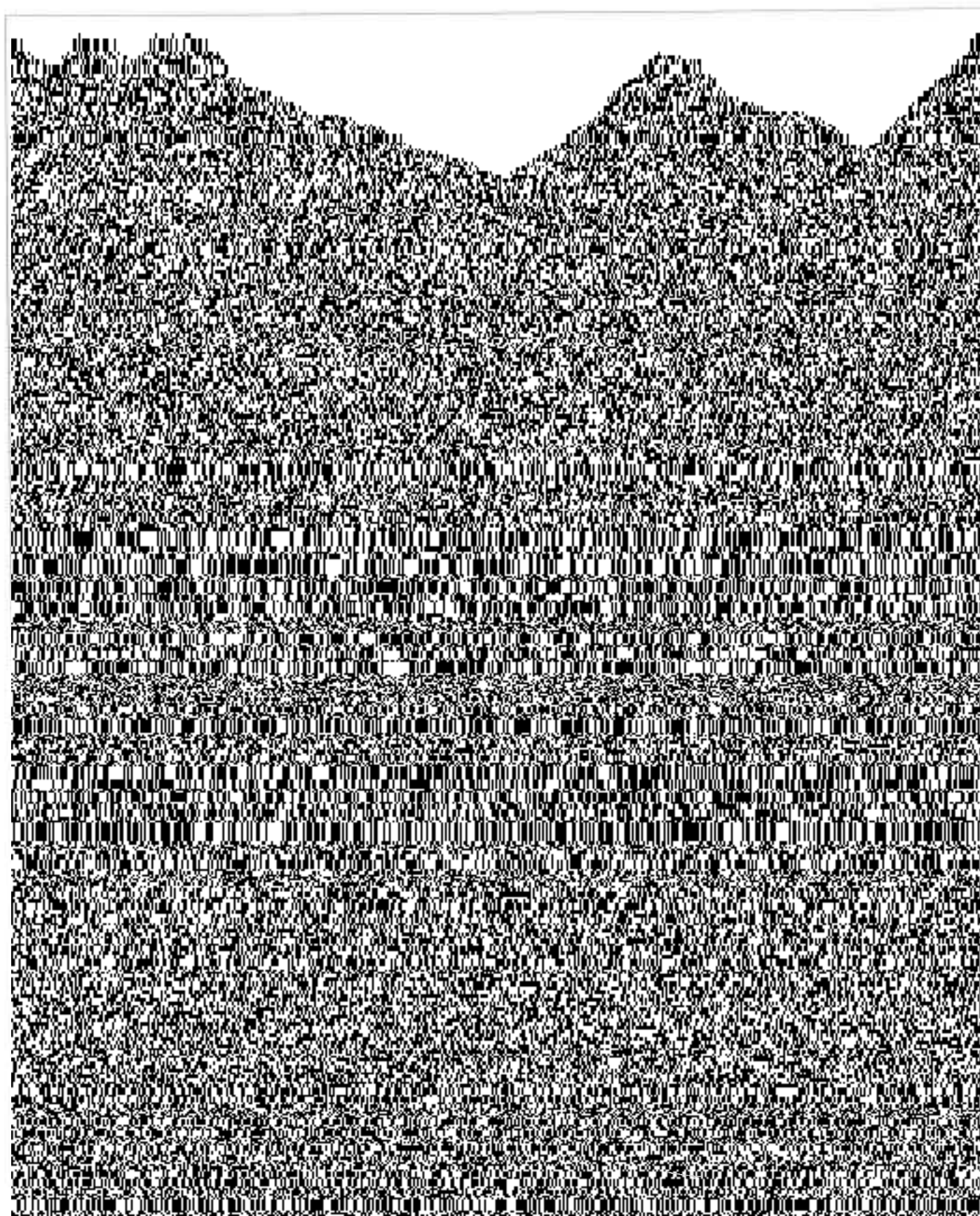




6	a) What is normalization? What are the conditions are required for a relation to be in 2NF, 3NF and BCNF explain with examples. b) Describe the working of UNION, INTERSECT, and EXCEPT operators in SQL. How do they differ in terms of result sets.	5M 5M	CO3	BL3
	OR			
7	a) Compute the closer of the following set of functional dependencies for a relation scheme. $R(A,B,C,D,E) F=\{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$ List out the candidate keys of R. b) Explain aggregate operators with suitable examples.	5M 5M	CO3	BL4
8	Define a transaction in the context of a database system. Explain the ACID properties of transactions. Illustrate the different states a transaction goes through using a state diagram.	10M	CO4	BL1
	OR			
9	Discuss the challenges of recovery in the presence of concurrent transactions. How are logs, checkpoints, and transaction states managed to ensure correct recovery.	10M	CO4	BL1
10	a) Differentiate between primary and secondary indexes. Discuss how each is implemented and their use cases in query optimization. b) Compare linear hashing and extendable hashing.	5M 5M	CO5	BL2
	OR			
11	Explain the structure and working of a B+ Tree. Discuss how B+ Trees support efficient insertion, deletion, and range queries.	10M	CO5	BL4