Reg.No.: | | | | | | | | | | | |

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 13008

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Fifth Semester
Computer Science and Technology
U19CT508 – ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	How do you define software agents?	2	K2	CO1
2.	Define argumentation	2	K1	CO1
3.	Define uncertainty. How it is solved by an agent?	2	K2	CO2
4.	List down the applications of Bayesian Network.	2	K2	CO2
5.	Define Naïve Bayes model.	2	K2	CO3
6.	For what kind of problems do you require parameter learning?	2	K4	CO3
7.	List the major steps in machine learning process.	2	K4	CO4
8.	What is the difference between feature selection and feature extraction?	2	K3	CO4
9.	Enumerate the advantages and disadvantages of robot.	2	K2	CO5
10.	List any two real life applications for NLP.	2	K1	CO5

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PART – B

Q.No.			Questions	Marks	KL	CO
11.	a)		Describe intelligent software agents in detail with their architecture.	13	K1	CO1
			(OR)			
	b)	i.	Explain trust and reputation models in multi agent systems.	10	K2	CO1
		ii.	Write short notes on Bargaining.	3	K2	
12.	a)	i.	Write short notes on Hidden Markov model.	7	K2	CO2
		ii.	Explain how the desirable Kalman filter is different from Wiener filter in estimation?	6	K2	
			(OR)			
	b)	i.	Explain the inference in temporal models.	5	K2	CO2
		ii.	Explain about the exact inference in Bayesian Networks.	8	K2	
13.	a)		Explain in detail about active and passive reinforcement learning.	13	K2	CO3
			(OR)			
	b)	i.	State and prove Bayes theorem.	6	K3	CO3
		ii.	Write short notes on Gaussian Mixture Models.	7	K3	
14.	a)		Explain in detail the process of machine learning with example.	13	K2	CO4
			(OR)			
	b)		Briefly explain different methods of data visualization.	13	K1	CO4
15.	a)		Briefly explain Natural Language Processing and its components.	13	K2	CO5
			(OR)			
	b)		Define Speech Recognition. Explain different types of speech recognition systems	13	K5	CO5

PART – C

Q.No.		Questions	Marks	KL	CO
16.	a)	What are the different applications of AI for agriculture in our country? Define a problem and explain how you will solve the same using methods studied in this course.	15	K6	CO5
		(OR)			
	b)	How would you build smart voice assistant? What may be the architecture behind it?	15	K5	CO5

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Question Paper Code: 13006

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Seventh Semester
Computer Science and Technology
U19CTE15 – BIG DATA TOOLS AND TECHNIQUES
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Write down some of the examples of big data analytics.	2	K2	CO1
2.	Spell out the disadvantages of Hadoop.	2	K2	CO1
3.	What is Yarn?	2	K1	CO2
4.	List the limitations of HDFS.	2	K2	CO2
5.	What is HiveQL?	2	K1	CO3
6.	Recall some of the common services provided by zookeeper.	2	K1	CO3
7.	What is Apache Oozie?	2	K1	CO4
8.	Tell about the use of Mongo DB.	2	K2	CO4
9.	Name the users of enterprise data science.	2	K2	CO5
10.	What are called heat maps?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	Why Big Data Analytics is important? Illustrate with example.	6	K1	CO1
		ii.	What are the essential components of a big data platform?	7	K2	

(OR)

	b)	i.	Outline the several key features of Hadoop that make it well-suited for big data processing?	8	K2	CO1
		ii.	Write short note on HDFS & Map Reduce.	5	K3	
12.	a)	i.	State the purpose of a Combiner Functions. How to use a combiner function in python Hadoop Streaming.	8	K1	CO2
		ii.	Explain the various nodes in Hadoop Cluster.	5	K3	
			(OR)			
	b)	i.	Draw the application workflow in Hadoop YARN. Explain the main components of YARN architecture.	9	K2	CO2
		ii.	How data integrity is handled in HDFS?	4	K3	
13.	a)	i.	Differentiate between pig & map reduce.	6	K1	CO3
		ii.	Why do we need zookeeper in Hadoop? How zookeeper in Hadoop works?	(3+4)	K2	
			(OR)			
	b)	i.	Draw the architecture of Hive and define each component.	8	K2	CO3
		ii.	Explain the data model of Zookeeper with suitable diagram.	5	K3	
14.	a)	i.	Illustrate the features of Apache Spark. Explain the core components along with the architectural diagram of apache spark.	(4+5)	K2	CO4
		ii.	Differentiate between RDBMS and MongoDB.	4	K3	
			(OR)			
	b)	i.	Describe the eco system of Apache Flink with a suitable diagram.	7	K1	CO4
		ii.	Write down the key features of NoSQL.	6	K2	
15.	a)	i.	List the benefits of enterprise data science.	5	K1	CO5
		ii.	Specify the various types of data visualizations offered by the programming language R.	8	K2	
			(OR)			
	b)	i.	State the importance of Data visualization in Big Data.	6	K3	CO5
		ii.	Explain various tools for Big Data visualization.	7	K2	

PART – C

Q.No.			Questions	Marks	KL	CO
16. a)	i.		What are the common Map Reduce Applications? What are the best practices for developing a map reduce applications?	(5+5)	K2	CO3
	ii.		Explain the workflow between Hive & Hadoop.	5	K3	CO4

(OR)

b)	i.		How insertion and selection are done in NoSql? Explain with example.	(3x2=6)	K2	CO4
	ii.		Suppose we want to get specific results on the "transport" database. Write down the codes for the following query in NoSql.	(3x3=9)	K5	CO5

a. To display the vehicles which have a speed greater than 100.

b. To display the vehicles which have a speed equal to 250.

c. To display the vehicles which have a speed lesser than 500 and brand as Benz.

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Question Paper Code: 13007

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS –NOV. / DEC. 2023
Fifth Semester

Computer Science and Technology

U19CTV35 – NATURAL LANGUAGE PROCESSING

(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What role does Regular Expression play in pattern matching?	2	K1	CO1
2.	What is the primary function of the Porter Stemmer?	2	K2	CO1
3.	How are Tagsets used in Part of Speech Tagging?	2	K4	CO2
4.	Define Back-off in the context of N-gram models.	2	K1	CO2
5.	What is the main difference between Top-Down and Earley Parsing techniques?	2	K4	CO3
6.	What is the role of Context-Free Grammars in English Syntax analysis?	2	K2	CO3
7.	What do Lexemes and Their Senses refer to in linguistic analysis?	2	K1	CO4
8.	What is the goal of Word Sense Disambiguation in linguistics?	2	K2	CO4
9.	What does "Discourse" refer to in linguistic analysis?	2	K4	CO5
10.	What is the main objective of Language Generation in conversational systems?	2	K1	CO5

PART – B

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	Write Regular Expression for the following: 1. To accept strings book or books 2. To accept color and color. 3. To accept any +ve integer with an optional decimal point	7.5	K5	CO1
		ii.	Identify the morphological type (Noun phrase, Verb Phrase, Adjective Phrase) of following sentence segments 1. Important to Bill 2. Looked up the tree	5.5	K6	CO1
			(OR)			
	b)		Explain derivational and inflectional morphology in details with suitable examples.	13	K1	CO1
12.	a)	i.	Explain different smoothing techniques to handle the data sparseness in n gram model.	6.5	K1	CO2
		ii.	Explain the process of Tagset Design and its importance in Part of Speech Tagging. What considerations are taken into account when designing tagsets for different languages?	6.5	K1	CO2
			(OR)			
	b)		Discuss various approach to perform Part of Speech tagging.	13	K1	CO2
13.	a)	i.	Explain the concept of Context-Free Rules and how they are utilized in linguistic analysis. How do trees play a role in representing the syntactic structure of sentences according to Context-Free Grammars?	6.5	K2	CO3
		ii.	With example, explain top-down parser and also discuss the disadvantage of probabilistic CFG.	6.5	K6	CO3
			(OR)			
	b)		Describe the role of Context-Free Rules and Trees in syntactic analysis. Provide a step-by-step example of constructing a parse tree for a simple English sentence.	13	K4	CO3
14.	a)	i.	Provide examples to illustrate the concept of Semantic Attachments and how they aid in uncovering the meaning of complex sentences.	6.5	K4	CO4
		ii.	Between the words eat and find which would you expect to be more effective in selection restriction-based sense disambiguation? Why?	6.5	K4	CO4
			(OR)			
	b)	i.	What are the elements associated with a First Order Predicate Calculus?	6.5	K4	CO4
		ii.	Explain the different levels of semantic analysis.	6.5	K2	CO4

| 15. | a) | i. | Elaborate on the importance of Coherence in discourse and how it ensures the logical flow of information within a text or conversation. | 6.5 | K2 | CO5 |
| | | ii. | Elaborate on the structure of Conversational Agents, highlighting the diverse components that play pivotal roles in their overall functionality. | 6.5 | K2 | CO5 |

(OR)

| | b) | Explain the notion of Discourse Structure and its relevance in organizing information in a text. Provide an example to illustrate how discourse structure can be represented. | 13 | K2 | CO5 |

PART – C

<div align="right">(1 x 15 = 15 Marks)</div>

Q.No.			Questions	Marks	KL	CO
16.	a)	i.	Perform parsing using simple top-down parsing for the sentence "The dogs cried" using the grammar given below: S->NP VP NP->ART N NP->ART ADJ N VP->V VP->V NP	7	K3	CO3
		ii.	Discuss the following: 1. Language as a rule-based system. 2. Stochastic Part-of-Speech tagging.	8	K2	CO3

(OR)

| | b) | Discuss the strengths and weaknesses of different approaches to Part of Speech Tagging, including Rule-Based, Stochastic, and Transformation-Based tagging. Provide examples to support your analysis. | 15 | K4 | CO5 |

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Question Paper Code: 13009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Fifth Semester
Computer Science and Technology
U19CTV21– CRYPTOGRAPHY AND NETWORK SECURITY
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	State the need for computer security.	2	K2	CO1
2.	Give an example in which system availability is the most important requirement.	2	K3	CO1
3.	State the Drawbacks of 3-DES.	2	K2	CO2
4.	Compare stream cipher with block cipher.	2	K2	CO2
5.	List the schemes for the distribution of public keys.	2	K1	CO3
6.	List out the possible attacks for RSA.	2	K1	CO3
7.	Differentiate between MAC and Hash function	2	K2	CO4
8.	State the properties of a digital signature.	2	K1	CO4
9.	List any two cyber security threats.	2	K1	CO5
10.	State the importance of Cyber Law.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Discuss the types of security threats and attacks that must be dealt with and give examples of the types of threats and attacks that apply to different categories of computer and network assets.	13	K2	CO1

(OR)

b)	i.	Summarize the functional requirements for computer security.	5	K2	CO1
	ii.	Describe the X.800 security architecture for OSI.	8		
12. a)	i.	Draw the general structure of DES and explain the encryption decryption process.	10	K2	CO2
	ii.	Mention the strengths and weakness of DES algorithm.	3		

(OR)

b)	i.	Explain the generation sub key and S Box from the given 32-bit key by Blowfish.	8	K3	CO2
	ii.	Explain how the encryption key is expanded to produce keys for the 10 rounds in AES.	5		

13. a)	Using RSA algorithm, Find n, d if p = 11, q = 3, e = 3. Show the steps in Encryption and Decryption of the message "HelloWorld".	13	K3	CO3

(OR)

b)	How to establish a shared secret between two parties using Diffie-Hellman key exchange algorithm? Explain.	13	K3	CO3
14. a)	Describe MD5 algorithm in detail. Compare its performance with SHA-1.	13	K3	CO4

(OR)

b)	Write and explain the Digital Signature Algorithm.	13	K2	CO4
15. a)	What are the services provided by PGP? Explain why E-mail compatibility function in PGP is needed. Name the cryptographic keys used in PGP.	13	K2	CO5

(OR)

b)	Explain in detail about critical security components and basics of malware.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Convert "MEET ME" using Hill cipher with the key matrix	15	K3	CO1

$$\begin{bmatrix} 6 & 24 & 1 \\ 13 & 16 & 10 \\ 20 & 17 & 15 \end{bmatrix}$$

Convert the cipher text back to plaintext.

(OR)

b)	As a crypt analyst suggest an algorithm which provides a strong integrity for the message and Justify it.	15	K4	CO4

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Question Paper Code: 7008

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Fifth Semester
Computer Science and Technology
U19EC528 – EMBEDDED SYSTEMS DESIGN
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Mention the challenges and design issues in embedded systems.	2	K2	CO1
2.	List the various methods available for developing the embedded firmware.	2	K1	CO1
3.	Highlight the features of LPC2148 microcontroller.	2	K1	CO2
4.	Write the significance of RESET Circuit.	2	K2	CO2
5.	Identify the role of watch dog timer.	2	K2	CO3
6.	Write short notes on the analog to digital and digital to analog converters supported in LPC2148 microcontroller.	2	K2	CO3
7.	How do you calculate the resistance value of a current limiting resistor when connecting LEDs to a microcontroller?	2	K2	CO4
8.	Obtain a scenario where a buzzer is commonly used in embedded systems.	2	K2	CO4
9.	Define Hard and Soft Real Time operating system.	2	K1	CO5
10.	Distinguish Preemptive or Non preemptive RTOS.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Discuss in detail how the hardware units are selected for a particular application in embedded system design.	13	K2	CO1

(OR)

	b)	i.	Differentiate CISC and RISC architectures.	7	K2	CO1
		ii.	Explain the fundamentals of the Von Neumann architecture and the Harvard architecture.	6		

12. a) Obtain the output of the following ARM instructions and explain.   13   K2   CO2

MOV R1, R3, LSL #2
MVN R2, R3, ASR #3
RSB R0, R1, #4
ADDEQ R0, R1, R2
ANDS R0, R1, R2
TEQ R1, R2
MLA R0, R1, R2, R3
SMULL R0, R1, R2,R3
BL Ahead
STR R1,[R2]
LDR R0, [R1], #4!
STR R0, [R1], #4
LDMIA R0!, {R1 − R3}

(OR)

b) i. Write an ALP for ARM processor to multiply 32-bit number by 8-bit number.   5   K3   CO2

ii. Write an ALP to find the largest number from the series stored in memory and store the result back in memory.   8

13. a) Explain the significance of GPIO (General Purpose Input / Output) pins in the LPC2148 microcontroller and provide an example of their application.   13   K2   CO3

(OR)

b) Explain the UART (Universal Asynchronous Receiver / Transmitter) operation on the LPC2148 microcontroller. What is its role in serial communication?   13   K2   CO3

14. a) Explain the concept of PWM (Pulse Width Modulation) in DC motor speed control. How does it work, and why is it useful?   13   K2   CO4

(OR)

b) Discuss the functionality of a keypad as an input device. How can a keypad matrix be decoded to read key presses?   13   K3   CO4

15. a) i. Explain the scheduler in which RTOS insert into the list and the ready task for sequential execution in a co-operative round robin model.   6   K2   CO5

ii. Explain the use of Semaphores for a Task or for the Critical Sections of a Task.   7

(OR)

				Marks	KL	CO

b)   i.   Explain message passing technique for inter process communication in detail.   6   K2   CO5

ii.   Explain the concept of Shared memory in task communication.   7

PART – C

<div align="right">(1 x 15 = 15 Marks)</div>

Q.No.	Questions	Marks	KL	CO
16. a) i.	Analyze the importance of embedded memory on chip. How it is useful in increasing the efficiency of the system.	8	K3	CO1
ii.	Explain the role of RTC in embedded system design, with examples.	7		

<div align="center">(OR)</div>

b)	With suitable diagrams and sample codes, Illustrate how a stepper motor can be interfaced with processor.	15	K3	CO4

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Question Paper Code: 2001

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Fifth Semester
Computer Science and Technology
U19MA509 – PROBABILITY, QUEUEING THEORY AND GAME HEORY
(Regulation 2019)

Time : Three Hours   Maximum : 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

❖ **Normal table vaules are permitted**

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	State the axioms of probability.	2	K1	CO1
2.	If P(A) = 0.35 P(B) = 0.73, P(A ∩ B) = 0.14, Find P($\overline{A} \cup \overline{B}$).	2	K2	CO1
3.	For the case of the thin copper wire, suppose that the number of flaws follows a Poisson distribution with a mean of 2.3 flaws per millimeter. Find the probability of exactly 2 flaws in 1 millimeter of wire.	2	K1	CO2
4.	Define exponential distribution.	2	K1	CO2
5.	What are the basic characteristics of a queueing system?	2	K1	CO3
6.	Customers arrive at a one-man barber shop according to Poisson process with a mean inter arrival time of 12 minute. Customers spend an average of 10 minutes in the barber's chair, what is the probability that more than 3 customers are in the system?	2	K1	CO3
7.	Define a network.	2	K1	CO4
8.	List the difference between PERT and CPM.	2	K1	CO4
9.	Outline the two principles of game theory.	2	K2	CO5
10.	Define saddle point.	2	K1	CO5

(5 x 16 = 80 Marks)

Q.No.			Questions	Marks	KL	CO

11.	a)	i.	A lot of 100 semiconductor chips contains 20 that are defective. Two are selected randomly, without replacement, from the lot.
			    a. What is the probability that the first one selected is defective?
			    b. What is the probability that the second one selected is defective given that the first one was defective?
			    c. What is the probability that both are defective?
				8	K3	CO1

		ii.	If A and B are independent events then prove that
			    a. $\bar{A}$ and $\bar{B}$ are independent
			    b. $\bar{A}$ and B are independent
				8	K3	CO1

			(OR)			

	b)	i.	In a test of a printed circuit board using a random test pattern, an array of 10 bits is equally likely to be 0 or 1. Assume the bits are independent.
			    a. What is the probability that all bits are 1s?
			    b. What is the probability that exactly five bits are 1s and five bits are 0s?
				8	K3	CO1

		ii.	In a bolt factory machines A, B, C manufacture respectively 25%, 35% and 40% of the total. Of their total output 5%, 4% and 2% are defective bolts. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machines A, B and C?	8	K3	CO1
12.	a)	i.	Each sample of water has a 10% chance of containing a particular organic pollutant. Assume that the samples are independent with regard to the presence of the pollutant. Find the probability that in the next 18 samples, exactly 2 contain the pollutant.	8	K2	CO2
		ii.	Find mgf, mean and variance of Binomial distribution.	8	K3	CO2
			(OR)			
	b)	i.	In a normal distribution, 31% of the items are under 45 and 8% are over 64. Find mean and variance.	8	K2	CO2
		ii.	Define uniform distribution and derive its mean and variance.	8	K4	CO2

13.	a)	i.	A T.V repairman finds that the time spent on his job has an exponential distribution with mean 30 minutes. If he repairs cars in the order in which they come, which follow Poisson arrival pattern with average rate of 10 per 8 hour day.
			    a. What is the repairman's expected idle time each day?
			    b. How any cars are ahead of an average car brought in?
				8	K3	CO3

		ii.	There are 3 typists in an office. Each typist can type an average of 6 letters per hour. If letters arrive for being typed at the rate of 15 letters per hor.
			    a. What fraction of the time all the typists will be busy?
			    b. What is the average number of letters waiting to be typed?
				8	K3	CO3

			(OR)			

b)	i.	Patients arrive at a clinic according to Poisson distribution t a rate of 30 patients per hour. The waiting room does not accommodate more than 14 patients. Examination time per patient is exponential with mean rate of 20 per hor. a. Find the effective arrival rate at the clinic b. What is the probability than an arriving patient will not wait?	8	K3	CO3
	ii.	A supermarket has two girls ringing up sales at the counters. If the service time for each customer is exponential with mean 4 minutes, and if the people arrive in a Poisson fashion at the rate of 10 per hour. a. What is the probability of having to wait for services? b. What is the expected percentage of idle time for each girl?	8	K3	CO3
14. a)	i.	Explain the rules of network construction. A project consists of series of activities / tasks labeled $A, B, ..., H, I$ with the following relationships ($w < x, y$ means X and y cannot start until w is completed ; $x, y < w$ means w cannot start until both x and y are completed) with this notation construct the network diagram having the following constraints $A < D, E$; $B, D < F$; $C < G$; $B, G < H$; $F, G < I$.	6	K5	CO4
	ii.	Find also minimum time of completion of the project, when the time (in days) of completion of each task as follows :	10	K3	CO4

Task	A	B	C	D	E	F	G	H	I
Time	23	8	20	16	24	18	19	4	10

(OR)

b)	A small project is composed of seven activities whose time estimates are listed in the table as follows:	16	K3	CO4

Activity		Estimated duration (in weeks)		
i	j	Optimistic	Most likely	Pessimistic
1	2	1	1	7
1	3	1	4	7
1	4	2	2	8
2	5	1	1	1
3	5	2	5	14
4	6	2	5	8
5	6	3	6	15

a. Draw the project work.
b. Find the expected duration and variance of each activity.

15. a) i. Explain two person Zero sum games.   6   K1   CO5

     ii. Consider the payoff matrix of Player A and solve it optimally by using graphical method.   10   K3   CO5

Player B

	1	2	3	4	5
Player A	3	0	6	-1	7
	-1	5	-2	2	1

(OR)

b) i. Find the optimal strategies of the player in the following games.   6   K2   CO5

Player B

		1	2	3
	1	25	20	35
Player A	2	50	45	55
	3	58	40	42

     ii. Construct the following payoff matrix with respect to the player A and solve it optimally.   10   K3   CO5

Player B

Player A	9	7
	5	11

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Question Paper Code: 6022

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Sixth Semester
Computer Science and Technology
U19ITOE12 – CYBER FORENSICS
(Regulation 2019)

Time : Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	How to prepare a computer investigation?	2	K1	CO1
2.	Mention some problems with computer forensic evidence.	2	K2	CO1
3.	What is meant by FTK file system?	2	K1	CO2
4.	List out the types and methods of acquisitions.	2	K2	CO2
5.	Define best evidence rule states.	2	K1	CO3
6.	How to prepare for a search in criminal case?	2	K2	CO3
7.	What is meant by remote acquisition?	2	K1	CO4
8.	List out the Steganalysis methods.	2	K2	CO4
9.	What is copyright issues?	2	K1	CO5
10.	Give the e-mail storage format available in Novell evolution.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Describe in detail about the Employee case, Internet abuse in corporate high tech investigation.	13	K1	CO1
	(OR)			
b)	How do you prepare and plan for a computer investigation? Discuss in detail with examples.	13	K1	CO1

1

12.	a)	Discuss in detail about various storage formats for digital evidence.	13	K2	CO2
		(OR)			
	b)	Summarize about the RAID data acquisition performing methods with an example.	13	K2	CO2
13.	a)	Briefly explain about the guidelines for processing law enforcement crime scenes.	13	K1	CO3
		(OR)			
	b)	Illustrate about review a case to identify requirements and plan your investigation.	13	K1	CO3
14.	a)	Classify the computer forensics software and hardware tools also give the details.	13	K2	CO4
		(OR)			
	b)	Examine in detail the techniques used for addressing data hiding.	13	K2	CO4
15.	a)	Explain about the roles of locating and recovering graphic files.	13	K2	CO5
		(OR)			
	b)	Briefly generalize the roles of the following term in investigations:			
		i. E-mail in investigations	7	K2	CO5
		ii. Unknown file formats	6		

PART – C

(1 x 15 = 15 Marks)

No.		Questions	Marks	KL	CO
16.	a)	A mother was concerned that her son was accessing unwanted website from his computer. Each time the computer was checked by a technician no evidence was found. How would a computer forensics service go about investigating this incident?	15	K3	CO3
		(OR)			
	b)	Demonstrate how to use remote network acquisition tools in cyber forensics.	15	K3	CO4

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Question Paper Code: 2001

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Fifth Semester
Computer Science and Technology
U19MA509 – PROBABILITY, QUEUEING THEORY & GAME HEORY
(Regulation 2019)

Time : Three Hours   Maximum : 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

❖ Normal table values are permitted

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	A wireless garage door opener has a code determined by the up or down setting of 12 switches. How many outcomes are in a sample space of possible codes?	2	K1	CO1
2.	When two events A and B are independent?	2	K1	CO1
3.	Determine the probability distribution of X, if X denote the number of semiconductor wafers that need to be analyzed in order to detect a large particle of contamination. Assume that the probability that a wafer contains a large particle is 0.01 and that the wafers are independent.	2	K5	CO2
4.	The probability that a wafer contains a large particle of contamination is 0.01. If it is assumed that the wafers are independent, what is the probability that exactly 125 wafers need to be analyzed before a large particle is detected?	2	K1	CO2
5.	What do you mean by transient state and steady state queueing system?	2	K1	CO3
6.	What is that probability that a customer has to wait more than 15 minutes to get his service completed in $(M/M/1):(\infty/FIFO)$ queue system if $\lambda = 6$ per hour and $\mu = 10$ per hour?	2	K1	CO3
7.	Explain the basic components of a network.	2	K2	CO4
8.	What are the total and free floats of a critical activity?	2	K1	CO4
9.	List the basic terminology of game theory.	2	K1	CO5
10.	Define saddle point in game theory.	2	K1	CO5

(5 x 16 = 80 Marks)

Q.No.			Questions	Marks	KL	CO

11. a) i. A part selected for testing is equally likely to have been produced on any one of the six cutting tools.   8   K2   CO1
 a. What is the sample space?
 b. What is the probability that the part is from tool 1?
 c. What is the probability that the part is from tool 1 or tool 5?
 d. What is the probability that the part is not from tool 4?

    ii. A batch of 500 containers frozen orange juice contains 5 that are defective. Two are selected at random, without replacement from the batch.   8   K2   CO1
 a. What is the probability that the second one selected is defective given that the first one was defective?
 b. What is the probability that both are defective?
 c. What is the probability that both are acceptable?

<div align="center">(OR)</div>

  b) i. Samples of emissions from three suppliers are classified for conformance to air-quality specifications. The results from 100 samples are summarized as follows.   8   K2   CO1

		Conform	
		Yes	No
Supplier	1	22	8
	2	25	5
	3	30	10

Let A denote the event that the sample is from the supplier 1, and let B denote the event that the sample conforms to specifications.
 a. Are events A and B independent?
 b. Determine $P\left(\dfrac{B}{A}\right)$.   8   K2   CO1

    ii. An inspector working for a manufacturing company has a 99% chance of correctly identifying defective items and a 0.5% chance of incorrectly classifying a good item as defective. The company has evidence that its line produces 0.9% of nonconforming items.
 a. What is the probability that an item selected for inspection is classified as defective?
 b. If an item selected at random is classified as non-defective, what is the probability that it is indeed good?

12.	a)	i.	The amount of time that a camera will run without having to be reset is a random variable having exponential distribution with $\theta = 50$ days. Find the probability that such a camera will
			   a. Have to reset in less than 20 days.
			   b. Not have to be reset in atleast 60 days.
				8	K5	CO2

		ii.	The phone lines to an airline reservation system are occupied 40% of the time. Assume that the events that the lines are occupied on successive calls are independent. Assume that 10 calls are placed to the airline.
			   a. What is the probability that for exactly three calls the lines are occupied?
			   b. What is the probability that for at least one call the lines are not occupied?
			   c. What is the expected number of calls in which the lines are all occupied?
				8	K2	CO2

<div align="center">(OR)</div>

	b)	i.	Contamination is a problem in the manufacture of optical storage disks. The number of particles of contamination that occur on an optical disk has a Poisson distribution, and the average number of particles per centimeter squared of media surface is 0.1. The area of a disk under study is 100 squared centimeters. Determine the probability that 12 particles occur in the area of a disk under study.	8	K5	CO2
		ii.	Suppose the current measurements in a strip of wire are assumed to follow a normal distribution with a mean of 10 milliamperes and a variance of 4 $(milli\ amperes)^2$. What is the probability that a measurement will exceed 13 milliamperes?	8	K2	CO2

13.	a)	i.	Customers arriving at a watch repair shop according to Poisson's process at a rate of one per every 10 minutes and the service time is an exponential random variable with mean 8 minutes.
			   a. Find the average number of customers in the shop L_s and in the queue L_q.
			   b. What is the probability that the server is idle?
				8	K3	CO3

		ii.	A supermarket has 2 girls attending to sales at the counters. If the service for each customer is exponential with mean 4 min and if people arrive in Poisson fashion at the arte 10 per hour,
			   a. What is the probability that a customer has to wait for service?
			   b. If the customer has to wait in the queue, what is the expected length of his waiting time?
				8	K3	CO3

b)	i.	A car servicing station has 2 bays where service can be offered simultaneously. Because of the space limitations, only 4 cars are accepted for servicing. The arrival pattern is Poisson with 12 cars per day. The service time in both the bays is exponentially distributed with $\mu = 8$ cars per day. Find the average number of cars in the servive station, the average number of cars waiting for service and the average time a car spends in the system.	8	K3	CO3
	ii.	Trains arrive at the yard every 15 minutes and the service time is 33 minutes. If the line capacity of the yard is limited to 5 trains, find the probability that the yard is empty and the average number of trains in the system, given that the inter arrival time and service time are following exponential distribution.	8	K3	CO3
14. a)	i.	Explain in detail the time calculations in networks.	6	K5	CO4
	ii.	Construct the network diagram comprising activities B, C, …Q and N such that the following constrained are satisfied:	10	K3	CO4

$$B < E, F; \quad C < G, L; \quad E, G < H; \quad L, H < I;$$
$$L < M; \quad H < N; \quad H < J; \quad I, J < P; \quad P < Q$$

The notation $X < Y$ means that the activity X must be finished before Y can begin.

b)	A project has the following activities and other characteristics:	16	K3	CO4

Activity	Preceding Activity	Time in weeks		
		t_0	t_m	t_p
A	-	4	7	16
B	-	1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E,F	1	4	7
I	G	4	19	28

    a. Draw the PERT network.
    b. Identify the critical path.

15. a) Solve the following game with the payoff matrix using dominance property. 16 K3 CO5

		Player B				
		1	2	3	4	5
	1	4	6	5	10	6
Player A	2	7	8	5	9	10
	3	8	9	11	10	9
	4	6	4	10	6	4

(OR)

b) i. Solve the following game with the Payoff matrix for the Player A: 8 K3 CO5

		Player B		
Player A		B_1	B_2	B_3
	A_1	-4	0	4
	A_2	1	4	2
	A_3	-1	5	-3

ii. Find the saddle point for the following payoff matrix : 8 K3 CO5

	1	2	3	4
1	2	-1	0	-3
2	2	1	0	3
3	-3	-2	1	4

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What is the role of the <meta> tag in HTML?	2	K1	CO1
2.	What is a 'Marquee' Tag in HTML?	2	K1	CO1
3.	How to use Tooltip class in CSS?	2	K3	CO2
4.	What do you mean by Active Web Pages?	2	K1	CO2
5.	List two JavaScript built-in object.	2	K4	CO3
6.	Why JavaScript is called dynamically typed language?	2	K5	CO3
7.	Write down the different ways to get an element from DOM.	2	K1	CO4
8.	What are the three parts of XSL?	2	K1	CO4
9.	What are the properties of XML Http Request?	2	K1	CO5
10.	What is the role of the callback function in AJAX?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	Explain the <META> tag of HTML giving its purpose and attributes with the help of an example.	6	K2	CO1
		ii.	Write the HTML code to create a table using any four tags under <TABLE> tag.	7	K6	

(OR)

1

	b)		What is Form in HTML? Design a basic form containing text boxes, checkbox, radio buttons, drop down lists and a hyperlink.	13	K6	CO1
12.	a)	i.	What is the difference between Static and Dynamic Web Pages?	6	K1	CO2
		ii.	Briefly explain Client and Server-side scripting with example.	7		

(OR)

	b)	i.	Define style sheet and explain different approaches of style sheets used in active web pages.	6	K1	CO2
		ii.	List and explain different selector available in CSS.	7		
13.	a)	i.	Briefly explain five kinds of event handlers.	6	K1	CO3
		ii.	Explain the concept of exception handling with respect to JavaScript with proper example.	7		

(OR)

	b)	i.	Explain the difference between frontend and backend development.	8	K1	CO3
		ii.	What is the purpose of HTML DOM Node Tree?	5		
14.	a)	i.	Define XSL and XSLT. Explain how XSLT transformation works with XML documents.	2+3	K3	CO4
		ii.	Provide a practical example of transforming an XML document using XSLT in PHP.	8		

(OR)

	b)	i.	Differentiate between Document Type Definitions (DTDs) and XML Schemas.	8	K3	CO4
		ii.	Describe the Document Object Model (DOM) and its significance in XML processing.	5		
15.	a)		Explain the fundamental architecture of an AJAX-based application, highlighting the role of the client and server components. Provide a diagram to illustrate this architecture.	8+5	K3	CO5

(OR)

	b)		Write down the various properties of SOAP protocol. Provide an example of a WSDL file and explain its components and purpose.	5+8	K1	CO5

PART – C

Q.No.			Questions	Marks	KL	CO
16.	a)	i.	Write a brief note on each one of the following.	6	K1	CO1
			• AJAX			
			• WSDL			
			• REST API			
		ii.	Write a HTML5 code to create a contact us page containing Name, Email, Phone, Query fields. The form should use POST request for submitting the form.	9	K6	CO1

(OR)

	b)	i.	Write code to create a website that says "Welcome to CSE Dept." to the first-time visitors (within a browsing session) and "Welcome Back" to the return visitors.	11	K6	CO4
		ii.	Create a simple XML Http Request, and retrieve data from a TXT file.	4	K6	CO5

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[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 5009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Seventh Semester
Computer Science and Technology
U19CSOE7 – OPEN SOURCE SOFTWARE
(Common to EEE)
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Compare OSS and FLOSS?	2	K2	CO1
2.	State any two key principles of the open source software.	2	K1	CO1
3.	Write down the steps to access other available partitions from the same Linux Machine.	2	K2	CO2
4.	Describe various run-levels used by Linux.	2	K1	CO2
5.	Show how to sort a MySQL Query Result.	2	K2	CO3
6.	List the data types used in PHP.	2	K1	CO3

7.	Differentiate between the following control statements of Perl.
	  i. If and unless
	  ii. While and until
		2	K2	CO4

8.	What is a reference in Perl? Where do you use references?	2	K1	CO4
9.	Write a Perl script to copy a content of file to another file in reverse order.	2	K2	CO5
10.	Write a brief note on CGI in Perl?	2	K1	CO5

PART – B

Q.No.		Questions	Marks	KL	CO
11.	a)	What do multiprogramming, multitasking and multiuser mean in Linux operating System? Explain them.	13	K2	CO1
		(OR)			
	b)	Explain the role of license in the OSS with a suitable example.	13	K2	CO1
12.	a)	Discuss the Linux internal structure with a neat diagram.	13	K1	CO2
		(OR)			
	b)	Recall the Network File System (NFS)? Explain the usage of following to configureEthernet card on a LINUX System:	13	K2	CO2

    i.   /etc/hosts
    ii.   /etc/networks
    iii. Resolve.conf
    iv. /etc/services

Q.No.		Questions	Marks	KL	CO
13.	a)	Write down the steps to Include PHP in a Web Page?	13	K1	CO3
		(OR)			
	b)	Write a MySQL program for the following Operations.	13	K2	CO3

    i.   Create a database
    ii.   Create a table
    iii. Load data into the table
    iv. Retrieve data from the table in various ways
    v.   Use multiple tables

Q.No.		Questions	Marks	KL	CO
14.	a)	List and explain any six Perl debugger commands.	13	K2	CO4
		(OR)			
	b)	Write a script that prompts for and reads two numbers and prints out the product of the two numbers multiplied together in separate lines.	13	K3	CO4
15.	a)	Write CGI script for uploading the selected file.	13	K3	CO5
		(OR)			
	b)	Explain in details the Perl Process Management.	13	K2	CO5

PART – C

Q.No.		Questions	Marks	KL	CO
16.	a)	Which are the looping controls available in PHP? Explain each with an example.	15	K2	CO4
		(OR)			
	b)	i. Explain with examples, built in functions of String, Array and List in Perl.	8	K2	CO5
		ii. Discuss symbol table in Perl? Explain in detail with example.	7	K2	CO5

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[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 13003

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Seventh Semester
Computer Science and Technology
U19CTE12 – SOFTWARE PERFORMANCE TESTING
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What are the key objectives of software testing?	2	K1	CO1
2.	What is the difference between a defect and a bug?	2	K1	CO1
3.	How does white box testing differ from black box testing?	2	K2	CO2
4.	Give some examples of static analysis tools.	2	K3	CO2
5.	What is the primary focus of integration testing?	2	K2	CO3
6.	What is Test harness?	2	K3	CO3
7.	What are the challenges typically encountered in test management, and how can they be mitigated?	2	K3	CO4
8.	What is the workflow for capturing and documenting defects?	2	K1	CO4
9.	List the advantages of test automation.	2	K3	CO5
10.	What metrics are used to measure the effectiveness and efficiency of automation in the process model?	2	K3	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Explain briefly about the Eleven Step software testing process and list out some of the benefits using this testing process.	13	K4	CO1

(OR)

	b)	What is defect analysis? Explain its types and defect prevention strategies.	13	K2	CO1
12.	a)	What is equivalence class partitioning? Explain it with an example.	13	K4	CO2

(OR)

	b)	Explain white box strategies in detail.	13	K2	CO2
13.	a)	What are the major differences between Use case and Test case? Explain the role of use cases in testing.	13	K3	CO3

(OR)

	b)	What is the goal of system testing? Explain types of system Testing.	13	K3	CO3
14.	a)	i. Explain Test people management in detail.	7	K2	CO4
		ii. Explain Test plan and Test components.	6		

(OR)

	b)	Explain documentation types in detail.	13	K4	CO4
15.	a)	Explain the essential skills required for effective software test automation. Discuss the significance of considering design and architecture aspects for successful automation implementation, and outline methods to tackle challenges that might arise during this process.	13	K4	CO5

(OR)

	b)	i. Explain project metrics, progress metrics and productivity metrics.	10	K4	CO5
		ii. List few Test Automation tools.	3		

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Consider a case study:	15	K4	CO5

A company is developing a new software product called ABC. The product is a web based application that allows users to manage their finances. The development team is using a waterfall methodology, and the testing phase is about to begin. QA team is responsible for applying suitable black box testing strategy to test the product. From the above case study what testing strategy does the QA team select and why? Also list out the factors for choosing that particular strategy?

(OR)

2

b) The company XYZ is developing a new software product called ABC. The product is a web-based application that allows users to manage their finances. The development team is using a waterfall methodology, and the testing phase is about to begin. QA team is responsible for identifying and fixing defects in the software. The QA team has a variety of tools and techniques at their disposal, including static analysis, dynamic analysis, manual testing. QA team is testing the ABC application and they have found a defect. The defect is that the application crashes when the user tries to add a new account. QA team is not sure what is causing the defect. They have tried to reproduce the defect, but they have not been able to do so consistently.

Help the QA team in investigating the defect and also help them fix this defect and make a conclusion.

15   K4   CO5

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Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 13011

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Fifth Semester

Computer Science and Technology

U19CTV37 – KNOWLEDGE BASED DECISION SUPPORT SYSTEM

(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	State the Characteristics of a Decision Support System.	2	K1	CO1
2.	List the practical issues faced during the implementation phase of decision support systems.	2	K2	CO1
3.	What are the essential steps in group-based decisions?	2	K3	CO2
4.	Show a Decision Trees with a suitable example from real-world applications.	2	K6	CO2
5.	What are the five steps in the knowledge management process?	2	K4	CO3
6.	State and highlight the importance of the crucial steps in the Knowledge Management System implementation.	2	K5	CO3
7.	What is Knowledge Engineering? Give an example.	2	K2	CO4
8.	What is a hyperplane in the Support Vector Machine (SVM)?	2	K2	CO4
9.	Define the power law distribution observed in Online Social Networking.	2	K6	CO5
10.	What is reality mining and its outcomes in any one of the real-world applications?	2	K5	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	Describe briefly 4 types of Decision support systems.	4	K2	CO1
		ii.	Describe any 3 decision making models and the steps involved in these models with a suitable example.	9	K3	CO1

	b)	i.	Explain the knowledge-based systems architecture in detail.	4	K2	CO1
		ii.	Describe the components of an intelligent decision support system, its advantages and disadvantages in detail.	9	K3	CO1
12.	a)	i.	Illustrate the effects of at least two tools used for direct and indirect support in the decision making process.	8	K2	CO2
		ii.	How do the data warehouses support real-time decision making processes?	5	K3	CO2
			(OR)			
	b)	i.	Explain a simple interactive model for group decision support systems (GDSS).	8	K2	CO2
		ii.	Illustrate the effects of group decision support through the collaborative group work.	5	K3	CO2
13.	a)	i.	Describe the knowledge management process model with a flowchart and sufficient illustrations.	8	K2	CO3
		ii.	Describe various approaches to Knowledge Management (KM) in detail and highlight the possible threats in the modern KM approaches.	5	K4	CO3
			(OR)			
	b)	i.	What is Organisational Learning? Explain 3 important key factors in improving the business processes.	8	K2	CO3
		ii.	Describe the Roles of people in knowledge management tasks.	5	K4	CO3
14.	a)	i.	Explain the process of Knowledge Engineering in a large scale expert system.	5	K2	CO4
		ii.	Define a Linear SVM classifier and state the differences between hard margin and soft margin linear SVM classifiers.	4+4	K3	CO4
			(OR)			
	b)	i.	Describe the process of Knowledge Acquisition, Representation and Reasoning from the unstructured text data.	5	K2	CO4
		ii.	Explain any two popular kernel functions in the Support Vector Machines (SVMs).	4+4	K3	CO4
15.	a)	i.	Describe the Small World Effects and its behaviour in social networking applications.	5	K3	CO5
		ii.	What are the primary objectives of Reality Mining and how can it be used without violating the privacy of any individual.	4+4	K4	CO5

(OR)

				Marks	KL	CO
b)	i.		Describe the importance of Management Support Systems (MIS) for Business Enterprise Applications.	5	K3	CO5
	ii.		How is reality mining used to perform predictive analysis? Describe the steps in detail with an example.	8	K4	CO5

PART – C

Q.No.			Questions	Marks	KL	CO
16.	a)	i.	How are the computerised decision support systems aid the decisions with improved intelligence levels	6	K2	CO3
		ii.	Describe the best practices suggested for improving the data quality and data integration in detail.	9	K4	CO5
			(OR)			
	b)	i.	Describe Key characteristics and capabilities of a Decision Support System.	6	K2	CO3
		ii.	Describe the steps used in the Genetic Algorithm process and provide a flow chart for a scheduling problem.	9	K4	CO4

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 13002

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2023
Seventh Semester
Computer Science and Technology
U19CT717 – BLOCKCHAIN METHODOLOGY
(Regulation 2019)

Time: Three Hours   Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	List two general problems of distributed database.	2	K1	CO1
2.	What is zero knowledge proof?	2	K1	CO1
3.	List out the fundamental properties of blockchain.	2	K2	CO2
4.	Write about consensus protocol.	2	K1	CO2
5.	What is the task of miners in blockchain network?	2	K1	CO3
6.	What is Merkle Patricia tree?	2	K1	CO3
7.	Differentiate proof-of-stake and proof-of-burn.	2	K2	CO4
8.	How do you measure energy utilization in blockchain mechanism?	2	K2	CO4
9.	List the key features of bitcoin cryptocurrency.	2	K1	CO5
10.	What is name coin?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Explain in detail about various components in hadoop distributed file system.	13	K2	CO1

(OR)

Q.No.		Questions	Marks	KL	CO
	b)	i. Explain in detail about memory hard algorithm	6	K1	CO1
		ii. Explain in detail about one cryptographic hash functions.	7	K1	CO1
12.	a)	Explain in detail about the structure of a block in blockchain with an example.	13	K1	CO2
		(OR)			
	b)	Explain in detail about the various components in blockchain architecture.	13	K1	CO2
13.	a)	Draw and explain in detail about the working of blockchain network.	13	K2	CO3
		(OR)			
	b)	Explain in detail about private and public blockchain mechanism with examples.	13	K2	CO3
14.	a)	Explain in detail about the functionality of Proof-of-Work (PoW) with an examples.	13	K2	CO4
		(OR)			
	b)	Explain in detail about the sybil attack with examples.	13	K1	CO4
15.	a)	Explain in detail about ethereum construction in blockchain technologies.	13	K2	CO5
		(OR)			
	b)	Explain in detail about various vulnerabilities in blockchain technologies and also describe the solutions to prevent them.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Explain the ways through which security and privacy can be developed in a blockchain.	15	K3	CO5
		(OR)			
	b)	Explain in detail about the entities can be used to develop blockchain for financial software and systems.	15	K4	CO2