

Indian Institute of Engineering Science and Technology, Shibpur
B.Tech(CS) 5th Semester Final Examinations, Jan 2021

Database Management Systems (CS – 501)

F. M. = 70

Time – 1 hr 30 min.

Answer Question No. 1 and any three from the rest.

1. Define the following:

- a) Data Independence
- b) DBA
- c) Candidate key
- d) BCNF
- e) Serializability

[5x2=10]

2. Consider the following relations:

Depositor (customer_name, ac_no)

Customer (customer_name, customer_street, customer_city)

Here, number of records in Customer and Depositor are 10,000 and 5,000 respectively. Also, the number of blocks in Customer and Depositor are 400 and 100 respectively.

- a) Estimate the number of block access for taking join of the above two relations using Block nested loop join under the worst case and best case scenario.
- b) Write merits and demerits of merge join

[10+10]

- 3. a) What are the advantages of maintaining concurrency in transactions?
- b) Name the modules which guarantees the following: Atomicity, Consistency, Isolation and Durability
- c) What is wait-for-graph scheme?
- d) In which scenario, the wait-for-graph works well?

[4x5]

- 4. Do a point wise comparison between Log based recovery with deferred update and Log based recovery with immediate update. What is the objective of check point?

[15+5]

- 5. a) What is view ? How can view act as a security mechanism ?
- b) What are the other security mechanisms that can be provided in SQL ?

[10+10]

6. Write short notes on the following:

- a) Query optimization techniques
- b) 3-level architecture

[10+10]