



HALDIA INSTITUTE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION UNDER MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL)

Paper Code: PCC-CS 501

Paper Name: Database Management Systems

Time Allotted: 1 Hour 30 Minutes

Full Marks: 70

The figures in the margin indicate full marks

Candidates are required to give their answers in their own words as far as practicable

Group – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives from the followings:

30 x 1 = 30

(i) A relation is if every field contains only atomic values that is, no lists or sets.

a) 1 NF b) 2 NF c) 3 NF d) BCNF [CO4]

(ii)) In 2NF

a) No functional dependencies exist. b) No multivalued dependencies exist.
c) No partial functional dependencies exist d) No partial multivalued dependencies exist.

[CO4]

(iii) Which normal form is considered adequate for normal relational database design?

a) 2NF b) 5NF c) 4NF d) 3NF [CO4]

(iv) In SQL, which command is used to add a column/integrity constraint to a table

a) ADD COLUMN b) INSERT COLUMN
c) MODIFY TABLE d) ALTER TABLE [CO2]

(v) A good query system

a) can accept English language commands b) allows non-programmers to access information stored in a database
c) can be accessed only by data processing professionalsd) both (a) and (b) [CO1]

(vi) A complete set of relational algebra operations are as follows:-

a) $\sigma, \pi, U, -, X$ b) $\sigma, \pi, /, -, X$ c) $\sigma, \pi, -, X, \Omega$ d) $\theta, \pi, -, X, \Omega$ [CO2]

(vii) Consider a B+-tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node?

a) 1 b) 2 c) 3 d) None [CO6]

(viii) Null means

a) 0 for numeric b) blank space for characters c) both a and b d) none of these [CO2]

(ix) which of the following is NOT a dense index

a) primary index b) clustering index c) secondary index d) both a and b [CO6]

(x) Truncate statement is

a) DDL b) DCL c) DML d) None of these [CO2]

(xi) Number of transaction phases available

a) 1 b) 2 c) 3 d) 4 [CO5]

(xii) With regards to transaction processing, any DBMS should be capable of:

a) Ensuring that transactions are free from interference from other users.
b) Parts of a transaction are not lost due to a failure.
c) Transactions do not make the database inconsistent.
d) All of the above. [CO5]

(xiii) What are the ACID properties of Transactions?

a) Atomicity, Consistency, Isolation, Database
b) Atomicity, Consistency, Isolation, Durability
c) Atomicity, Consistency, Inconsistent, Durability
d) Automatically, Concurrency, Isolation, Durability [CO5]

(xiv) A transaction completes its execution is said to be

a) loaded b) Rolled c) Saved d) Committed [CO5]

(xv) A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.

a) idle b) waiting c) deadlock d) ready [CO5]

(xvi)What are the ways of dealing with deadlock?

- a)deadlock prevention b) deadlock recovery c) deadlock detection d) All of the above [CO5]

(xvii)When transaction T_i requests a data item currently held by T_j , T_i is allowed to wait only if it has a timestamp smaller than that of T_j (that is, T_i is older than T_j). Otherwise, T_i is rolled back (dies). This is

- a)Wait-die b) wound-wait c) Wait-wound d) Wait [CO5]

(xviii)Which of the following occurs when a transaction rereads data and finds new rows that were inserted by a command transaction since the prior read?

- a)Nonrepeatable read b) Phantom read c) Dirty Read d) Consistent read [CO5]

(xix) In database, locking level is also called as

- a) granularity b) S-lock c) X-lock d) deadlock [CO5]

(xx)Which of the following is not a part of the database security? [CO5]

- a)Hardware b) Data and software c) Employees d) External hacker

(xxi)In which of the following formats data is stored in the database management system?

- a)Image b) Text c)Table d)Graph [CO6]

(xxii)) Which of the following is a function of the DBMS? [CO1]

- a) Storing data b)Providing multi-users access control
c) Data Integrity d)All of the above

(xxiii)Which command is used to remove a relation from an SQL?

- a) Drop table b) Delete c) Purge d)Remove [CO2]

(xxiv)Which of the following command is correct to delete the values in the relation teaches?

- a) Delete from teaches b) Delete from teaches where Id ='Null'
c) Remove table teaches; d) Drop table teaches [CO2]

(xxv)Which of the following establishes a top-to-bottom relationship among the items?

- a) Relational schema b) Network schema
c) Hierarchical schema d) All of the mentioned [CO2]

(xxvi)) Which of the following is a function of the DBMS?

- a) Storing data b) Providing multi-users access control
- c) Data Integrity d) All of the above

[CO1]

(xxvii)What is information about data called?

- a) Hyper data b) Tera data
- c) Meta data d) Relations

[CO1]

(xxviii)_____ command is used in SQL to issue multiple CREATE TABLE, CREATE VIEW and GRANT statements in a single transaction.

- a) CREATE CLUSTER b) CREATE PACKAGE
- c) CREATE SCHEMA d) All of the mentioned

[CO2]

(xxix)Which feature is not used when SQL features are not being supported?

- a) BEGIN b) END c) COMMIT d) ROLLBACK

[CO2]

(xxx)Which of the following isn't a level of abstraction?

- a) physical b) logical c) user d) view

[CO1]

Group – B

(Multiple Choice Type Questions)

2. Choose the correct alternatives from the followings:

20 x 2 = 40

(i) Consider relation schema R with set functional dependencies(F) as: R(ABCD)

F={AB->CD,C->A}. The given relation is in

- a)1 NF b) 2 NF c) 3 NF d) BCNF [CO4]

(ii)If every attribute is a candidate key then the table is in

- a)1NF b) 2NF c) 3NF d)BCNF [CO4]

(iii)Consider the join of relation A with relation B. If A has k tuples and B has r tuples then maximum and minimum sizes of the join respectively are

- a)k+r and 0 b)r.k and 0 c)r+k and |k-r| d)r.k and r+k [CO2]

(iv)Ordered data file having 30000 records stored on a disk with a block size 1024 bytes. Records of data file are of fixed length of 100 bytes, Length of each index entry in a primary index file is 15 bytes. Blocking factor of data file and the index file are _____ and _____ respectively. [CO6]

- a) 10, 68 b) 3000, 45 c) 68, 10 d) none of these.

(v) In Multi-level indexing on an unordered file

a) all the levels are primary index b) all the levels are secondary index

c) first level is primary index, rest levels secondary index

d) first level is secondary index, rest levels are primary index [CO6]

(vi) Consider the following schedule:

S: {r1(x); r2(y); r3(y); w2(y); w1(x); w3(x); r2(x); w2(x)}

Which one of the schedules is correct serialization?

- a) T1->T3->T2 b) T2->T1->T3 c) T2->T3->T1 d) T3->T1->T2 [CO5]

(vii) Consider the transactions T1, T2, and T3 and the schedules S1 and S2 given below.

T1: r1(X); r1(Z); w1(X); w1(Z)

T2: r2(Y); r2(Z); w2(Z)

T3: r3(Y); r3(X); w3(Y)

S1: r1(X); r3(Y); r3(X); r2(Y); r2(Z); w3(Y); w2(Z); r1(Z); w1(X); w1(Z)

S2: r1(X); r3(Y); r2(Y); r3(X); r1(Z); r2(Z); w3(Y); w1(X); w2(Z); w1(Z)

Which one of the following statements about the schedules is TRUE?

a) S1 is conflict serializable

b) S2 is conflict serializable

c) S1 and S2 are both conflict serializable

d) neither S1 nor S2 is conflict serializable [CO5]

(viii)

Which of the following clustering requires merging approach?

- a) Partitional b) Hierarchical c) Naive Bayes d) None of the mentioned [CO5]

(ix) Which of the following is required by K-means clustering?

a) defined distance metric

b) number of clusters

c) initial guess as to cluster centroids

d) all of the mentioned

[CO5]

(x) Which of the following combination is incorrect?

a) Continuous – euclidean distance b) Continuous – correlation similarity

c) Binary – manhattan distance d) None of the mentioned

[CO6]

(xi) If attributes A and B determine attribute C, then it is also true that:

- a) $A \rightarrow C$ b) $B \rightarrow C$ c) (A,B) is a composite determinant d) C is a determinant.

[CO4]

(xii) If attribute A determines both attributes B and C, then it is also true that:

a) $A \rightarrow B$ b) $B \rightarrow A$ c) $C \rightarrow A$ d) $(B,C) \rightarrow A$ [CO4]

(xiii) Which of the following is not a level of data abstraction? [CO1]

a) Physical level b) Critical level c) Logical level d) View level

(xiv) For some relations, changing the data can have undesirable consequences called:

a) referential integrity constraints b) modification anomalies
c) normal forms d) transitive dependencies. [CO2]

(xv) A relation is in this form if it is in BCNF and has no multivalued dependencies:

a) second normal form b) third normal form
b) c) fourth normal form d) domain/key normal form. [CO4]

(xvi) The given Query can also be replaced with_____:

SELECT name, course_id

FROM instructor, teaches

WHERE instructor_ID= teaches_ID;

a) select name, course_id from teaches, instructor where instructor_id=course_id
b) Select name, course_id from instructor natural join teaches
c) Select name, course_id from instructor
d) Select course_id from instructor join teaches [CO2]

(xvii) Which one of the following given statements possibly contains the error?

a) select * from emp where empid = 10003;
b) select empid from emp where empid = 10006;
c) select empid from emp;
d) select empid where empid = 1009 and Lastname = 'GELLER'; [CO2]

(xviii) Ready the Query carefully:

SELECT emp_name

FROM department

WHERE dept_name LIKE ' _____ Computer Science';

In the above-given Query, which of the following can be placed in the Query's blank portion to select the "dept_name" that also contains Computer Science as its ending string?

a) & b) _ c) % d) \$ [CO2]

(xix)The term "ODBC" stands for_____

- a) Oral database connectivity
- b) Oracle database connectivity
- c) Open database connectivity
- d) Object database connectivity

[CO1]

(xx)When a primary key is define in the table, DBMS automatically creates a _____ on a primary key column.

- a) Unique indexb) Sequencec) Triggerd) Synonym

[CO2]

ARPITA MAZUMDAR

Signature of the Paper Setter/Moderator

Answer Key:

Group – A

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|-----------------|----------|-----------|------------|-----------|----------|
| <u>1.</u> (i) a | (ii) c | (iii)d | (iv)d | (v)b | (vi) a |
| (vii) b | (viii) d | (ix) d | (x) c | (xi) d | (xii) d |
| (xiii) b | (xiv) d | (xv) c | (xvi) d | (xvii) a | (xviii)b |
| (xix) a | (xx) c | (xxi) c | (xxii) d | (xxiii) a | (xxiv) a |
| (xxv) c | (xxvi) d | (xxvii) c | (xxviii) c | (xxix) b | (xxx) c |

Group – B

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|----------------|----------|---------|---------|----------|-----------|
| <u>2.</u> (i)c | (ii) d | (iii) b | (iv)a | (v)d | (vi) a |
| (vii) a | (viii) b | (ix) d | (x) d | (xi) c | (xii) a |
| (xiii) b | (xiv) c | (xv) c | (xvi) b | (xvii) d | (xviii) c |
| (xix) c | (xx) a | | | | |