2022

COMPUTER SCIENCE

B.Sc. Fourth Semester End Examination - 2022

PAPER - C10T

Full Marks : 40 *Time : 2 hours*

The figures in the right-hand margin indicate marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

Group-A

1. **Answer any five questions.** 5×2=10

a) State two reasons for data inconsistency.

b) What is transitive functional dependency? Explain with suitable relation.

c) How the role of DBA is different from any other users of database?

d) Why specialization is called top down approach in DBMS?

c) What is the role of secondary index in file manipulation?

f) Define composite attribute with example.

Group - B

2. Answer any four questions. 4×5=20

a) Using relational algebra write down the following query:

Find the name of instructor who are from physics dept. from instructor relation.

b) What are the criteria needs to satisfy for natural join?

c) Write down between file based vs database system. 2+1+2

3. a) R={A,B,C,D,E,F,G,H}
F={CH->G, A->BC, B->CFH, E->A, F->EG}
Find the candidate key attribute.

b) What is aggregation features of extended er model ? Explain with suitable example.

4. What are the functionalities of data control language?

a) What is multi valued attribute? Explain with a example.

b) What is trivial functional dependency? 2+2+1

5. What is the goal of normalization? Define 3NF with example. 2+3

6. Explain the ACID properties of transaction. 5

7. a) What is ER Diagram?

b) Draw a low and high level E-R diagram for hospital management with following entity set and explain the relationship between them.

1. Doctor
2. Patients
3. Test
4. Admission

Group-C

Answer any one questions. 1×10=10

8. a) Consider the following decomposition for relational scheme.
R={A,B,C,D,E,F,G,H,I,J}
determine whether each decomposition has a lossess property with respect to
F={AB->C, A->DE, B->F, F->GH, D->-IJ}
R1(ABC) R2 (ADE) R3 (BF) R4 (FGH) R3(DIJ)

b) Can primary key be other than candidate key? Explain it with suitable example.

c) What is procedural and non-procedural language? What are unary and binary operators in RA?

5+2+2+1

9. Explain the B-tree file organization in details. What in the difference between heap file and hash file organization?

6+4