

**B.E. II (Information Technology) May 2021**  
**Class Test – II (ITR4C4: Database Management Systems)**

**Duration – 70 min.**

**MM - 20**

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**Note: All questions are compulsory. Attempt all part of a question in one place.**

**Q.1** Consider the relation schema and following functional dependency then find out the highest normal form of the relation also explains each step of it.

(i) R(ABCDEF)

ABC  $\rightarrow$  D

ABD  $\rightarrow$  E

CD  $\rightarrow$  F

CDF  $\rightarrow$  B

BF  $\rightarrow$  D

(ii) R (ABCDE)

BC  $\rightarrow$  ADE

D  $\rightarrow$  B

**6**

**Q.2** Let E1 and E2 be two entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?

**3**

**Q.3** Explain all the supertype/subtype constraints with example.

**6**

**Q.4** Consider three transactions T1, T2, and T3. Each transaction having 2, 3, and 4 operations respectively. Find out

**5**

- Total number of schedules possible.
- Total number of serial schedules and non-serial schedules possible.