

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
 TEST -1 EXAMINATION- Sep 2017
 B.Tech/M.Tech VII/I Semester

COURSE CODE: 10M11CI113

MAX. MARKS:15

COURSE NAME: Advanced Database Systems

COURSE CREDITS: 3

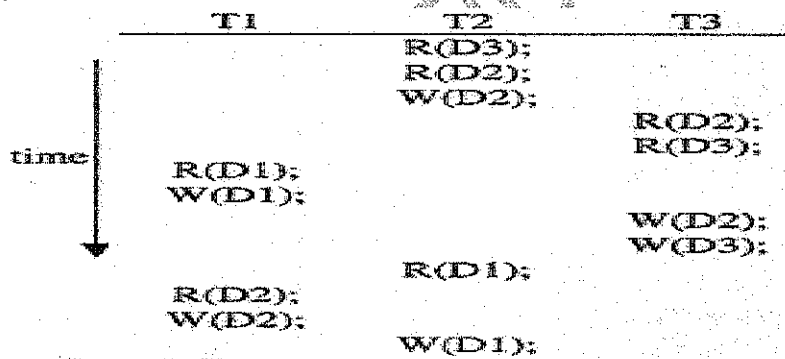
MAX. TIME: One Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. [5 Marks] Consider the following relational schema and set of functional dependencies. $R(A,B,C,D,E,F,G,H,I,J)$ with functional dependencies $AB \rightarrow C, A \rightarrow DE, B \rightarrow F, D \rightarrow H, F \rightarrow GH$.

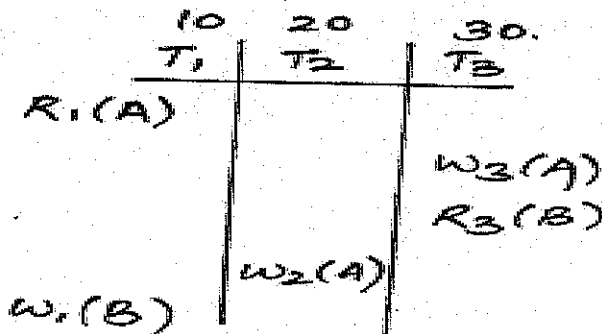
- (a) List all superkey(s) for this relation. Which of these superkeys form a key (i.e., a minimal superkey) for this relation? Justify your answer in terms of functional dependencies and closures.
- (b) Decompose R into BCNF. Your answer should consist of a list of table names and attributes and an indication of the keys in each table (underlined attributes).

Q2. [5 Marks] Consider three data items D1, D2 and D3 and the following execution schedule of transactions T1, T2 and T3. In the diagram, R(D) and W(D) denote the actions reading and writing the data item D respectively. Draw the precedence graph; if schedule is serializable; give its serial schedule.



Q3. [5 Marks] What happens if the following schedule will execute using:

- a) B-TSO Protocol (Basic Timestamp Ordering Protocol)
- b) TWR-TSO Protocol (Thomas Write Rule Timestamp Ordering Protocol)



CF-18-BTMT