Calcutta University
MSC 2nd Year
Advanced Database Management System (CSMC 201)
MID SEM 2024
Full Mark=20

1 Answer any **four** Question: [4x2=8]

a) What is insertion anomaly? Explain with an example.
b) Define transitive functional dependency with the help of suitable example.
c) Differentiate between B-Tree and B+ Tree.
d) Define query optimization.
e) Find out candidate key for relation R= (A, B, C, D, E) and given functional dependencies are: FD= {B → CD, D→E, B→A, E→ C, AD→E}.

2 Answer any **Three** question: [3x4=12]

a) Write properties of B-Tree. Insert following elements in the B-Tree of order 4:
65, 66, 70, 71, 74, 80, 91, 81, 99, 82, 75, 77, 89, 56

b) Explain extendible hashing with the following elements:
16. 6, 4, 22, 24, 10, 31, 7, 9, 20, 26, 28

c) Explain Cost-Based query optimization for **SELECT** operation.

d) Write rule of 3NF. Consider the relation R= (A, B, C, D, E, F, G, H, I, J) and the Functional dependencies are following:
FD= {AB →C, A→DE, B→F, F→GH, D→IJ}
Decompose R into **3NF.**

X