

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY

Department of Computer Science & Engineering

Class Test – I Session- Jan – June, 2024 Month-April

Sem- B. Tech (II) 4<sup>th</sup> (AI / DS)

Subject- Computer Network

Code- B127471(022)

Time Allowed: 2 hrs

Max Marks: 40

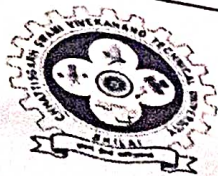
Min Marks: 14

Note: - Q1 is compulsory, attempt any two questions from Q2, Q3, and Q4.

CO1: The learner acquires basic information regarding network and network models.

CO2: The learner understands the functions of Data Link layer through its protocol and methods.

Q.N.	Questions	Marks	Levels of Bloom's Taxonomy	COs
Unit I				
Q1	What are the different types of networks based on scale?	[4]	L1	CO1
Q2	What is Guided transmission media? Explain its type.	[8]	L2	CO1
Q3	What is Internet? Explain working of Internet.	[8]	L2	CO1
Q4	Explain Public Switched Telephone Network (PSTN) ?	[8]	L2	CO1
Unit II				
Q1	What is Checksum?	[4]	L1	CO2
Q2	Explain Ethernet frame format. Calculate throughput of Pure ALOHA and Slotted ALOHA at vulnerable time?	[8]	L3	CO2
Q3	What is HDLC protocol? Draw and explain frame format of HDLC protocol.	[8]	L2	CO2
Q4	Host A wants to send 10 frames to host B. The host agrees to go with GO-Back-4. How many number of frames are transmitted by host A if every 6 <sup>th</sup> frame that is transmitted by host A is either corrupted or lost?	[8]	L3	CO2



# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY

Department of Computer Science & Engineering

Class Test – I Session- April-May , 2024 Month- April

Sem CSE 4<sup>th</sup> (AI) Subject - Operating System Code- B127473(022)

Time Allowed: 2 hrs Max Marks: 40

Note: - Question No. 1 is compulsory, attempt any two questions from Question No. 2, 3 and 4.

CO1: Understand basics, services of Operating System and structures of Operating System.

CO2: Understand the basic processing unit, scheduling and synchronization of process & program.

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Q.N.	Questions	Marks	Levels of Bloom's Taxonomy	COs																		
Unit I																						
Q1	Define Operating System and kernel.	[4]	Understand	CO1																		
Q2	Explain Operating System functions and its services.	[8]	Analyze	CO1																		
Q3	What are the objectives of Operating System and also explain its components.	[8]	Understand	CO1																		
Q4	Explain the structures of Operating System with proper figures.	[8]	Understand	CO1																		
Unit II																						
Q1	Explain process state transition and PCB.	[4]	Understand	CO1, CO2																		
Q2	Explain critical section and explain all the three algorithms proposed to solve the critical section problem.	[8]	Apply	CO2																		
Q3	What are the scheduling criterias. Take a sample data and compare preemptive SJFS and round robin algorithms.	[8]	Apply	CO2																		
Q4	For the given set of data calculate average waiting time and also draw gantt chart using Follwing algorithms. All process arrived at time = 0 (i) FCFS (ii) SJFS (iii) priority (iv) Round Robin (Quantum = 4)	[8]	Apply	CO2																		
	<table><tr><td></td><td><u>Burst time</u></td><td><u>Priority</u></td></tr><tr><td><u>Process</u></td><td></td><td></td></tr><tr><td>P<sub>1</sub></td><td>12</td><td>1</td></tr><tr><td>P<sub>2</sub></td><td>4</td><td>2</td></tr><tr><td>P<sub>3</sub></td><td>3</td><td>3</td></tr><tr><td>P<sub>4</sub></td><td>8</td><td>4</td></tr></table>		<u>Burst time</u>	<u>Priority</u>	<u>Process</u>			P <sub>1</sub>	12	1	P <sub>2</sub>	4	2	P <sub>3</sub>	3	3	P <sub>4</sub>	8	4			
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P <sub>1</sub>	12	1																				
P <sub>2</sub>	4	2																				
P <sub>3</sub>	3	3																				
P <sub>4</sub>	8	4																				





# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY

Department of Computer Science & Engineering

Class Test – I Session- Feb – June, 2024 Month- April

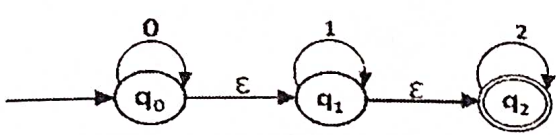
Sem- CSE 4<sup>th</sup> (AI)

Subject- Theory of Computation

Code- B127474(022)

Time Allowed: 2 hrs Max Marks: 40

Note: - Note: All questions are compulsory, attempt all questions from part A and B.

Q.N.	Questions	Marks	Bloom's Level	COs
<b>Part A</b>				
Q1 (a)	Given $\Sigma = (a, b)$ , which of following set is countable- a) Set of all string over $\Sigma$ b) Set of all language over $\Sigma$ c) Set of all RL over $\Sigma$ d) Set of all language over $\Sigma$ accepted by TM	[2]	Understand	CO1
Q1 (b)	If the regular set A is represented by $A = (01+1)^*$ and B is represented by $B = ((01)^*1^*)$ , which is true- a) $A \subset B$ b) $B \subset A$ c) $B = A$ d) A and B are incomparable	[2]	Understand	CO2
Q2	Construct minimal DFA which accepts strings of 0's and 1's over the input alphabet 0, 1 where the strings contains- a. Ends with 01 or 10 b. Second symbol from RHS is always 0 c. Length of string is even or divisible by 4 d. Even number of 0 and even number of 1	[2x4]	Apply	CO2
Q3	Construct a Moore machine which accepts strings of 0's and 1's where this machine 'a' when it encounters 01 else print 'b'. Convert this Moore machine to an equivalent Mealy machine?	[4]	Apply	CO2
Q4	Consider following epsilon NFA, convert this into equivalent Minimal DFA. 	[4]	Apply	CO2
<b>Part B</b>				
Q1(a)	Which of the following regular expression denotes set of all strings not containing 100 as a substring- a) $0^*(1+0)^*$ b) $0^*1010^*$ c) $0^*1^*01^*$ d) $0^*(10+1)^*$	[2]	Apply	CO2
(b)	Which of the following is regular- a) Strings of 0's whose length is perfect square b) Strings of odd number of 0's c) Set of all palindromes made up of 0's and 1's d) Strings of 0's whose length is prime no	[2]	Apply	CO2



**CHHATTISGARH SWAMI VIVEKANAND  
TECHNICAL UNIVERSITY**  
**Department of Computer Science & Engineering**  
Class Test – I Session- JAN – JUN, Month-April  
Sem- CSE -4<sup>th</sup> (AI / DS)

**Subject Name – R for Data Science**

**Subject- Code-B127475(022)**

Max Marks: 40

Min Marks:14

Time Allowed:2 hrs

*Note: -Part A is compulsory, attempt any questions from B,C and D.*

**CO1: Explain critical R programming concept.**

**CO2: Apply various concepts to write programs in R.**

Q.N.	Questions	Marks	Levels of Bloom's Taxonomy	COs
<b>Unit I</b>				
Q1	Describe various features of R.	[4]	Understand	CO1
Q2	Describe with example various methods of vector creation.	[8]	Understand	CO1
Q3	a. Create and store a sequence of values from 4 to -12 that progresses in steps of -0.4. b. Overwrite the object from (a) using the same sequence with the order reversed. c. Repeat the vector c(2, -4, 6, -8, 10) twice, with each element repeated 5 times, and store the result. Display the result sorted from largest to smallest. d. Create and store a vector that contains, in any configuration, the following: i. A sequence of integers from 7 to 15 (inclusive) ii. A fourfold repetition of the value 4.5 iii. The number -2 iv. A sequence of seven values starting at 105 and ending at the number that is the total length of the vector created in (c) e. Confirm that the length of the vector created in (d) is 25.	[8]	Apply	CO1
Q4	a. Convert the vector c(2,0.5,1,2,0.5,1,2,0.5,1) to a vector of only 1s, using a vector of length 3. b. The conversion from a temperature measurement in degrees Fahrenheit F to Celsius C is performed using the following equation: $C = 5/9 (F - 32)$ Use vector-oriented behaviour in R to convert the temperatures 45, 77, 20, 19, 101, 120, and 212 in degrees Fahrenheit to degrees Celsius. c. Use the vector c(2,4,6) and the vector c(1,2) in conjunction with rep and * to produce the vector c(2,4,6,4,8,12).	[8]	Apply	CO1
<b>Unit II</b>				
Q1	Explain a three-dimensional array graphically with an example.	[4]	Understand	CO2





**CHHATTISGARH SWAMI VIVEKANAND  
TECHNICAL UNIVERSITY**

**Department of Computer Science & Engineering**

**Class Test – I Session- JAN – JUN, Month-April**

**Sem- CSE 4<sup>th</sup>(DS)**

**Subject Name – Artificial Intelligence: Principles and Applications**

**Subject-Code- B127472(022)**

**Max Marks: 40  
hrs**

**Min Marks: 14**

**Time Allowed: 2**

*Note: -Part A is compulsory, attempt any questions from B, C and D.*

*CO1: Students will demonstrate a comprehensive understanding of foundational concepts in artificial intelligence (AI) and its significance in modern computing.*

*CO2: Students will analyze and evaluate key concepts and methodologies in AI, including the Turing test, the Chinese Room Thought Experiment, and the distinctions between optimum reasoning/behavior and human-like behavior/reasoning.*

*CO3: Students will develop proficiency in search algorithms and optimization techniques used in AI.*

	Questions	Marks	Levels of Bloom's Taxonomy	COs
<b>Unit I</b>				
Q1	Define AI and briefly explain its significance in modern computing.	[4]	Understand	CO1
Q2	Describe the Turing test and its significance in the field of artificial intelligence. Discuss its strengths and limitations.	[8]	Understand	CO2
Q3	What is agent program? Explain different agent program with suitable diagram.	[8]	Understand	CO2
Q4	Compare and contrast the differences between optimum reasoning/behavior and human-like behavior/reasoning, providing examples to illustrate your points.	[8]	Analyzing	CO2
<b>Unit II</b>				
Q1	What do mean by well defined problem? Formulate 8-QUEEN problem with suitable steps and diagram.	[4]	Understand	CO3
Q2	Compare and contrast uninformed search algorithms (e.g., depth-first search, breadth-first search) with informed search algorithms (e.g., A* search) in terms of their effectiveness, completeness, and time/space complexity.	[8]	Analyzing	CO3
Q3	Explore game playing and game tree search techniques, including minimax algorithm and alpha-beta pruning.	[8]	Analyzing	CO3
Q4	Explain the Genetic Algorithms (GAs) as a search paradigm with an example.	[8]	Understand	CO3



**Chhattisgarh Swami Vivekanand Technical University**  
**University Teaching Department**  
**Class Test-1**  
**B. Tech (H)-4<sup>th</sup> Semester**  
**Branch: AI/DS**

**Subject Name:** Data Visualization

**Subject Code:** B127476(022)

**Max Marks:** 40

**Min Marks:** 14

**Times:** 2 hrs

**Note:** Part A is compulsory, attempt any two questions from B, C, and D.

Q. No.	Questions		Mark s	BL	CO
UNIT 1					
1	a	What do you mean by Visualization.	4	L1	1
	b	Explain Coordinate System with Curved Axes.	8	L2	1
	c	Explain Various Directory of Visualization.	8	L2	1
	d	Explain Scales Data Values onto Aesthetics.	8	L2	1
UNIT 2					
2	a	Define Density plot with suitable Example.	4	L2	1
	b	Visualizing as a Multiple distribution at the same time.	8	L3	1
	c	Explain Q-Q Plot with Suitable Example.	8	L3	1
	d	Explain Empirical Cumulative Distribution functions.	8	L2	1