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Daffodil International University

Department of Computing and Information Systems

Course: Big Data Analysis and Applications — **Course Code:** CIS 312

Class Test 01 — **Time:** 30 Mins — **Total Marks:** 15 — **SET – A**

1. (a) Differentiate between Scale-Up (Vertical Scaling) and Scale-Out (Horizontal Scaling) architectures in the context of Big Data processing. [3]
   (b) Why does Scale-Up reach a physical and economic ceiling when transitioning from Gigabyte-scale to Petabyte-scale workloads? [2]
2. (a) Compare Schema-on-Write and Schema-on-Read strategies across the parameters of ingestion speed, structural flexibility, and read performance. [3]
   (b) Describe a real-world scenario where applying Schema-on-Read provides a clear architectural advantage over traditional Schema-on-Write. [2]
3. (a) Explain the core principle of "Data Locality" in distributed computing. Why is moving computation code to data nodes vastly more efficient than moving data to computation nodes? [3]
   (b) Identify two primary reasons why strict ACID transactional guarantees in traditional relational databases become performance bottlenecks at Big Data scale. [2]

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