



AIKTC/KRRC/SoET/ACKN/QUES/2021-22/

Date: 02/08/2022School: SoET-REV. C-SchemeBranch: 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 IOA			✓	

Note: SC – Softcopy, HC - Hardcopy

(Shaheen Ansari)
Librarian, AIKTC

Time: 2hour 30 minutes Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Identify the correct statement with respect to inherited attributes?
Option A:	The attributes can take values from the parents and from the left siblings but not the right sibling
Option B:	The attributes can take values from the parents and from the right siblings but not the left sibling
Option C:	The attribute can take value either from its parent or from its siblings.
Option D:	The attribute can only take value from its siblings.
2.	Which of the following is the graphical representation that shows the basic blocks and their successor relationship?
Option A:	Hamiltonian graph
Option B:	Control graph
Option C:	Flow graph
Option D:	DAG
3.	Rearrange the Compilation Process in the correct order:- a. Linking b. Assembling c. Pre-Processing d. Compiling
Option A:	c→d→b→a
Option B:	c→d→a→b
Option C:	d→c→b→a
Option D:	c→b→d→a
4.	What will be the FOLLOW(A) for following grammar? S→AaAb S→BaBb A→ε B→ε
Option A:	Only a
Option B:	a, b
Option C:	Only b
Option D:	Only ε
5.	Which technique is applicable to optimize the given code? t=c*4 for (j=0 ; j< c*4; j++) {.....}
Option A:	Constant Propagation
Option B:	Copy Propagation
Option C:	Induction Variable Reduction
Option D:	Common Sub-expression Elimination
6.	Consider the code:- MACRO &TEST ABC &X, &Y, &Z &TEST A 1, &X A 2, &Y A 3, &Z

	MEND LOOP1 SPCC P1,P2,P3 What will be the value in MDTC and MNTC after processing macro definition?
Option A:	MDTC = 5, MNTC =1
Option B:	MDTC = 6, MNTC =2
Option C:	MDTC = 2, MNTC =6
Option D:	MDTC = 1, MNTC =5
7.	Consider the Assembly code and Identify the type of statement: START 300 Line -1 ADD AREG,A Line -2 A DC '4' -- -- END
Option A:	Line -1 is Imperative Statement and Line-2 is Assembler Directive
Option B:	Line -1 is Assembler Directive and Line-2 is Declaration Directive
Option C:	Line -1 is Imperative Statement and Line-2 is Declaration Statement
Option D:	Line -1 is Declaration Directive and Line-2 is Assembler Directive
8.	Which of the following grammar is appropriate for operator precedence grammar?
Option A:	S-> EF
Option B:	S-> E*F ε
Option C:	S-> E+F
Option D:	S-> +EF
9.	Consider the Assembly code and Identify the type of statement: START 100 Line-1 MOVER AREG, First Line-2 ADD AREG, Second Line-3 MOVEM AREG, Result Line-4 PRINT Result What will be the intermediate code and Current Location Counter for Line-2?
Option A:	LC = 101, Intermediate code : (IS,02) (RG,01) (S,1)
Option B:	LC = 101, Intermediate code : (IS,01) (RG,01) (S,1)
Option C:	LC = 102, Intermediate code : (IS,01) (RG,01) (S,1)
Option D:	LC = 102, Intermediate code : (IS,02) (RG,01) (S,1)
10.	In terms of relocating the loader, which of the following is used to overcome the problem of linking?
Option A:	Transfer Vector
Option B:	Relocation bits
Option C:	Transfer Array
Option D:	Program length

Q2.	
A	Solve any Two 5 marks each
i.	Write a short note on Peephole Optimization.
ii.	Differentiate between Application and System Software.
iii.	What are the functions of Loader?
B	Solve any One 10 marks each
i.	Explain the different phases of compiler with suitable example?
ii.	What are the different ways of representing Intermediate code? Explain with example

Q3	Solve any Two Questions out of Three 10 marks each
A	<p>Consider the following Assembly Program:- START 501 A DS 1 B DS 1 C DS 1 READ A READ B MOVER AREG, A ADD AREG, B MOVEM AREG, C PRINT C END</p> <p>Generate Pass-1 and Pass-2 and also show the content of Database table involved in it.</p>
B	Explain various Code Optimization techniques in detail.
C	<p>Test whether the given grammar is in LL(1) or not. Construct LL(1) Parsing Table. $S \rightarrow AB/gDa$ $A \rightarrow ab/c$ $B \rightarrow dC$ $C \rightarrow gC/g$ $D \rightarrow fD/g$ Where a,b,c,d,f,g are the terminals and S,A,B,C,D are the Non-Terminals</p>

Q4	
A	Solve any Two 5 marks each
i.	Draw a neat flowchart of pass-1 of two pass assembler design
ii.	What is relocation and linking concept in Loaders
iii.	Compare Pattern, Lexeme and token with example
B	Solve any One 10 marks each
i.	Draw a neat flowchart of two pass macro processor. Explain with the help of example
ii.	Explain the design of direct linking loader.

Time: 2 hour 30 minutes

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The principle of ensures that the sender of a message cannot later deny sending of the message
Option A:	Authentication
Option B:	Non repudiation
Option C:	Access control
Option D:	Integrity
2.	Rail Fence Technique is an example of
Option A:	Substitution
Option B:	Transposition
Option C:	product cipher
Option D:	Caesar cipher
3.	The number of symmetric keys needed for one to one communication between 8 people is
Option A:	256
Option B:	32
Option C:	28
Option D:	8
4.	For the Knapsack $\{1, 6, 8, 15, 24\}$, find the plain text code if the ciphertext is 39
Option A:	10010
Option B:	11101
Option C:	10101
Option D:	00111
5.	The man-in-the-middle attack can endanger the security of the Diffie-Hellman method if two parties are not
Option A:	Authenticated
Option B:	Joined
Option C:	Submit
Option D:	Separate
6.	What is honey pot attack?
Option A:	dummy device put into the network to attract attackers
Option B:	single line threat
Option C:	IP spoofing bypass
Option D:	recognition attack
7.	Which is not a component of Public key infrastructure (PKI)?
Option A:	Client
Option B:	CRL
Option C:	CA
Option D:	KDC

8.	The attack in which the attacker aims at exhausting the targeted server's resources.
Option A:	Phishing attack
Option B:	DoS attack
Option C:	Website scripting attack
Option D:	SQL injection attack
9.	Secure Hash Algorithm -1 (SHA-1) has a message digest of
Option A:	160 bits
Option B:	512 bits
Option C:	628 bits
Option D:	820 bits
10.	Which of the following is considered as the unsolicited commercial email?
Option A:	Virus
Option B:	Malware
Option C:	Spam
Option D:	Adware

Q2	
A	Solve any Two 5 marks each
i.	Explain the relationship between Security Services and Mechanisms in detail.
ii.	Explain ECB and CBC modes of block cipher.
iii.	Define non-repudiation and authentication. Show with example how it can be achieved.
B	Solve any One 10 marks each
i.	Elaborate the steps of key generation using the RSA algorithm. In RSA system the public key (E, N) of user A is defined as (7,187). Calculate $\Phi(N)$ and private key 'D'. What is the cipher text for M=10 using the public key.
ii.	Discuss DES with reference to following points 1. Block size and key size 2. Need of expansion permutation 3. Role of S-box 4. Weak keys and semi weak keys 5. Possible attacks on DES

Q3	
A	Solve any Two 5 marks each
i.	What are properties of hash function? Explain role of hash function in security.
ii.	Explain working of TGS in Kerberos.
iii.	List and explain various types of attacks on encrypted message.
B	Solve any One 10 marks each
i.	Why are digital certificates and signatures required? What is the role of digital signature in digital certificates? Explain any one digital signature algorithm.
ii.	What is the need for message authentication? List various techniques used for message authentication. Explain any one of them.

Q4.	
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A	Solve any Two	5 marks each
i.	Explain handshake protocol in SSL.	
ii.	Explain buffer overflow attack.	
iii.	List various Software Vulnerabilities. How vulnerabilities are exploited to launch an attack.	
B	Solve any One	10 marks each
i.	How does PGP achieve confidentiality and authentication in emails?	
ii.	How is security achieved in Transport and Tunnel modes of IPSEC? Explain the role of AH and ESP.	



IPcode: 15653 IR@AIKTC-KRRC

C-19
University of Mumbai
Examinations Summer 2022
(Revised Set May 2022)

24/05/2022
Comps: R19
Sub: MC

SEM VI CBCS

Time: 2 Hr 30 Mins

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	VoLTE Stands for
Option A:	Voice over Long Term Evolution
Option B:	Voice Over Local Telecommunication Equipment
Option C:	Video Over Long Term Evolution
Option D:	Volume Over Long Term Evolution
2.	UTRAN stands for
Option A:	Universal Transmission Radio Networks
Option B:	Universal Terrestrial Radio Access Network
Option C:	Unified Transmission Area Network
Option D:	Universal Time Radio Access Network
3.	Which of the following Stores the User Related Data That is also relevant to GSM Mobile Systems?
Option A:	VLR
Option B:	HMR
Option C:	GMR
Option D:	SIM
4.	Generic Routing Encapsulation allows the encapsulation of packet of One protocol suite into payload portion of a packet of another Protocol suite is nothing but
Option A:	GRE
Option B:	IP Tunneling
Option C:	Protocol Synchronization
Option D:	Minimal Encapsulation
5.	Two or more antennas can also be combined to Improve the reception by counteracting the negative effects of multi path propagation, these antennas are also termed as
Option A:	multi element antenna Array
Option B:	Smart Antenna
Option C:	Sectored antenna
Option D:	Isotropic Radiator
6.	What is an Access Point
Option A:	An entity that provides access to LLC layer
Option B:	An entity that provides access to MAC layer
Option C:	An entity that provides access to the Destination System
Option D:	An entity that provides access to Basic Service Set

7.	A Mobile Phone Uses _____ Type of Communication
Option A:	Full Duplex
Option B:	Half Duplex
Option C:	Both A and B
Option D:	None of the Above
8.	There is a need for certain _____ to avoid the frequency Overlapping in FDM.
Option A:	Guard Space
Option B:	Frequency Range
Option C:	Carrier
Option D:	Attenuator
9.	Which of the following is the disadvantage of having smaller cells in Cellular System
Option A:	Less Transmission Power
Option B:	Only Local Interface
Option C:	Need of Handover
Option D:	Frequency Re-use
10.	IN TCP/IP _____ is a congestion Control algorithm that makes it possible to quickly recover lost Data Packets
Option A:	Fast Retransmit and Fast Recovery
Option B:	Fast Retransmit
Option C:	Fast Recovery
Option D:	Slow Start

Q2,	Solve any Two	10 marks each
a)	Explain Bluetooth Protocol Stack in detail. Explain the terms PICONET and Scatter net in terms of Bluetooth.	
b)	Explain Various Hand over mechanisms in Details.	
c)	Write a Short Note on UTRAN and UMTS Network	

Q3	Solve any Two	10 marks each
a)	Explain IP Packet Delivery, What do you mean by Agent Discovery and Agent Advertisement in terms of Mobile N/w	
b)	Explain GSM Architecture in Detail.	
c)	Explain signal Propagation in detail with various effects such as shadowing, Reflection, Refraction, scatter, multipath propagation	

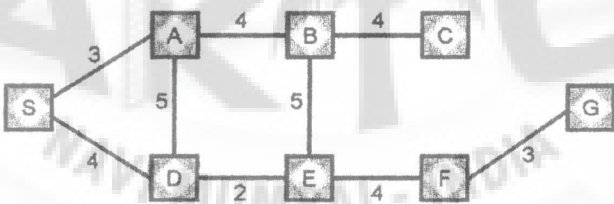
Q4	Solve any Two	10 marks each
a)	Write a brief description on Various Generations of Telecommunication, Describe various applications of mobile devices for Vehicles, Emergency situation, Business, Entertainment.	
b)	Write a Short Note on a) HAWAII b) HMIPv6	
c)	What are the various Wireless LAN Threats and How we can secure the wireless Networks	

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The computer program that simulates the thought process of humans is known as:
Option A:	Expert reason
Option B:	Personal information
Option C:	Expert system
Option D:	Human logic
2.	_____ is the heuristic function of greedy best-first search and _____ is heuristic function of A* Algorithmic search.
Option A:	$F(n) \neq h(n)$ and $f(n) = h(n) + g(n)$
Option B:	$F(n) = h(n)$ and $f(n) = h(n) + g(n)$
Option C:	$F(n) > h(n)$ and $f(n) = h(n) g(n)$
Option D:	$F(n) < h(n)$ and $f(n) = h(n) + g(n)$
3.	The search strategy that uses a problem specific knowledge is known as
Option A:	Heuristic Search
Option B:	Informed Search
Option C:	Best-first Search
Option D:	All of the above Search
4.	In which agent does the problem generator is present?
Option A:	Learning agent
Option B:	Simple-reflex agent
Option C:	Goal based agent
Option D:	Utility based agent

5.	_____ is the field that investigates the mechanics of human intelligence.
Option A:	Sociology
Option B:	Nurology
Option C:	Cognitive science
Option D:	Psychology
6.	What is present in empty plan?
Option A:	Start
Option B:	Finish
Option C:	Modest
Option D:	Both Start and Finish
7.	Which is the most straightforward approach for planning?
Option A:	Best first search
Option B:	Hill climbing search
Option C:	Depth first search
Option D:	State space search
8.	What are you predicating by the logic $\forall x : \exists y : \text{loyal_to}(x,y)$?
Option A:	Everyone to loyal to all
Option B:	Everyone is loyal to someone
Option C:	Everyone is not loyal to someone
Option D:	Everyone is loyal
9.	Which of the following is not a stage of knowledge engineering?
Option A:	Assemble the relevant knowledge
Option B:	Encode general knowledge about the domain.
Option C:	Identify the task.
Option D:	Fixing a problem.
10.	The father of AI is
Option A:	Alan Turing

Option B:	John McCarthy
Option C:	Russel Stuart
Option D:	Andrew Ng

Q2. (20 Marks)	Solve any Four out of Six 5 marks each
A	Explain WUMPUS world environment giving its PEAS description. Explain how percept sequence is generated.
B	Write a short note on conditional probability and its role in AI.
C	What are the limitations of Hill Climbing Search and how that can be overcome?
D	Explain the concept of Supervised Learning.
E	Convert the following statements into predicate logic 1. All kings are persons. 2. Every city in Maharashtra has temple. 3. An Apple a day keeps doctor away. 4. Anything anyone eats and is not killed by is food. 5. Square of 3 is 9.
F	Explain the steps involved in Natural Language Processing.

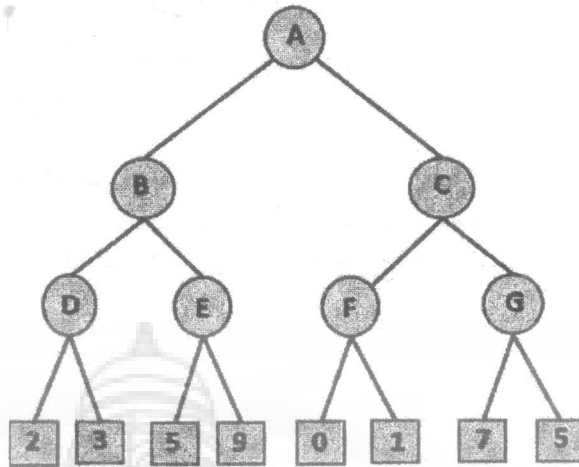
Q3. (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Consider the following facts: 1. Steve only likes easy courses. 2. Science courses are hard. 3. All the courses in the basket_weaving department are easy. 4. BK301 is a basket_weaving course. Find by resolution that "What course would steve like?"
B	List down all agent types. Explain each with block diagram.
C	Apply A* algorithm on the following graph. Heuristic values are $h(S) = 15$, $h(A) = 14$, $h(D) = 12$, $h(B) = 10$, $h(E) = 10$, $h(C) = 8$, $h(F) = 10$, $h(G) = 0$. S is the start node and G is the goal node. 

Q4. (20 Marks)	
A	Solve any Two 5 marks each
i.	Give types of parsing and generate the parse tree for a sentence "The cat ate the fish".
ii.	Explain Simulated Annealing with suitable example.
iii.	Differentiate between Informed search and uninformed search Algorithms.
B	Solve any One 10 marks each

What is planning? List types of planning and describe in detail Partial order planning.

ii.

Apply the alpha beta pruning on following example by considering the root node a max.



31/05/2022

Q.P. Code: 94000

Q1 (20 Marks)	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Identify which is not TRUE about IoT
Option A:	An IoT network is a collection of interconnected devices.
Option B:	IoT stands for Interconnection of Things.
Option C:	IoT technology uses sensors and actuators.
Option D:	IoT technology uses cloud storage to store data.
2.	The layers in IoT Reference Model by IoTWF occurs in the sequence -
Option A:	Physical devices- Data Accumulation- Application- Edge Computing
Option B:	Physical Devices- Data Accumulation- Edge Computing- Application
Option C:	Physical Devices- Edge Computing- Data Accumulation- Application
Option D:	Application - Physical Devices- Edge Computing- Data Accumulation
3.	The standardized architecture of M2M IoT does not achieve
Option A:	Decompose IoT problem to smaller part
Option B:	Identify different technologies at each layer and how they relate to one another
Option C:	Have a process of defining interfaces that leads to interoperability
Option D:	Define a tiered security model that does not enforce the transition points between levels.
4.	The following protocol is used to link all devices in IoT-
Option A:	UDP
Option B:	HTTP
Option C:	TCP/IP
Option D:	COAP
5.	MQTT stands for
Option A:	Message Queue Telemetry Transport
Option B:	Message Query Telemetry Transport
Option C:	Meta Query Telemetry Transport
Option D:	Multiple Query Telemetry Transport
6.	Following is NOT an IoT Board-
Option A:	Arduino Uno
Option B:	Beagle Bone Black
Option C:	Particle Photon
Option D:	Microsoft Azure
7.	Which of the following Access network sublayer works in least range
Option A:	HAN
Option B:	FAN
Option C:	PAN
Option D:	LAN