

University Roll No.....

Mid Term Examination, Even Semester 2019-20

Programme: B.Tech (CSE) Year: II Sem: IV

Database Management Systems: BCSC 0003

Time: 1 Hour

Maximum Marks:15

Section – A

3 x 2 = 6 Marks

- I. Why certain functional dependencies are called trivial functional dependencies? Consider the given relation R (ABCDEF) with the set of the following function dependencies:

$$F = \{A \rightarrow CE, B \rightarrow D, C \rightarrow ADE, BD \rightarrow F\}$$

Find the closure of the BCD.

- II. Given the following relation instance:

x	y	z
1	4	2
1	5	3
1	6	3
3	2	2

Find out all functional dependencies satisfied by this relation instance.

- III. Consider a relation schema R (A, B, C, D) and functional dependencies $A \rightarrow B$ and $C \rightarrow D$. State whether the following decomposition of relation R into R1 (A, B) and R2(C, D) is the Loss Less Join Decomposition or Lossy.

Section – B

3 x 3 = 9 Marks

- I. Why do we need normalization in data management? A table has fields F1, F2, F3, F4, and F5, with the following functional dependencies:

$$\{F1 \rightarrow F3, F2 \rightarrow F4, (F1, F2) \rightarrow F5\}$$

List the candidate keys. In normalization terms, determine the highest normal form. Give reasons for your answer.

- II. Consider the set F of functional dependencies for relation schema R(ABCDE):

$$F = \{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$$

Find out Canonical Cover of F.

- III. Differentiate the following:

- (a) Dense index and Sparse index
- (b) Clustered indexing and Secondary indexing