

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***M.E DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026***Third Semester**Computer Science and Engineering***PCSE2418 — Data Visualization Techniques***Regulations - 2024**Duration : 3 Hrs**Maximum : 100 Marks****PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	Differentiate within-record vs between-record data structure.	L2	1	2
2.	What is the purpose of data preprocessing? Give two steps.	L1	1	2
3.	Define semiology of graphical symbols.	L1	2	2
4.	Name two historical milestones in the evolution of visualization.	L2	2	2
5.	Give two issues unique to geospatial visualization.	L2	3	2
6.	State two methods to combine multiple techniques effectively.	L1	3	2
7.	List any three interaction spaces (screen/object/data/attribute/data-structure).	L1	4	2
8.	Define interaction operator with an example.	L1	4	2
9.	Mention a hardware factor affecting performance.	L2	5	2
10.	Name two common data issues that harm visualization quality.	L2	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a A CSV has 200,000 rows with attributes: Age(int), Salary(float), Dept(categorical), JoinDate(date), PerformanceScore(1-5). a) Identify data types & within/between-record structures. b) Propose a preprocessing plan (missing, outliers, type casting, binning) c) Design a visualization to examine relation between Age, Salary, PerformanceScore; justify encodings Or b For event logs (userID, timestamp, action, duration): a) Classify data (temporal, categorical, quantitative) b) Map to two alternative visual forms and compare trade-offs c) Provide criteria to choose one form for trend + outlier detection	L3	1	16
12.	a Relate Gibson's affordances to interactive chart elements (sliders, handles, brushing). Show how signifiers guide action and reduce errors. Or b Build a concise taxonomy for academic dashboards (trend, distribution, part-to-whole, relationship, hierarchy). Map typical tasks to each class.	L2	2	16

13.	a	Given a course catalog (Program → Semester → Course → Unit → Topic), choose tree technique (node-link, icicle, treemap). Provide layout and label strategy for readability at scale.	L3	3	16
	Or				
	b	A city dataset: accident points, road polylines, ward polygons. a) Propose layered map design (basemap, symbolization, scale b) Handle density & occlusion (kernels/hexbin/cluster c) Add uncertainty depiction for location accuracy	L3	3	16
14.	a	A faculty wants to compare two semesters of results quickly. Propose coordinated multiple views and interactions (linked brushing, synchronized axes, snapshots).	L3	4	16
	Or				
	b	Mobile device, low bandwidth: redesign an NLP topic-explorer for single-handed use; specify touch gestures, progressive rendering, and minimal UI.	L3	4	16
15.	a	Compare three application domains (education, finance, public policy) and argue how domain constraints shape data, tasks, evaluation, and future research directions.	L2	5	16
	Or				
	b	Discuss how cognition, perception, and reasoning issues guide choices of color, scale, and layout in high-stakes decision dashboards (e.g., disaster response).	L2	5	16