Chhattisgarh Swami Vivekanand Technical University, University Teaching Department

B. Tech (Honours) (Data Science/ Artificial Intelligence)

Class Test - II, June, 2023

Subject Name-Data Visualization **Subject Code-B127476(0222)**

Time Allowed: 2 hours	*Maximum Marks:* 40
	Minimum Pass Marks: 14

Part – 1(a is compulsory and b, c and d are optional attempt any two)

e) Write short notes on mosaic plot. **[4 marks]**

f) How do you visualize Nested proportions? **[8 marks]**

g) What is the principle involved in visualizing trends? Explain with example. **[8 marks]**

h) What are histograms? With example state the use of histograms with respect to discrete data sets. **[8 marks]**

Part – 2 (a is compulsory and b, c and d are optional attempt any two)

e) Write notes on use of colours for colour deficiency people. **[4 marks]**

f) Describe methods to overcome data overlapping sections. **[8 marks]**

g) With example describe what are scatter plots?**[8 marks]**

h) Write short note on any two from following sections

i. Correlogram

ii. Geo-spatial curves

iii. Use of secondary axis in data visualization

iv. Problems associated with over-use of colors.

Chhattisgarh Swami Vivekanand Technical University

University Teaching Department

B.Tech (Honours) (Data Science/ Artificial Intelligence)

Re-Class Test - II, Jun, 2023

R for Data Science (B127475(022))

Time Allowed: 2 hours	*Maximum Marks*: 40
	Minimum Pass Marks: 14

Note:	• Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question. • The figure in the right-hand margin indicates marks. • Showing outputs are compulsary in all questions that includes programing

- PART1-

(a)Differentiate between "null" and "NA" in the context of missing data in R.

(i) Define "null" and explain how it is represented in R when referring to missing data.

(ii) Define "NA" and describe how it is represented in R when denoting missing values.

(iii) Discuss the implications of using "null" and "NA" differently in data analysis and highlight any situations where one would be preferred over the other.

(iv) Provide an example scenario where the distinction between "null" and "NA" becomes crucial in data analysis, and explain how handling them differently can affect the results or interpretation of the analysis. [4]

(b) Consider a dataset with the following variables: "Age", "Height", and "Weight".

(i) Explain how the $ symbol can be used to add a new column named "Gender" to the dataset with values "Male" and "Female" for each observation.

(ii) Describe the steps involved in using the cbind() function to add a new column named "BMI" (Body Mass Index) to the dataset, calculated as weight divided by height squared. [8]

(c) Consider a nested list in the R programming language, where each element of the list contains multiple sub-elements.

(i) Define what a nested list is in R and explain its structure.

(ii) Demonstrate how to create a nested list in R with at least two levels of nesting, providing sample code. [8]

(d) Elucidate the salient disparities and functional differentiations between lists and data frames in the R programming language. [8]

- PART 2-

(a)Discuss the process of reading and writing files in R, encompassing the essential steps and techniques involved in file manipulation. [4]

(b) Explain the concepts and techniques related to title and axis labels, color selection, and customization of line and point appearances in R. [8]

(c) Explain the significance of "pch" in R for point shapes in graphical representations, including how to specify and modify "pch" values, their role in conveying information, and considerations when using them. [8]

(d) Discuss the features and advantages of ggplot2 in R, including its grammar of graphics, plot creation process, versatility, aesthetics customization, geoms, facets, and the ability to produce publication-quality visuals. [8]

B. Tech (Honours) (Artificial Intelligence)

Class Test - II, JUNE,2023

(AICTE Scheme)

(Computer Science and Engineering Branch)

Subject- Artificial Intelligence: Principles and Applications

Subject Code: B127472(022)

Time Allowed: 2 hours

Maximum Marks: 40

Minimum Pass Marks: 14

Note: *(iii)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.

(iv) The figure in the right-hand margin indicates marks.

I.	**(a) Write steps of clausal form with proper syntax.**	[2]
	(b) What is Resolution? Explain it with proper example.	[6]
	(c) Explain Bayesian Network in detail with proper example.	[6]
	(d) Explain Fuzzy set theory with proper example.	[6]
II.	**(a)Define Machine Learning..**	[1]
	(b) Differentiate between Supervised and Unsupervised Learning.	[6]
	(c) Explain Naive Bays Theorem with proper example.	[6]
	(d)Explain Clustering and its types.	[6]
III	**(a)What is the difference between data science and data visualization?**	[1]
	(b)How Data visualization impact in machine learning. (only fact should be explain with proper justification)	[6]
	(c))How do you calculate over fitting and under fitting functions.	[6]
	(d) Why do we need Box Fitting Graph explain with proper graph and example.	[6]

B. Tech (Honours) (Data Science/Artificial Intelligence)

4th Semester, Class Test - 2, Jun, 2023

(AICTE Scheme)

(Computer Science and Engineering Branch)

Operating System

B127473 (022)

Time Allowed: 2 hours

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(iii)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(iv) The figure in the right-hand margin indicates marks.

Part – 1

a) Differentiate between Logical Address Space and Physical Address Space. 4

b) Explain Swapping. 8

c) Explain Contiguous Memory Allocation with its advantages and disadvantages. 8

d) Consider the following reference string...

5,7,7,4,0,5,2,0,2,6,5,1,2,2,3,3,8,4,5,4,3,2,0,2,3,4 = 24

For **three (3) frames**, find the number of page faults each of the following algorithm produces. 8

4. FIFO
5. MFU
6. LRU

Part – 2

a) What is "Copy – on – Write" ? 4

b) How does the Operating System manages the open files? What is File Locking? 8

c) Describe the I/O Hardware with a PC bus structure. 8

d) Write short notes on: 8

iii. File Attributes

iv. Polling

Chhattisgarh Swami Vivekanand Technical University
University Teaching Department
B. Tech (Honours) (Data Science/ Artificial Intelligence)
Re-Class Test - II, May, 2023
Subject: Theory of Computation **B127474 (022)**

Time Allowed: 2 hours *Maximum Marks:* 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory.
(ii) Attempt any two parts from (b), (c), and (d) of each question.
(iii) The figure in the right-hand margin indicates marks.

UNIT- 3

Q.1. (a) Define CFG. [1]

(b If g is the grammar S-> SbS/a. Show that g is ambiguous and Find the reduce grammar that is equivalent to the CFG given below:

S-> aC/ SB, A-> bSCa, B->aSB/bBC, C->aBC/ad [6]

(c) Define CNF. Convert the given grammar into CNF. [6]

S-> aSa/ SSa/ a

(d) Explain in brief null production. Eliminate null production of given grammar. [6]

S-> aSa/ bSb/ ^

UNIT-4

Q.2. (a) Define ID. [1]

(b) Construct a PDA A equivalent to the following CFG: [6]

$L= \{a^m b^m c^n / m,n >=1\}$

(c) Construct t a PDA accepting by empty store for the following language: [6]

$L= \{a^n b^{n+2} / n>=1\}$

(d) Show that $L= \{a^i b^j / j=i^2\}$ is not CFL. [6]

UNIT-5

Q. 3. *(a)Difference between* Recursive Languages and Recursively *enumerable languages.* [2]

(b) Design a TM that accepts $\{a^n b^n / n > 0\}$ and show the transition table & Transition diagram of TM. [6]

(c) Design a TM to recognize the language $\{X^n Y^n Z^n / n > 0\}$ [6]

(d) Write Short notes on (any 2) [6]

I) LBA II) Multitape TM III) DFA TM

B. Tech (Honours) (Data Science/Artificial Intelligence)

Class Test - II, June, 2023

(AICTE Scheme)

(Computer Science and Engineering Branch)

Subject- Computer Network

(B127471(022))

Time Allowed: 2 hours

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(i)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(ii) The figure in the right-hand margin indicates marks.

I.	(a)What is the difference between IPv4 and IPv6 explain with 4 differences.	[2]
	(b)Explain congestion control technique: Closed Loop and its type.	[6]
	(c)What is Classful Addressing explain with suitable example for each class.	[6]
	(d)List the approaches to improve the QoS (Quality of Service) in detail.	[6]
II.	(a) What is piggybacking?	[1]
	(b)What is the difference between TCP and UDP (6 differences)	[6]
	(c)Draw TCP header format with explanation.	[6]
	(d)Explain the TCP congestion control methods	[6]
III.	(a) What is DNS?	[1]
	(b)Explain the working diagram of SMTP vs POPvs IMAP.	[6]
	(c)What is www (World wide web) and E-mail (Electronic mail)	[3+3]
	(d) Short notes on: 1. FTP 2. Telnet	[3+3]