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B127476(022)

B. Tech. (Hon's) (Fourth Semester) Examination, April-May 2023

(New Scheme)

(Artificial Intelligence)

DATA VISUALIZATION

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note *: Part (a) of each question is compulsory & carries 4 marks. Attempt any* ***two*** *parts from (b), (c) and (d) of each question and each part carries 8 marks.*

Unit-I

1. (a) What do you understand by curved coordinate system?

   (b) Write detailed notes on data visualization aesthetics.

   (c) Discuss different properties of color that can be

used in data visualization.

(d) Discuss different distributions that are commonly used in data visualization.

Unit-II

2. (a) Explain Quantile-Quantile plot.

(b) How can multiple distributions be effectively visualized together in order to compare and analyze their characteristics simultaneously?

(c) Using data set below provide a siuitable visualization technique to get the best possible information :

Age group	Sports	Art	Music
10-12	30	25	15
13-15	45	35	20
16-18	55	40	25

(d) Write short notes on following (any **two**)

(i) Heatmaps

(ii) Box plot

(iii) Cumulative distribution function

(iv) Use of secondary axis in data visualization.

Unit-III

3. (a) Write detailed notes on bar graph and its subtypes.

(b) A teacher wants to represent the student strength in his college. Provide a nested pi-chart using data set below create a nested pi-chart.

Engg. Discipline	**No. of B.Tech Hon's Students**	**Gender**
Computer Science	80	Male : 60, Female : 20
Electrical Engg.	45	Male : 30, Female : 15
Mechanical Engg.	60	Male : 45, Female : 15
Civil Engg.	35	Male : 20, Female : 15

(c) A retail ice-cream vendor wants to see his ice-cream sales in recent days. His sales figures are explained in the data set below :

Create a scattered chart to represent the data below :

Date	Temp. °C	Sales Revenue ($)	Ice cream servings
1.6.2022	25	1200	80
2.6.2022	28	1500	100
3.6.2022	30	1800	120
4.6.2022	22	1000	70
5.6.2022	24	1100	75
6.6.2022	27	1400	95
7.6.2022	32	2000	150
8.6.2022	29	1600	110
9.6.2022	26	1300	90
10.6.2022	31	1900	140

(d) Write short notes on following attributes (any **two**)

(i) Mosaic plot

(ii) Correlogram

(iii) Response curve

(iv) Geo-spatial graphs

Unit-IV

4. (a) What are cartograms, explain with examples 4

(b) Define trends? How can you visualize trends? Write principles of curve fitting. Also define goodness of fit 4+8+4

(c) What is uncertainty in data set? Explain different techniques to explain uncertainity in a given data? 8+8

Unit-V

5. (a) Explain the use of colors in data visualization for color deficient people.

(b) How can you represent a data set with overlapping regions?

(c) Write notes on common problems associated with use of colors in data visualization techniques.

(d) Write short notes on following attributes (any **two**)

(i) Use of different line types in data visualization

(ii) Use of different markers in data visualization

(iii) Use of different transparency levels in data visualization

(iv) Use of data labels in data visualization