

National Institute of Technology Calicut
Department of Computer Science and Engineering
CS3095D DATABASE MANAGEMENT SYSTEMS LABORATORY

S5/S7 B.Tech. - Monsoon Semester 2022

End Semester Examination [25/11/22]

Part A
[Functional Dependencies/Normalization]
(Set A)

6 Marks

30 Minutes

1. Suppose you are given a relation R with four attributes ABCD. For the following set of FDs, assuming those are the only dependencies that hold for R, do the following:

- (a) Identify the candidate key(s) for R. (1 Marks)
- (b) Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF). Justify. (1+1 Marks)
- (c) Is R in BCNF? If R is not in BCNF, decompose it into a set of BCNF relations that preserve the dependencies. (0.5+1.5 Marks)

FDs: $ABC \rightarrow D, D \rightarrow A$

2. Consider the relation R (ABCDE): $FD = \{ A \rightarrow B, B \rightarrow C, C \rightarrow D, D \rightarrow E \}$ Find out the highest normal form. (0.5 Marks)

3. Consider a relation scheme $R = (A, B, C, D, E, F, G, H)$ on which the following functional dependencies hold : $F = \{ CH \rightarrow G, A \rightarrow BC, B \rightarrow CFH, E \rightarrow A, F \rightarrow EG \}$ What are the candidate keys of R ? (0.5 Marks)
