Paper Code: CS-502

Roll No. | | | | | | | | | | |

B.TECH
FIFTH SEMESTER EXAMINATION, 2016-17
DATABASE MANAGEMENT SYSTEM

[Time: 3 hrs.] [Max. Marks: 100]

Note- Attempt All questions. All questions carry equal marks.

1. Attempt any *four* parts of the following: - **(5x4=20)**

(a) List the advantages of DBMS over file system.
(b) What do you understand by weak entity and strong entity? Explain briefly.
(c) List and explain all the aggregate operations in SQL.
(d) State and explain validation based protocol.
(e) Data Independence
(f) $R(A_1,A_2,.....A_n)$, Candidate key=$\{A_1A_2\}$.How many super keys are possible?

2. Attempt any *two* parts of the following: - **(10x2=20)**

(a) State and explain all the relational constraints.

(b) Given relation R(ABCDEFGHIJ) and FDs F:{AB-> C,B->D,D->EF,A->GH, H->IJ}. Decompose it in BCNF.

(c) If we have two relations R and S, R have m tuples and S have n tuples then what is the minimum and maximum no. of tuples in the following:
(i) Cross product (ii) Natural join (iii) left outer join (iv) right outer join (v) full outer join

3. Attempt any *two* parts of the following: - **(10x2=20)**

(a) Solve the following:
(i) R(ABCDEFGH), F:{CH->G, A->BC, B->CFH, E->A, F->EG}
Find out all possible candidate keys.
(ii) Check whether the given FDs are equivalent or not.
F: {A->B, AB->C, D->AC, D->E}
G: {A->BC,D->AB}

(b) Explain specialization, generalization, aggregation and attribute inheritance.

(c) Explain:
(i) Multiple granularity
(ii) Multi version scheme

4. Attempt any *two* parts of the following: - **(10x2=20)**

(a) What are ACID properties and what are the possible states of a transaction? Explain in brief.

(b) Test the following schedules are conflict equivalent or not.
(i) S1= r1(a); r2(b); w1(a); w2(b)
S2= r2(b); r1(a); w2(b); w1(a)
(ii) S1=r1(a); w1(a); r2(a); w2(a)
S2=r1(a); r2(a); w2(a); w1(a)

(c) Check whether the given schedule is view equivalent or not.
S: R2(B);R2(A); R1(A); R3(A);W1(B);W2(B);W3(B)
S':R2(B); R2(A); W2(B);R1(A)W1(B);R3(A);W3(B)

5. Attempt any *two* parts of the following: - **(10x2=20)**

(a) Consider the following schedules, find whether they are conflict serializable or not.
(i) R1(x);R2(x);W1(x);R3(x);W2(x)
(ii)R2(x);R1(x);W2(x);R3(x);W1(x)
(iii)R3(x);R2(x);R1(x);W2(x);W1(x)
(iv)R2(x);W2(x);R3(x)R1(x)W1(x)

(b) Explain Normalisation with suitable examples.

(c) Define:
(i) Serializability
(ii) Blind write
(iii) Unsafe operations
(iv) Foreign key