p/q – t+ p/q *y**	10
Q.6.	A.	Explain Direct Linking Loader in Detail.	10
	B.	Explain the different phases of a compiler with suitable example.	10

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3°pm Sem-VI-CBGS-R-KT CO-R-19 9/12/22

(3 Hours) [Total 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 with examples keyed and keyless transposition ciphers.

b Explain the different modes of block ciphers.

c Differentiate between SHA-1 and MD5

d What is Buffer overflow attack?

e Explain ARP spoofing.

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 AES algorithm. Highlight the difference between AES and DES. [10]

3 a Explain various types of firewalls. [10]

b Discuss various attacks on digital signatures and the methods by which they can be overcome. [10]

4 a Elaborate the sign and verification process of RSA as a digital signature scheme. [10]

b Write short notes on [10]

1. Packet sniffing
2. SQL injection

5 a State the rules for finding Euler's phi function. Calculate [10]
a. $\varphi(10)$
b. $\varphi(49)$
c. $\varphi(343)$

b Explain Kerberos as an authentication service. [10]

6 a Enlist the various functions of the different protocols of SSL. Explain the phases of handshake protocol. [10]

b How does ESP header guarantee confidentiality and integrity of packet payload? What is an authentication header (AH)? How does it protect against replay attack? [10]

Co - Sem - VI - CBG - KT

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	Explain different types of Antenna used in mobile communication.	**5**
	b	What is co-channel interference?	**5**
	c	What is reverse tunneling?	**5**
	d	Describe use of Cellular IP.	**5**
	e	Compare various Telecommunication Generations	**5**
2	a	Explain protocol architecture of WLAN and its different types.	**[10]**
	b	What is the use of different interfaces used in the global system for mobile communication (GSM) with appropriate diagram?	**[10]**
3	a	What are different security algorithms used in GSM?	**[10]**
	b	How is packet delivery achieved to and from mobile nodes?	**[10]**
4	a	Explain Wireless LAN threats.	**[10]**
	b	What is the responsibility of MAC management in IEEE 802.11?	**[10]**
5	a	Explain selective retransmission process at TCP.	**[10]**
	b	Explain self-organizing networks (SON) for heterogeneous Networks.	**[10]**
6	a	Explain agent registration process in mobile communication.	**[10]**
	b	What is micro mobility and its approaches?	**[10]**

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Sem-VI-CBCS-KT

Time: (3 Hours) Max Marks: 80

NOTE: - Q1 is compulsory
Solve any three from remaining.

Q1. Solve any **four** from following. [20]

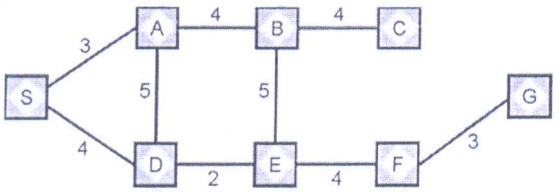
a. Compare the importance of Partial order planning over Total order planning.
b. What data is used to evaluate award and punishment of robot navigation?
c. Explain the categorization of Intelligent System.
d. How AI will help in the Robotics application.
e. Generate the parse tree for a sentence "The *cat ate the fish*".
f. What do you mean by state space representation? Explain with example the necessity of it

Q2. a. What actions would you take to prove "Some who are intelligent can't read" using prepositional logic [10]

1. Whoever can read is literate.
2. Dolphins are not literate.
3. Some dolphins are intelligent.

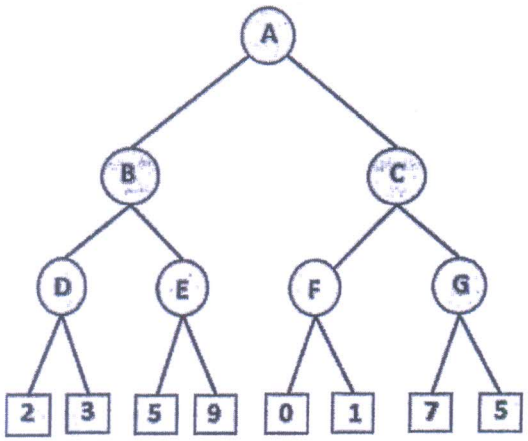
b. Solve the Air cargo transport problem using Planning. It involves loading and unloading cargo onto and off of planes and flying it from place. Initial State is cargo 1 and plane 1 is at Mumbai airport, cargo 2 and plane 2 is at Delhi airport. Goal State is cargo 2 should be at Mumbai airport and cargo 1 should be at Delhi airport. [10]

Q3. a. Apply A* algorithm on the following graph. Heuristic values are
h(S) = 15, h(A) = 14, h(D) = 12, h(B) = 10, h(E) = 10, h(C) = 8 , h(F) = 10,
h(G) = 0. [10]
S is the start node and G is the goal node.



b. Explain the Depth Limit search and Depth first iterative deepening search. [10]

Q4. a. Apply the alpha beta pruning on following example by considering the root node a max. [10]



b. Explain PEAS descriptors also state PEAS description for online English tutor. [10]

Q5. a. Explain Problem formulation also give the initial state, goal test, successor function, and cost function for the following.
Choose the formulation that is precise enough to be implemented.
Problem statement: A 3 foot tall monkey is in a room where some bananas are suspended from the 8 foot tall ceiling. He would like to get bananas. The room contains two stackable, movable, climbable 3 foot high crates. [10]

b. Explain the concept of PAC learning [10]

Q6 .Write detailed note on following. **(Any two)** [20]

a. Hill Climbing Algorithm and it's Limitations.
b. Forward and Backward Chaining
c. Language models of Natural Language Processing

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Sem-VI - CBCS-19- E&T

(3 Hours) [Total Marks: 80]

Instructions:

1) Attempt any **Four question**.
2) All question carries equal marks.
3) Figures to the right indicate full marks.
4) Illustrate your answers with neat sketches wherever necessary.
5) Assume suitable additional data, if necessary and clearly state it.

Q.1 A) Discuss in details working of each layer in IOTWF Standardized Architecture. (10 Marks)

Q.1 B) Explain Arduino Uno board with its pins and parts in detail. (10 Marks)

Q.2 A) What are IOT software platform? Explain any five with examples. (10 Marks)

Q.2 B) State the factors which are helping to select right protocol for a particular IoT application? Compare between COAP and MQTT? (10 Marks)

Q.3 A) Give the classification of networks according to access technologies and distances considering in IoT based applications. (10 Marks)

Q.3 B) Describe Zigbee protocol stack using IEEE 802.15.4 (10 Marks)

Q.4 A) Explain Fog Computing and Edge computing with its advantages and disadvantages. State the difference between the Fog Computing and Edge computing. (10 Marks)

Q.4 B) What are gateways and backhaul sub layers? (10 Marks)

Q.5 A) Draw and explain neat diagram of Protocol Stack for Transporting Serial DNP3 SCADA over IP. Give meaning of a master/slave relationship in DNP3. (10 Marks)

Q.5 B) Write in detail about working of Sensors and Actuators. Differentiate between Sensors and actuators with neat diagram. Explain any five types of sensors and actuators with appropriate area of application where they are useful. (10 Marks)

Q.6 A) What is meaning of Smart object? Explain the characteristics of Smart object. Give the trends in smart objects. (10 Marks)

Q. 6 B) Write short note on – (10 Marks)

i) Health & lifestyle domain specific IOT.

ii) Data Analytics Versus Business Benefits