

Registration No :

--	--	--	--	--	--	--	--	--	--

Total Number of Pages : 02

B.Tech.  
PCS41103

4<sup>th</sup> Semester Regular / Back Examination 2017-18

**DATABASE SYSTEM**

**BRANCH : CSE**

**Time : 3 Hours**

**Max Marks : 100**

**Q.CODE : C771**

**Answer Part-A which is compulsory and any four from Part-B.**

**The figures in the right hand margin indicate marks.**

**Answer all parts of a question at a place.**

**Part – A (Answer all the questions)**

**Q1 Answer the following questions: *multiple type or dash fill up type:* (2 x 10)**

- a) Which one of the following is a procedural language?  
a. Domain relational calculus      b. Tuple relational calculus  
c. Relational algebra      d. Query language
- b) The scheme for hierarchical data base is \_\_\_\_\_.  
a. a tree      b. a graph      c. a B-tree      d. none of the above
- c) Which defines the structure of a relation which consists of a fixed set of attribute-domain pairs?  
a. Instance      b. Schema      c. Program      d. Super Key
- d) Data independence means  
a. data is defined separately and not included in programs.  
b. programs are not dependent on the physical attributes of data  
c. programs are not dependent on the logical attributes of data  
d. both B and C
- e) Which-one of the following statements about normal forms is FALSE?  
a. BCNF is stricter than 3 NF  
b. Lossless, dependency -preserving decomposition into 3 NF is always possible  
c. Loss less, dependency – preserving decomposition into BCNF is always possible  
d. Any relation with two attributes is BCNF View Answer
- f) The situation where the lock waits only for a specified amount of time for another lock to be released is  
a. Lock timeout      b. Wait-wound      c. Timeout      d. Wait
- g) In order to undo the work of transaction after last commit which one should be used ?  
a. View      b. Commit      c. Rollback      d. Flashback
- h) \_\_\_\_\_ will undo all statements up to commit?  
a. Transaction      b. Flashback      c. Rollback      d. Abort
- i) Which level of RAID refers to disk mirroring with block striping?  
a. RAID level 1      b. RAID level 2      c. RAID level 0      d. RAID level 3
- j) Which one of the following is a Stripping technique ?  
a. Byte level      b. Raid level      c. Disk level      d. Block level

**Q2 Answer the following questions: *Short answer type:* (2 x 10)**

- a) What are advantages of DBMS over traditional file based systems?
- b) What is the difference between primary key and unique constraints?
- c) What are indexes?
- d) What is Functional Dependency?
- e) What is BCNF (Boyce-Codd Normal Form)?
- f) What is meant by query optimization?

- g) What is transparent DBMS?
- h) Explain the difference between an exclusive lock and a shared lock?
- i) What are conflict serializable schedules?
- j) What is a Log File?

**Part – B (Answer any four questions)**

- Q3** a) What is data independence? Discuss three tier schema architecture of data independence. (10)  
 b) Explain Database Administrator's responsibilities. (5)
- Q4** a) Draw an E-R model for Student Management System. (10)  
 b) Enlist the types of keys used in E-R diagram. (5)
- Q5** a) Describe about the RAID structure with a labeled diagram. (10)  
 b) What is Data modeling and explain the types of data modeling in brief. (5)
- Q6** a) Is the decomposition in 4NF always dependency preserving and lossless? Explain with an example. (10)  
 b) Define generalization and aggregation. Demonstrate generalization and aggregation using E-R diagram. (5)
- Q7** a) Enlist briefly the types of data base recovery techniques. (10)  
 b) Describe about the different anomalies arise due to data redundancy ? (5)  
 Convert the following relation into 2NF.  
 Emp-proj(e#, p#, hours, pname, ename, location)  
 F = {e#,p#->hours, p#->pname,location, e#->ename}
- Q8** a) Describe ACID properties. Explain transaction life cycle. (10)  
 b) Why concurrency control is needed ? Explain the problems that would arise when concurrency control is not provided by the DB system? (5)
- Q9** a) Write the query using tuple calculus & domain calculus. (10)  
 Given 3 relations are: Emp(e#, ename, sal)  
                                 Assigned-to(e#, p#)  
                                 Project(p#, pname, chief)  
       (i) Display employee no(e#), employee name of those employees either getting salary more than 5000 or their employee no is greater than 105.  
       (ii) Display name of the chief under whom 'Peter' is working.  
       (iii) Display employee no and Project no(p#) of those employee whose chief is 'Mark'.  
       (iv) Display pname & Chief of those employees either working in p# 'P005' or having salary greater than 6000.  
       (v) Display ename, p# of those employees working in pname 'data base' or 'operating systems'.  
 b) Differentiate between data ware house and data mining? (5)