UNIT-VII

DATABASE MANAGEMENT SYSTEM

ENGINEERS ACADEMY
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NOTES
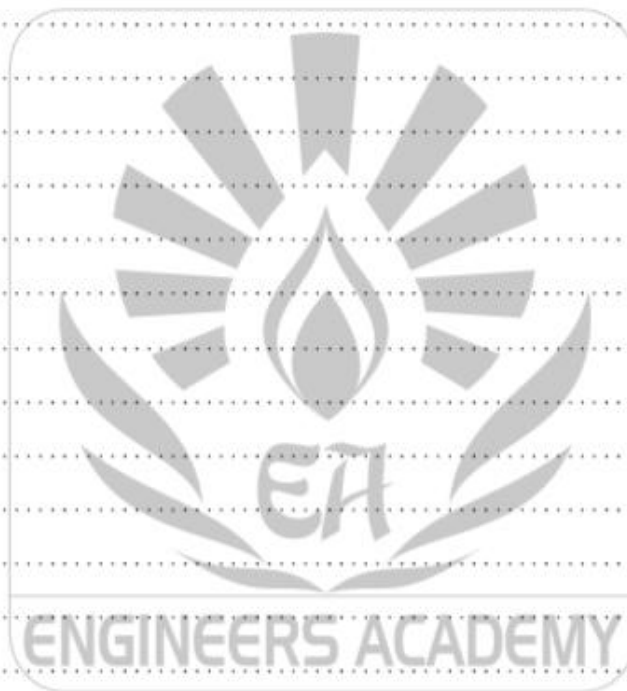
INTRODUCTION TO DBMS

CHAPTER 1

OBJECTIVE QUESTIONS

1. Consider the entities 'hotel room', and 'person' with a many to many relationship 'lodging'

   If we wish to store information about the rent payment to be made by person(s) occupying different hotel rooms, then this information should appear as an attribute of
   (a) person   (b) Hotel Room
   (c) Lodging   (d) None of these

2. Architecture of the database can be viewed as
   (a) two levels   (b) four levels
   (c) three levels   (d) one level

3. An entity set that does not have sufficient attributes to form a primary key is a
   (a) strong entity set   (b) weak entity set
   (c) simple entity set   (d) primary entity set

4. In an E-R diagram attributes are represented by
   (a) rectangle   (b) square
   (c) ellipse   (d) triangle

5. In case of entity integrity, the primary key may be
   (a) not Null
   (b) Null
   (c) both Null & not Null
   (d) any value.

6. A logical schema
   (a) is the entire database.
   (b) is a standard way of organizing information into accessible parts.
   (c) describes how data is actually stored on disk.
   (d) both (a) and (c)

7. The rule that a value of a foreign key must appear as a value of some specific table is called a ?
   (a) Referential constraint
   (b) Index
   (c) Integrity constraint
   (d) Functional dependency

8. Which of the following statements is True ?
   (a) The Entity-Relationship data model is an example of implementation data models
   (b) A conceptual schema can be defined using an E-R model
   (c) E-R model is used in a phase called physical database design
   (d) E-R model is used in a phase called conceptual database design

9. Match the following with most appropriate types of attributes.
   List-I
   P. Name of the dependent
   Q. Degree of a person
   R. Telephone number
   S. Date of birth
   List-II
   1. Stored attribute
   2. Composite attribute
   3. Multi-valued attribute
   4. Discriminator attribute
   Codes :
   (a) P-4, Q-3, R-2, S-1
   (b) P-4, Q-2, R-3, S-1
   (c) P-4, Q-1, R-2, S-3
   (d) P-4, Q-1, R-3, S-2

10. The collection of information stored in a database of a particular moment is_____

    (a) view   (b) schema

    (c) instance   (d) subschema

11. The number of rows in a table is known as

    (a) attribute

    (b) tuple

    (c) cardinality

    (d) doesn't describe anything

12. The terms in List-I have been mapped to List-II so that it corresponds to the mapping process of the ER model into a relational model. Which of the following represents the mapping process?

    List-I

    A. Entity type

    B. Key attributes

    C. Composite attributes

    D. Multi-valued attribute

    E. Value set

    List-II

    1. Primary (or secondary) key

    2. Domain

    3. Child table

    4. Set of simple component attributes

    5. Relation

    Codes :

	A	B	C	D	E
(a)	3	1	4	2	5
(b)	5	1	4	3	2
(c)	3	1	4	5	2
(d)	5	1	3	4	2

13. Conceptual design

    (a) is a documentation technique

    (b) needs data volume and processing frequencies to determine the size of the database

    (c) involves modelling independent of the DBMS

    (d) is designing the relational model

14. In an E-R diagram double lines indicate ?

    (a) Total participation

    (b) Multiple participation

    (c) Cardinality N

    (d) None of the above

15. An advantage of the database management approach is ?

    (a) data is dependent on programs.

    (b) data redundancy increases.

    (c) data is integrated and can be accessed by multiple programs.

    (d) none of the above.

16. In E-R Diagram relationship type is represented by ?

    (a) Ellipse

    (b) Dashed ellipse

    (c) Rectangle

    (d) Diamond

17. The property (or set of properties) that uniquely defines each row in a table is called the:

    (a) identifier

    (b) index

    (c) primary key

    (d) symmetric key

18. Which normal from is considered adequate for relational database design ?

    (a) 2 NF   (b) 3 NF

    (c) 4 NF   (d) BCNF

19. A prime attribute of a relation schema R is an attribute that appears

    (a) In all candidate keys of R

    (b) In some candidate keys of R

    (c) In a foreign key of R

    (d) Only in the primary key of R

20. All many to many relationships (M-N) relationships in E-R model are implemented in relational model as :

(a) Relation corresponding to 'M' side is modified to include foreign key of the relation on the 'N' side

(b) Relation corresponding to 'N' side is modified to include foreign key of the relation on the 'M' side.

(c) Seperate relation is created and primary keys of both M and N are included in the new relation as foreign keys

(d) Seperate relation is created and foreign keys of both M and N are included in the new relation as primary keys

21. An 1-N relationships in E-R model is implemented in relational model as

(a) Relation corresponding to 1 side is modified to include foreign key of the relation on the 'N' side.

(b) Relation corresponding to 'N' side is modified to include foreign key of the relation on the '1' side

(c) Primary keys are added on both sides

(d) Foreign keys are added on both sides

22. Consider a business rule such as "Each department is managed by atmost one employee".

What is the cardinality from employee to the department?

(a) 1 : 1   (b) 1 : M
(c) M : 1   (d) M : N

23. Which one of the following is true ?

(a) Every super key is a candidate key.

(b) Every candidate key is a primary key.

(c) Some candidate key are super key.

(d) Every candidate key is super key.

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Answer Key

1. **Ans: (c)**

   This information should appear as an attribute of lodging.

2. **Ans: (c)**

3. **Ans: (b)**

4. **Ans: (c)**

5. **Ans: (a)**

6. **Ans: (a)**

7. **Ans: (a)**

   The rule that a value of a foreign key must appear as a value of some specific table is called a referential constraint. (Referential integrity constraint is concerned with foreign key)

8. **Ans: (d)**

9. **Ans: (b)**

10. **Ans: (c)**

11. **Ans: (c)**

12. **Ans: (b)**

13. **Ans: (c)**

14. **Ans: (a)**

15. **Ans: (c)**

16. **Ans: (d)**

17. **Ans: (c)**

18. **Ans: (b)**

19. **Ans: (b)**

20. **Ans: (c)**

21. **Ans: (b)**

22. **Ans: (b)**

23. **Ans: (d)**

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FUNCTIONAL DEPENDENCY (F.D.)

CHAPTER 2

OBJECTIVE QUESTIONS

1. In a schema with attributes A, B, C, D and E following set of functional dependencies are given.

   $$A \rightarrow B$$
   $$A \rightarrow C$$
   $$CD \rightarrow E$$
   $$B \rightarrow D$$
   $$E \rightarrow A$$

   Which of the following functional dependencies is NOT implied by the above set?

   (a) $CD \rightarrow AC$ (b) $BD \rightarrow CD$

   (c) $BC \rightarrow CD$ (d) $AC \rightarrow BC$

2. R(abcd) f{a→bc, b→cd, c→da}. The number of candidate keys are?

   (a) 1   (b) 2

   (c) 3   (d) 4

3. R(abcd) f{a→b,b→c, c→a}. The number of candidate keys are?

   (a) 1   (b) 2

   (c) 3   (d) 4

4. R(abcd) with set of fds{ab→c, c→d, d→a}. List all candidate keys of R?

   (a) ab, bc, bd   (b) ab,b c,ad

   (c) ab,bc,ad   (d) none

5. R(abcd) f{b→c,c→a,c→d} list candidate keys of R ?

   (a) a   (b) b

   (c) c   (d) none

6. R(abcd) f{a→c, b→d} List all candidate keys of R?

   (a) ab,bd   (b) ab,ad

   (c) ad,bc   (d) ab

7. R(abcde) f{a→bc,cd→e,b→d,e→a} R1(abc) R2(ade) The decomposition is ?

   (a) Lossless join & dependency preserving.

   (b) No Lossless join & No dependency preserving.

   (c) No Lossless join & dependency preserving.

   (d) Lossless join & No dependency preserving.

8. R(xyzw) f{y←> w, xy→z} where the symbol ←> means y→w and w→y. What are the candidate keys?

   (a) xy and zw   (b) xw and yz

   (c) xy and wx   (d) xy and yz

9. R(ABCDE) f{a→bc, b→d,cd→c,e→a} list all keys of R ?

   (a) 1   (b) 2

   (c) 3   (d) 4

10. F{a→bc,b→c} find canonical cover ?

    (a) {a→b,b→c}   (b) {a→c,b→c}

    (c) {ab→c,b→c}   (d) none

11. f{a→bc,b→c} is C extraneous in a→bc

    (a) True   (b) False

    (c) can't predicate   (d) none

12. f{a→ bc,b→ cc,a→ c} mention how many extraneous attributes are in f?

    (a) 2   (b) 1

    (c) 3   (d) none

13. f{a→b,b→c,ac→d} g{a→b,b→c,a→d} which of the following is true.

    (a) f=g   (b) f covers g

    (c) g covers f   (d) none

14. R(abcdef) f{a→ce,b→d,c→ad,bd→ef} find {ab}⁺(closure of ab) ?

    (a) abce　　　　　　(b) aced

    (c) abcde　　　　　 (d) none

15. R(abcde) f{a→bc,cd→e,b→d,e→a} find candidate keys ?

    (a) 2　　　　　　　 (b) 4

    (c) 1　　　　　　　 (d) none

16. Consider R(xyz) {1,4,2}, {1,5,3}, {1,6,3}, {3,2,2} which of the following is True.

    (a) xy→z and z→y　(b) yz→x and y→z

    (c) yz→x and x→z　(d) xz→y and y→x

17. F{a→b,bc→de,aef→g} Which of the following is implied ?

    (a) bc→dg　　　　　(b) acf→dg

    (c) a→dg　　　　　 (d) b→dg

18. F{a→bc, b→a, c→a} g{a→b, b→c, c→a}which of the following is true?

    (a) f=g　　　　　　 (b) f covers g

    (c) g covers f　　　 (d) none

19. F{pq→r, p→q, s→pq, s→t} g{p→qr, s→pt} which of the following is true?

    (a) f=g　　　　　　 (b) f covers g

    (c) g covers f　　　 (d) none

20. R(abcdefg) F{a→b, bc→de, aef→g} which of the following is implied ?

    (a) acf→dg　　　　 (b) dg→acf

    (c) f→dge　　　　　(d) f→a

21. R(abc) f{a→b,b→a,b→c,a→c}. find the number of redundant fds ?

    (a) 1　　　　　　　 (b) 2

    (c) 3　　　　　　　 (d) none

22. R(abc) represents relationship between two entity sets with keys A & B respectively and suppose that R has fds a→b and b→a. what fd implies about relationship ?

    (a) 1-1　　　　　　 (b) 1-m

    (c) m-1　　　　　　(d) m-m

23. R(abcd) with ab is key. Mention fd so that R is in 1nf but not in 2nf ?

    (a) ab→c　　　　　 (b) ab→d

    (c) a→c　　　　　　(d) ab→cd

24. R(abcde) f{ab→cde,c→d,e→ab} find keys ?

    (a) 1　　　　　　　 (b) 2

    (c) 3　　　　　　　 (d) none

25. R(abcdefg) f{a→bc,ab→de,d→ef,f→a}. find number of keys?

    (a) 2　　　　　　　 (b) 3

    (c) 4　　　　　　　 (d) none

26. R(abcde) with the following instance {a,2,3,4,5} {2,a,3,4,5}, {a,2,3,6,5},{a,2,3,6,6} Which of the following fds are valid?

    (a) a→bc　　　　　 (b) bc→d

    (c) c→de　　　　　 (d) none

27. R(abcde) f{a→bc,bc→d,d→ea}. How many non prime attributes are there?

    (a) 0　　　　　　　 (b) 1

    (c) 2　　　　　　　 (d) none

28. R(abcd) f{a+b→cd,c→b}. after convert into BCNF, the relations are?

    (a) {ab,ac}　　　　 (b) {abc,ac}

    (c) {bc,ca}　　　　 (d) {cb,acd}

29. R(abcde) f{a→b,c→d,a→e} the decomposition R1(abc) R2(bcd) R3(cde) is?

    (a) Lossless join & dependency preserving.

    (b) No Lossless join & No dependency preserving.

    (c) No Lossless join & dependency preserving.

    (d) Lossless join & No dependency preserving.

30. R(abcde) f{a→bc,c→de,d→e} the decomposition R1(abcd) R2(de) is?

    (a) Lossless join & dependency preserving.

    (b) No Lossless join & No dependency preserving.

    (c) No Lossless join & dependency preserving.

    (d) Lossless join & No dependency preserving.

31. R(ab) {x1,y1} {x2,y2} {x3,y1} {x4,y1} {x5,y2} {x6,y2} find how many are fds are satisfied?

 (a) 1   (b) 2

 (c) 4   (d) none

32. Consider R(abcdefg) f{a→b,bc→de,aeg→g} compute AC+.

 (a) {abcde}   (b) {ab}

 (c) {abde}   (d) none

33. f{a→c,ac→d,e→ad,c→h} g{a→cd,e→ah}

 (a) f=g   (b) f covers g

 (c) g covers f   (d) none

34. R(abcde) f{a→b,bc→e,ed→a} find keys?

 (a) 1   (b) 2

 (c) 3   (d) none

35. R(abcd) f{ab→c,c→d,d→a} find candidate keys?

 (a) ab,cb,db   (b) ab,cb

 (c) cb,db   (d) none

36. f{a→b,ab→c} is A extraneous in ab→c

 (a) True   (b) False

 (c) can't predict   (d) none

37. f{a→bc,b→cc,a→c} how many extraneous attributes.

 (a) 1   (b) 2

 (c) 3   (d) none

38. f{a→b,bc→de,aef→g} Which one of the following is hold ?

 (a) bc→dg   (b) acf→dg

 (c) a→dg   (d) none

39. R(CSZ) f{ CS→Z, Z→C} R1(SZ) R2(CZ) The decomposition is ?

 (a) Lossless join & dependency preserving.

 (b) No Lossless join & No dependency preserving.

 (c) No Lossless join & dependency preserving.

 (d) Lossless join & No dependency preserving.

40. R(abcdef) f{a→bc,f→a,c→a,d→e,e→d} r1(acd) r2(bcd) r3(efd). The decomposition is ?

 (a) Lossless join & dependency preserving.

 (b) No Lossless join & No dependency preserving.

 (c) No Lossless join & dependency preserving.

 (d) Lossless join & No dependency preserving.

41. R(abcde) f{a→bb→c,bd→e} which of the following decomposition is in bcnf

 (a) ab,bc,bde   (b) ad,bde,abc

 (c) abd,be,ce   (d) ab,acd,bce.

42. R(abcde) f{a→bc,d→b} of the following dependencies {I. a→b, II. a→c III. a→d } which must necessarily hold on R?

 (a) I   (b) II

 (c) I & II   (d) I, II, III

43. R(abcdef) f{ab→cd,cd→ef,bc→def,d→b,ce→f} find candidate keys ?

 (a) cd   (b) ab

 (c) ce   (d) none

44. R(abcdefg) f{a→b,bc→de,aef→g} find closure of ac?

 (a) {abcd}   (b) {abcde}

 (c) abe}   (d) none

45. R(abcdef) f{a→b, c→de, ac→f}r1(ab) r2(cde) r3(acf) The decomposition is ?

 (a) Lossless join & dependency preserving.

 (b) No Lossless join & No dependency preserving.

 (c) No Lossless join & dependency preserving.

 (d) Lossless join & No dependency preserving.

☐☐☐

ANSWER KEY

1.   *Ans. (b)*

     BD → CD is not implied by the given set.

2.   *Ans. (c)*

3.   *Ans. (c)*

4.   *Ans. (a)*

5.   *Ans. (b)*

6.   *Ans. (d)*

7.   *Ans. (d)*

8.   *Ans. (c)*

9.   *Ans. (d)*

10.   *Ans. (a)*

11.   *Ans. (a)*

12.   *Ans. (b)*

13.   *Ans. (a)*

14.   *Ans. (d)*

15.   *Ans. (b)*

16.   *Ans. (b)*

17.   *Ans. (b)*

18.   *Ans. (a)*

19.   *Ans. (a)*

20.   *Ans. (a)*

21.   *Ans. (a)*

22.   *Ans. (a)*

23.   *Ans. (c)*

24.   *Ans. (b)*

25.   *Ans. (b)*

26.   *Ans. (a)*

27.   *Ans. (b)*

28.   *Ans. (d)*

29.   *Ans. (b)*

30.   *Ans. (a)*

31.   *Ans. (a)*

32.   *Ans. (a)*

33.   *Ans. (a)*

34.   *Ans. (c)*

35.   *Ans. (a)*

36.   *Ans. (b)*

37.   *Ans. (a)*

38.   *Ans. (b)*

39.   *Ans. (d)*

     LLJ & No D.P.

40.   *Ans. (b)*

     No LLJ & No D.P.

41.   *Ans. (a)*

42.   *Ans. (c)*

43.   *Ans. (b)*

44.   *Ans. (b)*

45.   *Ans. (a)*

     LLJ, DP

□□□

NORMALIZATION

CHAPTER 3

OBJECTIVE QUESTIONS

1. $R(abcde)$ $f\{ab{\to}cd, abc{\to}e, c{\to}e\}$ find normal form ?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

2. $R(abcde)$ $f\{a{\to}c, b{\to}d, ab{\to}c\}$ find normal form?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

3. If every determinant is Candidate Key, then normal form is ?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

4. $R(abcd)$ $f\{ab{\to}cd, c{\to}a, a{\to}c\}$ the relation is in?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

5. $R(abcde)$ $f\{ab{\to}cde, c{\to}a, d{\to}b\}$ the relation is in?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

6. $R(abcd)$ $f\{b{\to}c, c{\to}a, c{\to}d\}$ the relation is in?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

7. $R(abcd)$ $f\{a{\to}c, b{\to}d\}$ the relation is in?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

8. $R(csz)$ $f\{cs{\to}z, z{\to}c\}$ the relation is in?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

9. $R(chr)$ $f\{rh{\to}c, c{\to}r\}$ the relation is in?
   - (a) 1nf
   - (b) 2nf
   - (c) 3nf
   - (d) bcnf

10. $R(sname, saddress, pname, price)$ $f\{sname {\to} saddress, sname\ pname {\to} price\}$ the relation is in?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

11. $R(eno, deptno, dname)$ $f\{eno\ deptno {\to} dname, deptno {\to} dname\}$ the relation is in?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

12. $R(cndp)$ $f\{cn{\to}p, dn{\to}p, c{\to}d, d{\to}c\}$ the relation is in?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

13. $R(abcdefgh)$ $f\{a{\to}c, b{\to}d, e{\to}f, g{\to}h, c{\to}g\}$ the relation is in?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

14. $R(abcd)$, abcd contains atomic values & $f\{a{\to}c, b{\to}d\}$. the relation is in?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

15. $Supplier(sid, sname, city, street)$ $f\{sname\ city {\to} sid\ street, sid {\to} sname\}$ the relation is in?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

16. $R(abcdepg)$ $f\{ab{\to}cd, de{\to}p, c{\to}e, p{\to}c, b{\to}g\}$ the relation is in?
    - (a) bcnf
    - (b) 3nf but not bcnf
    - (c) 2nf not 3nf
    - (d) no 2nf

17. Which normal form is adequate for any RDBMS?
    - (a) 1nf
    - (b) 2nf
    - (c) 3nf
    - (d) bcnf

18. R(abcde) f{ab→cd,c→de,a→f} the relation is in?
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

19. R(abcdefgh) f{a→c,b→d,e→f,g→h,c→g} what is the normal form.
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

20. R(abcde) ac is key, f{b→e,c→d,a→b} the relation is in?
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

21. R(wxyz) f{wy→xz, z→y} the relation is in?
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

22. R(sid cid sname cname marks) f{sid →sname, cid →cname,sid cid →marks} the relation is in?
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

23. R(abcdef) f{a→b,de→f,b→c} find normal form.
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

24. R(manager, project, deptno) f{project, deptno → manager, manager →deptno) the relation is in?
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

25. Which is the best normal form for any RDBMS.
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

26. R(ab) f{a→b,b→a} the relation is in?
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

27. R(abdefgh) f{ab→ cdef, a→ c,b→ d,c→ fg, g→h,h→f,g→f} find max. normal form.
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

28. f{ab→ cd,cd→ ef,bc→ def,d→ b,ce→ d} find normal form
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

29. R(abcdefpg) f{ab→cd,de→p,c→e,p→c, p→g}
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

30. R(abcdefgh) f{abc→ de, f→fg, h→g, g→h, abcd→ef}
    (a) 1nf   (b) 2nf
    (c) 3nf   (d) bcnf

31. R(abc) {1,1,1}{1,1,0}{2,3,2}{2,3,2}. We can conclude that
    (a) a→b,b→c
    (b) a→b,b not implies c
    (c) b not implies c
    (d) a not implies b, b not implies c.

32. R(lmnop) f{m→o,no→p,p→l,l→mn} R1(lmnp) R2(mo) decomposition is ?
    (a) Lossless join & dependency preserving.
    (b) No Lossless join & No dependency preserving.
    (c) No Lossless join & dependency preserving.
    (d) Lossless join & No dependency preserving.

33. R(abcd) f{ab→c,b→d,d→b} find keys of R
    (a) ab,cd   (b) bc,ad
    (c) ac,bd   (d) ab,ad

34. R(abcde) into r1(ab(c) R2(ade) if the set of fds hold on R=F={a→bc,cd→c,b→d,c→a} the decomposition is ?
    (a) Lossless join & dependency preserving.
    (b) No Lossless join & No dependency preserving.
    (c) No Lossless join & dependency preserving.
    (d) Lossless join & No dependency preserving.

35. f{ab→cd,af→d,de→f,c→g,f→c,g→a} which of the following is false.
    (a) {cf}⁺={acdefg}   (b) {bg}⁺={abcdg}
    (c) {af}⁺={acdefg}   (d) {ab}⁺={abcdfg}

36. Which one of the following is/are true ?

(a) Every relation which is in 3-NF is also is BCNF.

(b) Every relation which is in 2-NF is also is BCNF.

(c) Every relation which is in 3-NF is also in 2-NF.

(d) Every relation is in 1-NF.

37. Consider the relation R(A B C D E F G H I J) which has following functional dependencies :

$\{AB \to C, B \to F, D \to IJ, A \to DE, F \to GH\}$

if R is decomposed into two decompositions D_1, D_2 as follows

$D_1 \Rightarrow R_1(ABC), R_2(ADE), R_3 (BF), R_4(FGH) R_5(DIJ)$

$D_2 \Rightarrow R_1(ABCDE), R_2(BFGH), R_3(DIJ)$

Then which of the following is true ?

(a) D_1 is lossless and D_2 is lossy.

(b) D_1 is lossy and D_2 is lossless.

(c) D_1 and D_2 both are lossy.

(d) D_1 and D_2 both are lossless.

38. Consider the relation R(ABCDE) with the following functional dependency set

$F = \{A \to BC, CD \to E, B \to D, E \to A\}$

If r is decomposed D{R_1(ABCE) and R_2(BD)} then which of the following is true ?

(a) Decomposition D is lossy and dependency preserving.

(b) Decomposition D is lossless and dependency preserving.

(c) Decomposition D is lossless but not dependency preserving.

(d) Decomposition D is lossy but not dependency preserving.

39. Consider the relation R(ABCDEFGHIJ) which have following functional dependencies.

$\{AB \to C, B \to D, D \to EF, A \to GH, H \to IJ\}$

Minimum number of tables which will be created in conversion of R to its boyce codd normal form?

(a) 4   (b) 3

(c) 5   (d) None of the above

40. Consider the following statements :

Statement-I: If $X \to A$ is a dependency, then the table is said to be in the 3-NF, if x is a proper subset of some key.

Statement-II : If 2-NF table consists of only one non key attribute then the table is always in 3-NF.

Which of the following is true?

(a) Both I and II are true

(b) I is true, II is false

(c) I is false, II is true.

(d) I and II both are false.

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ANSWER KEY

1. Ans. (b)	21. Ans. (c)
2. Ans. (a)	22. Ans. (a)
3. Ans. (d)	23. Ans. (a)
4. Ans. (c)	24. Ans. (c)
5. Ans. (c)	25. Ans. (c)
6. Ans. (b)	26. Ans. (d)
7. Ans. (a)	27. Ans. (a)
8. Ans. (c)	28. Ans. (b)
9. Ans. (c)	29. Ans. (a)
10. Ans. (a)	30. Ans. (b)
11. Ans. (a)	31. Ans. (b)
12. Ans. (c)	32. Ans. (d)
13. Ans. (a)	33. Ans. (d)
14. Ans. (a)	34. Ans. (d)
15. Ans. (c)	35. Ans. (c and d)
16. Ans. (d)	36. Ans. (c and d)
17. Ans. (c)	37. Ans. (d)
18. Ans. (a)	38. Ans. (c)
19. Ans. (a)	39. Ans. (c)
20. Ans. (a)	40. Ans. (c)

TRANSATIONS AND CONCURRENCY CONTROL

CHAPTER 4

OBJECTIVE QUESTIONS

1. Consider the following schedule S of transaction T_1 and T_2:

T_1	T_2
Read(A)	
A = A - 10	
Write(A)	
	Read(A)
	Temp = 0.2*A
	Write(A)
Read(B)	
B = B + 10	
Write(B)	
	Read(B)
	B = B + Temp
	Write(B)

Which of the following is TRUE about the schedule S?

(a) S is serializable only as $<T_1, T_2>$

(b) S is serializable only as $<T_2, T_1>$

(c) S is serializable both as $<T_1, T_2>$ and $<T_2, T_1>$

(d) S is serializable neither as $<T_1, T_2>$ nor as $<T_1, T_2>$

2. A company maintains records of sales made by its salespersons and pays them commission based on each individual's total sales made in a year. This data is maintained in a table with following schema:

salesinfo = (salespersonid, totalsales, commission) In a certain year, due to better business results, the company decides to further reward its salespersons by enhancing the commission paid to them as per the following formula.

If commission <= 50000, enhance it by 2%

If 50000 < commission <= 100000, enhance it by 4%.

If commission > 100000, enhance it by 6%.

The It staff has written three different SQL scripts to calculate enhancement for each slab, each of these scripts is to run as a separate transaction as follows:

T1 Update salesinfo

Set commission = commission* 1.02

Where commission < = 50000;

T2 Update salesinfo

Set commission = commission * 1.04

Where commission > 50000 and commission is < = 100000;

T3 Update salesinfo

Set commission = commission * 1.06

Where commission > 100000;

Which of the following options of running these transactions will update the commission of all salespersons correctly?

(a) Execute T1 followed by T2 followed by T3

(b) Execute T2, followed by T3; T1 running concurrently throughout

(c) Execute T3 followed by T2; T1 running concurrently throughout

(d) Execute T3 followed by T2 followed by T1

3. Amongst the ACID properties of a transaction, the 'Durability' property requires that the changes made to the database by a successful transaction persist.

(a) Except in case of an Operating-System crash

(b) Except in case of Disk crash

(c) Except in case of a power failure

(d) Always, even if there is a failure of any kind

4. Which of the following is not a consequence of concurrent operations?

    (a) Lost update problem

    (b) Update anomaly

    (c) Unrepeatable read

    (d) Dirty read

5. If a transaction T has obtained an exclusive lock on item Q, then T can

    (a) read Q

    (b) write Q

    (c) both read and write Q

    (d) write Q but not read Q

6. In schedule S there are 4 transactions each transaction is reading two data items and updating (on writing) the same and no two transaction are sharing the same data items. Then the schedule is equivalent to_____number of serial schedule.

    (a) 4   (b) 8

    (c) 16   (d) 24

7. Which of the following statement is false

    (a) Basic 2 PL protocol is dead lock free and guarantees recoverable schedule

    (b) Strict 2 PL protocol is not dead lock free and guarantees serializable schedules

    (c) Basic times tamp ordering suffers from cascading rollback (i.e., not recoverable schedule) and dead lock free

    (d) Strict time stamp ordering is recoverable and conflict serializable

    (e) None

8. A schedule S : T_1 Read (x); T_2 : Write (x) ; T_2 ; Write (y) ; T_3 Write (y) ;T_1 Write (y);

    T_1 : commit; T_2 ; commit ; T_3 : commit

    The above schedule is

    (a) view serializable

    (b) conflict serializable

    (c) Recoverable

    (d) not serializable

9. Which of the following schedule is allowed under basic timestamp protocol

    S1 : $r_1(x)$, $r_3(x)$, $w_1(x)$, $r_2(x)$, $w_3(x)$

    S2 : $r_1(x)$, $r_3(x)$, $w_3(x)$, $w_1(x)$, $r_2(x)$

    S3 : $r_3(x)$, $r_2(x)$, $w_3(x)$, $r_1(x)$, $w_1(x)$

    S4 : $r_1(x)$, $r_3(x)$, $r_2(x)$, $w_1(x)$, $w_3(y)$

    (a) S1   (b) S2

    (c) S3   (d) S4

10. Consider a non serial schedule S has 4 transactions and the execution of operation is given below :

    S : $R_1(A)$, $R_4(B)$, $W_3(A)$, $W_2(B)$, $W_4(C)$, $commit_4$, $W_3(C)$, $W_1(A)$, $commit_1$, $R_2(D)$, $W_3(D)$, $Rollback_3$;

    The above given Schedule is

    (a) Recoverable schedule

    (b) Cascading rollback schedule

    (c) Cascadeless rollback schedule

    (d) both (a) and (c)

11. Assume transaction A holds a shared lock R. If transaction B also requests for a shared lock on R ?

    (a) It will result in a deadlock situation.

    (b) It will immediately be rejected

    (c) It will immediately be granted

    (d) It will be granted as soon as it is released by A

12. Which of the following concurrency control schemes is not based on the serializability property?

    (a) Two – phase locking

    (b) Graph-based locking

    (c) Time-stamp based locking

    (d) None of these

13. Checkpoints are a part of ?

    (a) Recovery measures

    (b) Security measures

    (c) Concurrency measures

    (d) Authorization measures

14. Precedence graphs help to find a ?

(a) Serializable schedule

(b) Recoverable schedule

(c) Deadlock free schedule

(d) Cascadeless schedule

15. Consider following two columns ; Column-1 contains ACID properties and Column-2 contains handler of a ACID property.

Column-1	Column-2
P. Atomicity	1. Application programmer
Q. Consistency	2. Recovery manager
R. Isolation	3. Concurrency control manager
S. Durability	4. Transcation manager

Which one of the following is true ?

(a) P-2, Q-3, R-4, S-1

(b) P-4, Q-1, R-3, S-2

(c) P-4, Q-2, R-3, S-1

(d) R-2, Q-4, R-3, S-1

16. Consider the following schedules :

S_1 : $R_2(x)$ $R_2(y)$ $R_1(x)$ $R_3(y)$ $W_1(x)$ $R_2(x)$

S_2 : $R_2(x)$ $R_2(y)$ $W_2(x)$ $R_1(x)$ $R_1(y)$

S_3 : $R_2(x)$ $R_2(x)$ $R_1(x)$ $R_1(y)$ $W_1(x)$ $W_2(x)$

Which one of the following is true ?

(a) S_1 has lost update and dirty read problems.

(b) S_2 has dirty read and unrepeatable read problems

(c) S_3 has lost update problem.

(d) None

17. How many of following schedules have WR conflict.

S_1 : $R_1(x)$ $R_2(x)$ $W_2(x)$ $R_1(y)$ $W_1(y)$

S_2 : $R_1(x)$ $W_1(x)$ $R_2(x)$ $R_2(y)$ $W_1(y)$

S_3 : $R_1(x)$ $R_1(y)$ $W_1(x)$ $R_1(y)$ $R_2(y)$

(a) 1

(b) 2

(c) 3

(d) None

18. Consider the following schedules :

S_1 : $R_1(A)$ $W_1(A)$ $R_2(A)$ $W_2(A)$ $R_1(B)$ C_2C_1

S_2 : $R_1(A)$ $W_1(A)$ $C_1R_2(A)$ $R_3(A)$ $W_3(A)$ C_2C_3

Which one of the following is true ?

(a) S_1 is recoverable but not cascadeless.

(b) S_2 is both recoverable and cascadeless.

(c) S_1, S_2 are neither cascadeless nor recoverable

(d) S_1 is neither cascadeless nor recoverable but S_2 is recoverable schedule.

19. Consider the following schedules :

S_1 : $R_1(x)$ $W_2(x)$ $W_1(x)$ $R_1(x)$ C_2C_1

S_2 : $R_3(x)R_1(x)R_2(x)W_1(y)R_2(y)$ $W_2(x)C_3C_1C_2$

S_3 : $R_1(x)$ $R_2(z)$ $R_3(x)$ $R_1(x)$ $R_2(y)W_1(x)C_1W_2(z)$ $W_3(y)W_2(x)C_3C_2$

Which one of the following is true ?

(a) S_1 is recoverable but neither cascadeless nor strict

(b) S_2 is recoverable and cascadeless but not strict

(c) S_3 is recoverable, cascadeless and strict.

(d) None

20. Consider the following two schedules :

S_1 : $R_1(A)$ $R_2(B)$ $W_1(A)$ $W_2(B)$ C_1C_2

S_2 : $R_2(B)$ $R_1(A)$ $W_2(B)$ $W_1(A)$ C_2C_1

Consider the following three statements :

P : S_1 and S_2 are conflict equivalent

Q : S_1 and S_2 both have WW conflict.

R : S_1 and S_2 both are recoverable and cascadeless and strict schedules.

Which one of the following is true ?

(a) Only P

(b) P and Q

(c) P and R

(d) P, Q, R

21. Consider the following two schedules :

S_1 : $R_1(A)\ W_1(A)\ R_2(A)\ W_2(A)\ R_1(B)\ W_1(B)$ $R_2(B)\ W_2(B)\ C_2 C_1$

S_2 : $R_1(A)\ W_1(A)\ R_1(B)\ W_1(B)\ C_1\ R_2(A)\ W_2(A)$ $R_2(B)\ W_2(B)\ C_2$.

(a) S_1 and S_2 are conflict equivalent but S_1 is not conflict serializable.

(b) S_1 and S_2 both are recoverable, cascadeless.

(c) S_1 is recoverable and conflict serializable and S_2 is recoverable, cascadeless and strict.

(d) None

22. Consider the following two schedules :

S_1 : $R_1(A)\ W_1(A)\ R_1(B)\ R_2(A)\ W_2(A)\ R_2(B)$ $W_1(B)\ W_2(B)$

S_2 : $R_2(x)\ W_3(x)\ W_1(y)\ R_2(y)\ R_2(y)\ W_2(z)\ R_4(x)$ $R_4(y)$

Which one of the following is true ?

(a) S_1 is conflict serializable but S_2 is not.

(b) S_2 is conflict serializable but S_1 is not.

(c) Both S_1 and S_2 are conflict serializable

(d) Neither S_1 nor S_2 is conflict serializable.

23 Consider the following two schedules.

S_1 : $W_1(x)\ R_2(y)\ R_1(y)\ R_2(x)$

S_2 : $R_1(x)\ R_2(y)\ W_3(x)\ R_2(x)$

Which one of the following is true ?

(a) S_1 and S_2 both are conflict and view serializable.

(b) S_1 and S_2 both are conflict serializable but not view serializable.

(c) S_1 and S_2 both are neither conflict serializable nor view serializable.

(d) None

24. Which one of the following is/are false ?

(a) Every complete schedule is always strict schedule.

(b) Every cascadeless schedule is always recoverable schedule.

(c) Every strict schedule is always cascadeless schedule.

(d) Every recoverable schedule is always complete schedule.

25. Consider the following schedule S :

	S	
T_1	T_2	T_3
R(A)		
	W(A)	
W(A)		
		R(B)
	W(B)	
		W(B)

The number of possible non-serial schedule are having same transactions as in given schedule S are _____ .

26. Consider the following two schedules S_1 and S_2 :

S_1 : $R_1(A)\ R_2(B)\ W_1(A)\ W_2(B)$

S_2 : $R_2(A)\ R_1(B)\ W_2(A)\ W_1(B)$

Which of the following is/are true ?

(a) S_1 and S_2 are not conflict equivalent.

(b) S_1 and S_2 are conflict equivalent.

(c) S_1 and S_2 are view equivalent.

(d) S_1 and S_2 are not view equivalent.

27. Consider the following schedules :

S_1 : $R_1(A)\ W_1(A)\ R_1(C)\ R_2(B)\ W_2(A)\ R_2(C)$

S_2 : $R_1(A)\ W_2(A)\ W_1(A)\ R_2(B)\ R_1(C)$

Which one of the following is true?

(a) S_1 and S_2 both are conflict serializable schedule

(b) S_1 is conflict serializable but S_2 is not

(c) S_1 is not conflict serializable but S_2 is conflict serializable.

(d) Neither S_1 nor S_2 is conflict serializable.

28. Consider the following schedule S :

S : $R_2(x)\ R_1(x)\ W_2(x)\ W_1(x)\ C_2 C_1$

Which one of the following is true?

(a) S is only recoverable schedule.

(b) S is only cascadeless schedule.

(c) S is both recoverable and cascadeless schedule.

(d) S is strict, recoverable and cascadeless schedule.

29. Consider the following schedules :

$S_1 : R_1(A)W_1(A)R_2(A)W_2(A)W_1(A)W_2(B)R_2(B)$

$S_2 : R_1(x) R_2(x) W_2(x) W_1(x) R_3(x)$

Which of the following is true ?

(a) Both S_1 and S_2 are conflict serializable.

(b) S_1 is conflict serializable and S_2 is view serializable.

(c) Both S_1 and S_2 are view serializable.

(d) Neither S_1 nor S_2 are view serializable

(e) None of the above.

30. Which one of the following are false ?

(a) Strict-2PL protocol is not deadlock free and ensures cascadeless schedules and strict schedules.

(b) Basic time stamp protocol is deadlock free and ensures cascadeless schedules.

(c) Conservative-2PL is deadlock free and ensures cascadeless schedules.

(d) Rigours-2PL ensures strict schedules and there is a chance of deadlock.

31. Consider the following statements :

P : All conflict serializable schedules are also view serializable

Q : B tree have more redundancy than B⁺ tree.

R : Weak entity may or may not have total participation.

S : ALL and ANY conditions will return TRUE if inner query returns an empty set

Which statements of above are false?

(a) P and R only

(b) P, R and S only

(c) R and S only

(d) Q, R and S only

ANSWER KEY

1. **Ans. (a)**

   S is serializable either as T_1 or as T_2

2. **Ans. (d)**

   For a person whose commission is 8000 than it modified by T2.

   If T2 run first than T3, its commission will be modified by first update (T2), its commission will be, '12800'. Then after that if we apply T3, then its commission will be '12800' which is in range of T3 also.

3. **Ans. (d)**

   Always, even if there is a failure of any kind.

4. **Ans. (b)**

5. **Ans. (c)**

6. **Ans. (d)**

7. **Ans. (a)**

8. **Ans. (d)**

9. **Ans. (d)**

10. **Ans. (d)**

11. **Ans. (c)**

12. **Ans. (d)**

13. **Ans. (a)**

14. **Ans. (a)**

15. **Ans. (b)**

16. **Ans. (c)**

17. **Ans. (a)**

18. **Ans. (d)**

19. **Ans. (c)**

20. **Ans. (c)**

21. **Ans. (c)**

22. **Ans. (b)**

23. **Ans. (a)**

24. **Ans. (a)**

25. **Ans. (84)**

26. **Ans. (b and d)**

27. **Ans. (b)**

28. **Ans. (c)**

29. **Ans. (c)**

30. **Ans. (b and c)**

31. **Ans. (d)**

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QUERY LANGUAGE

CHAPTER 5

OBJECTIVE QUESTIONS

1. Consider the following relation schemas:

   b-Schema = (b-name, b-city, assets)

   a-Schema = (a-num, b-name, bal)

   d-Schema = (c-name, a-number)

   Let branch, account and depositor be respectively instances of the above schemas.

   Assume that account and depositor relations are much bigger than the branch relation.

   Consider the following query.

   $\Pi_{c\text{-name}} (\sigma_{b\text{-city}="Agra" \wedge bal<0}(\text{branch} \bowtie (\text{account} \bowtie \text{depositer})$

   Which one of the following queries is the most efficiently version of the above query?

   (a) $\pi_{c\text{-name}}(\sigma_{bal<0}(\sigma_{b\text{-city}="Agra"}\text{branch}\bowtie \text{account}) \bowtie \text{depositer})$

   (b) $\pi_{c\text{-name}}(\sigma_{b\text{-city}="Agra"}\text{branch}\bowtie(\sigma_{bal<0}\text{account}\bowtie \text{depositer})$

   (c) $\pi_{c\text{-name}}(\sigma_{b\text{-city}="Agra"}\text{branch}\bowtie\sigma_{b\text{-city}="Agra" \wedge bal<0}\text{account} \bowtie \text{depositer})$

   (d) $\pi_{c\text{-name}}(\sigma_{b\text{-city}="Agra"}\text{branch}\bowtie\sigma_{b\text{-city}="Agra" \wedge bal<0}\text{account} \bowtie \text{depositer})$

2. Relational Algebra is ?

   (a) Data Definition Language

   (b) Meta Language

   (c) Procedural query Language

   (d) None of the above

3. Key to represent relationship between tables is called ?

   (a) Primary key   (b) Secondary Key

   (c) Foreign Key   (d) None of these

4. _____ produces the relation that has attributes of R1 and R2

   (a) Cartesian product

   (b) Difference

   (c) Intersection

   (d) Product

5. Which of the following are the properties of entities?

   (a) Groups   (b) Table

   (c) Attributes   (d) Switchboards

6. Which of the following is correct:

   (a) A SQL query automatically eliminates duplicates

   (b) SQL permits attribute names to be repeated in the same relation.

   (c) A SQL query will not work if there are no indexes on the relations

   (d) None of these

7. The RDBMS terminology for a row is ?

   (a) tuple   (b) relation

   (c) attribute   (d) degree

8. The full form of DDL is ?

   (a) Dynamic Data Language

   (b) Detailed Data Language

   (c) Data Definition Language

   (d) Data Derivation Language

9. Which of the following is a legal expression in SQL?

    (a) SELECT NULL FROM EMPLOYEE

    (b) SELECT NAME FROM EMPLOYEE

    (c) SELECT NAME FROM EMPLOYEE WHERE SALARY = NULL

    (d) None of the above

10. In SQL, testing whether a subquery is empty is done using ?

    (a) DISTINCT   (b) UNIQUE

    (c) NULL   (d) EXISTS

11. A DBMS query language is designed to

    (a) support end users who use English-like commands

    (b) support in the development of complex applications software

    (c) specify the structure of a database

    (d) all of the above

12. A table joined with itself is called ?

    (a) Join   (b) Self Join

    (c) Outer Join   (d) Equi Join

13. _____ operator is used to compare a value to a list of literals values that have been specified.

    (a) Like   (b) COMPARE

    (c) BETWEEN   (d) IN

14. In relational database model, after conceptually designing your database, the information contained in a single class would be stored in a:

    (a) database   (b) field

    (c) property   (d) table

15. Relational Algebra does not have

    (a) Selection operator

    (b) Projection operator

    (c) Aggregation operators

    (d) Division operator

16. Consider the following three relations.

Jno	Sno		Jno	Sno		Jno	Sno
J2	S1		J2	S1		J2	S1
J1	S1		J1	S1		J1	S1
J1	S2		J1	S2		J1	S2

Query : $(R \bowtie Q \bowtie S)$

Find out the number of rows results comes as output for the above Query.

    (a) 4

    (b) 5

    (c) 6

    (d) None of the above values

17. The following two question involve the three relations below :

    1. $R(a,b) = \{(0,1), (4,5), (8,9)\}$

    2. $S(b,c) = \{(1, 2), (5,2), (5,6), (5, 10), (13, 10)\}$

    3. $T(c,d) = \{(2,3), (6,7), (10,11), (10, 3),\}$

    The number of tuples in $R \bowtie S \bowtie T$, where $\bowtie$ is the natural join is :

    (a) 5   (b) 8

    (c) 10   (d) 13

□□□

ANSWER KEY

1. *Ans. (b)*

    b.   Schema = (b-name, b-city, assets)

    a.   Schema = (a-num, b-name, bal)

    d.   Schema = (c-name, a-number)

$\pi_{\text{c-name}}(\sigma_{\text{b-city}} = \text{"Agra"} \wedge \text{bal} < 0 \text{ (branch} \bowtie \text{(account} \bowtie \text{depsitor))}$

Most efficient version of this query.

$\pi_{\text{c-name}} (\sigma_{\text{b-city= "Agra"}} \text{ branch} \bowtie (s_{\text{bal}<0} \text{account} \bowtie \text{depositor))}$

2. *Ans. (c)*

3. *Ans. (c)*

4. *Ans. (a)*

5. *Ans. (c)*

6. *Ans. (d)*

7. *Ans. (a)*

8. *Ans. (c)*

9. *Ans. (b)*

10. *Ans. (d)*

11. *Ans. (d)*

12. *Ans. (b)*

13. *Ans. (a)*

14. *Ans. (d)*

15 *Ans. (c)*

16. *Ans. (b)*

17. *Ans. (a)*

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STRUCTURED QUERY LANGUAGE (SQL)

CHAPTER 6

OBJECTIVE QUESTIONS

1. Consider two tables in a relational database with columns and rows as follows:

Table: Students

Roll_no	Name	Dept_id
1	ABC	1
2	DEF	1
3	GHI	2
4	JKL	3

Table: Department

Dept_id	Dept_name
1	A
2	B
3	C

Roll_no is the primary key of the student table, Dept_id is the primary key of the Department table and Student. Dept_id is a foreign key from Department. Dept_id What will happen if we try to execute the following two SQL statements?

i. update Student set Dept_id = Null where Roll_no = 1;

ii. update Department set Dept_id = null where Dept_id = 1;

(a) Both i, and ii will fail

(b) i, will fail but ii will succeed

(c) i, will succeed but ii, will fail

(d) both i and ii will succeed

2. A relational database contains two tables student and department in which student table has columns roll_no, name and dept_id and department table has columns dept_id and dept_name. The following insert statements were executed successfully to populate the empty tables:

Insert into department values (1, 'Mathematics');

Insert into department values (2, 'Physics');

Insert into student values (1, 'Navin', 1);

Insert into student values (2, 'Mukesh', 2);

Insert into student values (3, 'Gita', 1);

How many rows and columns will be retrieved by the following SQL statement?

Select * from student, department

(a) 0 rows and 4 columns

(b) 3 rows and 4 columns

(c) 3 rows and 5 columns

(d) 6 rows and 5 columns

3. In an inventory management system implemented at a trading corporation, there are several tables designed to hold all the information. Amongst these, the following two tables hold information on which items are supplied by which suppliers, and which warehouse keeps which items along with the stock-level of these items.

Supply = (supplierid, itemcode)

Inventory = (itemcode, warehouse, stocklevel)

For a specific information required by the management, following SQL query has been written.

Select distinct STMP supplierid

From supply as STMP

Where not unique (Select ITMP.supplierid

From Inventory, Supply as ITMP

Where STMP.supplierid = ITMP.supplierid

And ITMP.itemcode = Inventory.itemcode

And Inventory.warehouse = 'Nagpur');

For the warehouse at Nagpur, this query will find all suppliers who

(a) Do not supply any item

(b) Supply exactly one item

(c) Supply one or more items

(d) Supply two or more items

4. A table 'student' with schema (roll, name, hostel, marks) and another table 'hobby' with schema (roll, hobbyname) contains records as shown below.

Table student			Table hobby		
Roll	Name	Hostel	Marks	Roll	Hobbyname
1798	Manoj Rathod	7	95	1798	Chess
2154	Soumic, Banerjee	5	68	1798	Music
2369	Gumma Reddy	7	86	2154	Music
2581	Pradeep Pendse	6	92	2369	Swimming
2643	Suhas kulkarni	5	78	2581	Cricket
2711	Nitin Kadam	8	72	2643	Chess
2872	Kiran Vora	5	92	2643	Hockey
2926	Manoj Kunkalikar	5	94	2711	Volleyball
2956	HemantKarkhanis	7	88	2872	Football
3125	Rajesh Doshi	5	82	2926	Cricket
				2959	Photography
				3125	Music
				3125	chess

The following SQL query is executed on the above tables:

select hostel

from student naturaj join hobby

where marks > = 75 and roll between 2000 and 3000;

Relation S and H with the same schema as those of these two tables respectively contain the same information as tuples. A new relation S' is obtained by the following relational algebra operation.

$S' = \Pi_{hostel}(\sigma_{S.roll=H.roll}(\sigma_{marks>75 \text{ and } roll > 2000 \text{ and } roll < 300}(S))X(H))$

The difference between the number of rows output by the SQL statement and the number of tuples in S' is

(a) 6   (b) 4

(c) 2   (d) 0

Statement for Linked Answer Questions 5 and 6

Consider a database with three relation instances shown below. The Primary keys for the Drivers ans Cars relation are did and cid respectively and the records are stored in ascending order of these primary keys as given in the tables. No indexing is available in the database D: Drivers relation.

D : Drivers relation

did	dname	rating	age
22	Karthikeyan	7	25
29	Salman	1	33
31	Boris	8	55
32	Arnoldt	8	25
58	Schumacher	10	35
64	Sachin	7	35
71	Senna	10	16
74	Sachin	9	35
85	Rahul	3	25
95	Ralph	3	53

R : Reserves relation

did	cid	day
22	101	10/10/06
22	102	10/10/06
22	103	08/10/06
22	104	07/10/06
31	102	10/11/06
31	103	06/11/06
31	104	12/11/06
64	101	05/09/06
64	102	08/09/06
74	103	08/09/06

C : Cars relation

cid	Cname	Colour
101	Renault	Blue
102	Renault	Red
103	Ferrari	Green
104	Jaguar	red

5. What is the output of the following SQL query?

Select D.dname

from Drivers D

where D.did in

(select R.did

from Cars C, Reserves R

where R.cid = C.cid

and C.color = 'red'

intersect

select R.did

from Cars C, Reserves R

where R.cid = C.cid and C.color = 'green');

(a) Karthikeyan, Boris

(b) Sachin, Salman

(c) Karthikeyan, Boris, Sachin

(d) Schumacher, Senna

6. Let n be the number of comparisons performed when the above SQL query is optimally executed. If linear search is used to locate a tuple in a relation using primary key, then n lies in the range.

(a) 36-40   (b) 44-48

(c) 60-64   (d) 100-104

7. Which are the two ways in which entities can participate in a relationship?

(a) Passive and active

(b) Total and partial

(c) Simple and Complex

(d) All of the above

8. Which of the following is a comparison operator in SQL?

(a) =   (b) LIKE

(c) BETWEEN   (d) All of the above

9. A set of possible data values is called

(a) attribute.   (b) degree.

(c) tuple.   (d) domain.

10. Using Relational Algebra the query that finds customers, who have a balance of over 1000 is

(a) $\Pi_{Customer\_name}(\sigma_{balance>1000}(Deposit))$

(b) $\sigma_{Customer\_name}(\Pi_{balance>1000}(Deposit))$

(c) $\Pi_{Customer\_name}(\sigma_{balance>1000}(Borrow))$

(d) $\sigma_{Customer\_name}(\Pi_{balance>1000}(Borrow))$

11. In E-R Diagram derived attribute are represented by ?

(a) Ellipse   (b) Dashed ellipse

(c) Rectangle   (d) Triangle

12. Cross Product is a:

(a) Unary Operator

(b) Ternary Operator

(c) Binary Operator

(d) Not an operator

13. An instance of relational schema R(A,B,C) has distinct values of A including NULL values. Which one of the following is true?

(a) A is a candidate key

(b) A is not a candidate key

(c) A is a primary Key

(d) Both (a) and (c)

14. The FD set {A → B, DB → C} implies ?

(a) DA → C   (b) A → C

(c) B → A   (d) DB → A

15. Count function in SQL returns the number of

(a) values   (b) distinct values

(c) groups   (d) columns

16. If two relations R and S are joined, then the non matching tuples of both R and S are ignored in

(a) left outer join   (b) right outer join

(c) full outer join   (d) inner join

17. Select E.eid

From Employee E

Where E.Salary = (Select max (E2.salary)

From Employee E2

Where E2.salary = (select max (E3.salary)

From Employee E3);

(a) It returns eids of employees who make highest salary

(b) It returns eids of employees who make second highest salary

(c) It returns eids of employees who make third highest salary

(d) It returns error message

18. Select E.cname

    From Aircraft A, Certified C, Pilots P

    Where A.aid = C.aid and A.name = 'Boeing' and P.eid = C.eid;

    the above query Returns

    (a) Find the names of pilots certified for some aircraft

    (b) Find the names of pilots certified for Bombay aircraft

    (c) Find the eids of pilots certified for Boeing aircraft

    (d) Find the names of pilots certified for Boeing aircraft

19. Select E.cname

    From Aircraft A, Certified C, Pilots P

    Where A.aid = C.aid and P.eid = C.eid and A.cruisingrange > 3000 and P.eid not in

    (Select C2.eid From Certified C2, Aircraft A2 Where C2.aid = A2.aid and A2.name = 'boeing');

    The above query returns

    (a) Finds the names of pilots who can operate with a range greater than 3000 km

    (b) Finds the names of pilots but are not certified on any Boeing

    (c) Find the names of pilots who can operate with a range greater than 3000 Km, but are not certified on any Boeing

    (d) Returns error

20. Consider the schema

    supplier (sid, sname, address)

    parts (pid, pname, color)

    Catalog (sid, pid, cost)

    Select distinct C.sid from catalog C, parts P where C.pid = P.pid and P.color = 'red''

    Intersect

    Select distinct C.sid from catalog C1, parts P1 where C1.pid = P1.pid and P1.color = green'';

    (a) It finds sids of suppliers who supply a red part

    (b) It finds pids of suppliers who supply a red part and green part

    (c) It finds sids of suppliers who supply a red part and green part

    (d) It finds sids of suppliers who supply a green part.

21. _____ is a virtual table that draws its data from the result of an SQL SELECT statement.

    (a) View   (b) Synonym

    (c) Sequence   (d) Transaction

22. Which two files are used during operation of the DBMS

    (a) Query languages and utilities

    (b) DML and query language

    (c) Data dictionary and transaction log

    (d) Data dictionary and query language

23. DML is provided for

    (a) Description of logical structure of database.

    (b) Addition of new structures in the database system.

    (c) Manipulation & processing of database.

    (d) Definition of physical structure of database system.

24. AS clause is used in SQL for

    (a) Selection operation

    (b) Rename operation

    (c) Join operation

    (d) Projection operation

25. The language that requires a user to specify the data to be retrieved without specifying exactly how to get it is

    (a) Procedural DML

    (b) Non-Procedural DML

    (c) Procedural DDL

    (d) Non-Procedural DDL

26. Consider the following customer relational table and query ?

Customer(<u>customer-name</u>, customer-city, customer-street)

query q : Select F.customer-name

        from customer F join customer S

        using (customer-city, customer-street)

        Where S.customer-name = "Smith";

The above query q returns :

(a) The name of all customers who live in the same city as "Smith"

(b) The name of all customers.

(c) The name of all customers who live in the same street and same city as "Smith"

(d) The name of all customers who live in the same street as "Smith".

27. Consider the following relational tables and query q.

employee(<u>employee-name</u>, street, city)

works (<u>employee-name</u>, company-name, salary)

Query q :

Select * from employee

Where employee-name from works

where company-name = "Engineers Academy"

and salary > 50000;

The above query q returns :

(a) Name of all employees of engineers academy.

(b) Name, street, city of all employees of engineers academy.

(c) Name of all employees of engineers academy who have salary of greater than 50000.

(d) Name, street, city of all employees of engineers academy who have salary of greater than 50000.

28. Consider the following two queries :

Query - I :

Select ID, name, count (course-id, section-id, year, semester)

as

'Number of sections from instructor natural left outer join teaches

group by ID, name

Query - II :

Select ID, name,

(select count(*) as 'Number of sections'

from teaches T where T.id = I.id)

from instructor I

Here instructor and teaches are relational table as follows :

instructor (<u>ID</u>, name, dept-name, salary)

teaches (<u>ID</u>, <u>course-id</u>, <u>sec-id</u>, <u>semester</u>, <u>year</u>)

Which of the following option is correct?

(a) Both queries returns same result.

(b) Intersection of results of both query is empty.

(c) Set difference of result of query-I from query-II is not empty.

(d) None of the above.

ANSWER KEY

1. *Ans. (c)*

First query will successfully executed and after executing this statement attribute dept-id of student table become NULL which is foreign key from department's dept-id. So, second statement will not execute, condition will not satisfy in this case, by any row.

Hence correct answer is (c).

2. *Ans. (d)*

After populating the table

Student

Dept-id	Dept name
1	Mathematic
2	Physics

Roll.no	Name	Dept_id
1	Navin	1
2	Mukesh	2
3	Gita	1

Department

Select * from student, department.

This query will execute natural join first and will retrieve all the row and column. Hence 6 row and 5 column will retrieve, which is same as Cartesian product of these table. Hence correct answer is (d).

3. *Ans. (d)*

This query will find all suppliers who supply two or more item.

4. *Ans. (a)*

By executing SQL query we have table of the form.

Table student		Table hobby		
Roll	Name	Hostel	Marks	Hobby name
1798	Manoj Rathod	7	95	Chess
1798	Manoj Rathod	7	95	Music
2154	Soumic Banerjee	5	68	Music
*2154	Gumma Reddy	7	86	Swimming
*2581	Pradeep Pendse	6	92	Cricket
*2643	Suhas Kulkarni	5	78	Hockey
*2872	Kiran vora	5	92	Football
*2711	Nitin Kadam	8	72	Volleyball
*2926	Manoj Kunkalikar	5	94	Cricket
*2959	Hemant Karkhanis	7	88	Photography
*3125	Rajesh Doshi	5	82	Music
*3125	Rajesh Doshi	5	82	Chess
*2643	Suhas Kulkari	5	78	Chess

* Lines related to final query.

{7, 6, 5, 5, 8, 5, 7, 5, 5, 5} - {7, 6, 5, 8} = 6

5. *Ans. (a)*

When R.cid = c.cid and c.colour = 'Green'

Did	cid	Day	
32	103	08/10/06	
31	103	06/11/06	Table-1
74	103	08/09/06	

When R.cid = c.cid and colour = 'Red'

did	cid	day	
22	102	10/10/06	
22	104	07/10/06	
31	102	10/11/06	Table-2
31	104	12/11/06	
64	102	08/09/06	

$\Rightarrow$ Table 1 $\cap$ Table 2 gives 2 values of did = 22 and 31

$\therefore$ with these values in driver relation gives KarthiKeyan and Boris.

6. *Ans. (c)*

Counting the number of comparision leads to approx. 62.

7. *Ans. (b)*

8. *Ans. (d)*

9. *Ans. (d)*

10. *Ans. (a)*

11. *Ans. (b)*

12. *Ans. (c)*

13. *Ans. (b)*

14. *Ans. (a)*

15. *Ans. (a)*

Count function in SQL returns the number of values. (Count function counts all the not null values in the specific column. If we want to count only distinct values than the DISTINCT keyword is also to be used).

16. *Ans. (d)*

17. *Ans. (b)*

18. *Ans. (d)*

19. *Ans. (c)*

20. *Ans. (c)*

21. *Ans. (a)*

22. *Ans. (c)*

23. *Ans. (c)*

DML is provided for manipulation & processing of database s. (Data stored in the database is processed or manipulated using data manipulation language commands as its name)]

24. *Ans. (b)*

'AS' clause is used in SQL for rename operation. (e.g., SELECT ENO AS EMPLOYEE_NO FROM EMP)

25. *Ans. (b)*

26. *Ans. (c)*

27. *Ans. (d)*

28. *Ans. (a)*

□□□

CHAPTER

FILE STRUCTURE

7

OBJECTIVE QUESTIONS

1. Consider a table T in a relational database with a key field K. A B-tree of order p is used as an access structure on K, where p denotes the maximum number of tree pointer in a B-tree index node. Assume that K is 10 bytes long; disk block size is 512 bytes; each data pointer P_D is 8 bytes long and each block pointer P_B is 5 byte long. In order for each B-tree node to fit in a single block, the maximum value of p is ?

  (a) 20   (b) 22

  (c) 23   (d) 32

2. A B-tree used as an index for a large database table has four levels including the root node. If a new key is inserted in this index, then the maximum number of nodes that could be newly created in the process are?

  (a) 5   (b) 4

  (c) 3   (d) 2

3. In a database file structure, the search key field is 9 bytes long, the block size is 512 bytes, a record pointer is 7 bytes and a block pointer is 6 bytes. The largest possible order of a non-leaf node in a B⁺-tree implementing this file structure is?

  (a) 23   (b) 24

  (c) 34   (d) 44

4. A primary key if combined with a foreign key creates

  (a) Parent-Child relationship between the tables that connect them.

  (b) Many to many relationship between the tables that connect them.

  (c) Network model between the tables that connect them.

  (d) None of the above.

5. A B-tree of order m has maximum of _____ children?

  (a) m   (b) m+1

  (c) m-1   (d) m/2

6. If $\alpha \rightarrow \beta$ holds then so does ?

  (a) $\gamma\alpha \rightarrow \gamma\beta$

  (b) $\alpha \rightarrow\rightarrow \gamma\beta$

  (c) both (a) and (b)

  (d) None of the above

7. A table can have only one ?

  (a) Secondary key

  (b) Alternate key

  (c) Unique key

  (d) Primary key

8. Dependency preservation is not guaranteed in

  (a) BCNF   (b) 3NF

  (c) 1NF   (d) 2NF

9. Isolation of the transactions is ensured by

  (a) Transaction

  (b) Application programmer

  (c) Concurrency control

  (d) Recovery management

10. Given that the block size is 512 bytes, search filed is 9 bytes, record pointer is 7 bytes and a block pointer is 6 bytes long, what are the orders of internal and leaf nodes of B⁺-tree respectively?

  (a) 31, 34   (b) 34, 31

  (c) 32, 33   (d) 34, 32

11. Consider a disk with block size = 1024 bytes, a block pointer 6 bytes and record pointer 8 bytes. The file has 10000 employee records. Every record is fixed length of 100 bytes. Its key is SSN which is of 2 bytes. The file is not ordered by the key field (SSN) and want to construct a secondary index on SSN. Find out the no. of blocks required in first level index.

(a) 100 blocks   (b) 99 blocks

(c) 117 blocks   (d) 116 blocks

12. Consider the file consists of 30,000 fixed length records of size 100 bytes. Each disk block size is 1024 bytes and block pointer size is 6 bytes. Suppose we construct a secondary index on key field of length 9 bytes long then find out the number of block needed for index file ?

(a) 441   (b) 434

(c) 435   (d) 442

13. Suppose we have an ordered file with 30,000 records stored on a disk with block size 1024 bytes stored based on key field of length 9 bytes and block pointer of 6 bytes. File records are of fixed length and are unsnapped, with record length 100 bytes. If we construct an index on the above key field, find out the total number of blocks required in index file ?

(a) 44 blocks   (b) 45 blocks

(c) 441 blocks   (d) 442 blocks

☐☐☐

ANSWER KEY

1. *Ans. (c)*

2. *Ans. (a)*

    [dashed box] [solid box] root (first level)

    [dashed box] [solid box] Second level

    [dashed box] [solid box] third level

    [dashed box] [solid box] fourth level

    If insert takes place then new node can be inserted at each level shown by dashed box and in this process the new root can be created. Hence 5 is the answer.

3. *Ans. (c)*

4. *Ans. (a)*

5. *Ans. (a)*

6. *Ans. (a)*

7. *Ans. (d)*

8. *Ans. (a)*

9. *Ans. (c)*

10. *Ans. (b)*

11. *Ans. (b)*

12. *Ans. (d)*

13. *Ans. (b)*

□□□

NOSQL AND POSTGRES SQL

OBJECTIVE QUESTIONS

1. Which of the following is not a NoSQL database?

   (a) Cassandra   (b) MongoDB

   (c) SQL Server   (d) None of the above

2. Which of the following is a nosql database type?

   (a) SQL

   (b) JSON

   (c) Document databases

   (d) None of the Above.

3. Which of the following are the simplest NoSQL databases ?

   (a) Key-value Stores

   (b) Document Databases

   (c) Wide-column

   (d) All of the above

4. What is the aim of NoSQL?

   (a) NoSQL is not suitable for storing structured data.

   (b) NoSQL databases allow storing non-structured data.

   (c) NoSQL is a new data format to store large datasets.

   (d) NoSQL provides an alternative to SQL databases to store textual data.

5. All NoSQL databases are similar. true or false.

   (a) True

   (b) False

6. Which of the following is a strong feature for NoSQL databases?

   (a) Higher Scalability

   (b) Cost Effecitve

   (c) Support flexible schema

   (d) All of the above

7. What are the types of NoSQL databases?

   (a) Document databases

   (b) Key-value stores

   (c) Graph & Column-oriented databases.

   (d) All of the above

8. Which of the following is not a valid NoSQL database ?

   (a) Cassandra

   (b) Scylla

   (c) Handhoop / Hbase

   (d) PostgreSQL

9. Does NoSQL databases prohibits the use of SQL?

   (a) Yes

   (b) No

10. What is NoSQL database?

    (a) NoSQL is a database is an enhanced form of RDBMS.

    (b) NoSQL is database that is built with enhancements to DBMS.

    (c) NoSQL is a database that is built on ways and means other than tables and columns.

    (d) None of the Above

11. Is MongoDB a NoSQL database?

    A. Yes

    (b) No

12. NoSQL can be referred to as

    (a) No SQL   (b) Only SQL

    (c) Not Only SQL   (d) SQL Undefined

13. Which of the following represent column in NoSQL
    - (a) Field
    - (b) Database
    - (c) Collection
    - (d) Document

14. The core principle of NoSQL is
    - (a) High availability
    - (b) Low availability
    - (c) Both High & Low availability
    - (d) None of above

15. .... is a online NoSQL developed by Cloudera.
    - (a) Oozie
    - (b) Hbase
    - (c) Imphala
    - (d) HCatalog

16. NoSQL databases is used mainly for handling large volumes of data.
    - (a) structured
    - (b) unstructured
    - (c) semi-structured
    - (d) None of above

17. Which of the following is not an example of a NoSQL database management system ?
    - (a) HBase
    - (b) MongoDB
    - (c) CouchDB
    - (d) PostgreSQL

18. Which of the following is a characteristic of a NoSQL database?
    - (a) Uses JSON
    - (b) Needs a schema
    - (c) Requires JOINs
    - (d) Uses tables for storage

19. NoSQL databases are most often referred to as
    - (a) Network
    - (b) Distributed
    - (c) Relational
    - (d) Object-oriented

20. Which of the following is a reason to use an SQL database ?
    - (a) It's ACID-compliant.
    - (b) It can easily store unstructured data. It's ACID- compliant.
    - (c) It can enable development in the cloud
    - (d) None of above

21. Which of the following is true of nosql databases ?
    - (a) They do not support very large amounts of sparse data.
    - (b) They do not support distributed database architectures.
    - (c) They are not based on the relational model
    - (d) They are geared toward transaction consistency rather than performance.

22. NoSQL databases are increasingly used in ....
    - (a) Big data
    - (b) Real-time web applications
    - (c) Both Big data & Real-time web applications
    - (d) None of the above

23. Which of the following NoSQL database store data in nodes and edges?
    - (a) Wide-column stores
    - (b) Key-value databases
    - (c) Graph databases
    - (d) Document databases

24. What are the disadvantages of NoSQL databases?
    - (a) Limited query capabilities
    - (b) The learning curve is stiff for new developers
    - (c) Doesn't work as well with relational data
    - (d) All of the above

25. Which of the following is a document-oriented NoSQL Database?
    - (a) CouchDB
    - (b) OrientDB
    - (c) FlockDB
    - (d) Hypertable

26. What does NoSQL stand for?
    - (a) Not Only SQL
    - (b) Non-SQL
    - (c) No SQL
    - (d) None of the above

27. Which of the following is not a type of NoSQL database?
    - (a) Graph database
    - (b) Column-family database
    - (c) Relational database
    - (d) Document database

28. Which of the following is an example of a document database?

    (a) MongoDB   (b) Cassandra

    (c) Neo4j   (d) Redis

29. Which of the following is a benefit of using a NoSQL database ?

    (a) High scalability

    (b) Data consistency

    (c) ACID compliance

    (d) Limited data modeling options

30. Which of the following is a disadvantage of using a NoSQL database?

    (a) Limited data modeling options

    (b) ACID compliance

    (c) Data consistency

    (d) Low scalability

31. Which of the following is a characteristic of a key-value store database ?

    (a) Data is stored as key-value pairs

    (b) Supports transactions and joins

    (c) Provides full-text search capabilities

    (d) Stores data in a tabular format

32. Which of the following is an example of a key-value store database?

    (a) Redis

    (b) Cassandra

    (c) Couchbase

    (d) MongoDB

33. Which of the following is a characteristic of a column-family store database?

    (a) Data is stored as key-value pairs

    (b) Supports transactions and joins

    (c) Provides full-text search capabilities

    (d) Stored data in column families

34. Which of the following is an example of a column-family store database?

    (a) Cassandra

    (b) MongoDB

    (c) Redis

    (d) Couchbase

35. Which of the following is a characteristic of a document database ?

    (a) Data is stored as key-value pairs

    (b) Supports transactions and joins

    (c) Provides full-text search capabilities

    (d) Stores data in a document format

36. Which of the following is an example of a document database?

    (a) Couchbase

    (b) Cassandra

    (c) Redis

    (d) MongoDB

37. Which of the following is a characteristic of a graph database?

    (a) Redis   (b) MongoDB

    (c) Cassandra   (d) Neo4j

38. Which of the following is a benefit of using a document database ?

    (a) Flexible schema

    (b) High data consistency

    (c) Strong data typing

    (d) Limited data storage options

39. Which of the following is a disadvantage of using a graph database?

    (a) Limited scalability

    (b) High complexity

    (c) Inconsistent data modeling

    (d) Limited support for joins

40. Which of the following is a benefit of using a key-value store database ?

(a) High scalability

(b) Strong data typing

(c) Easy querying and indexing

(d) Limited data storage options

41. Which of the following is a disadvantage of using a column-family store database ?

(a) Limited data modeling options

(b) Limited scalability

(c) High complexity

(d) Limited support for ACID

42. Which of the following is a benefit of using a graph database ?

(a) Flexible data modeling

(b) Limited complexity

(c) High data consistency

(d) Strong support for ACID transactions

43. Which of the following is a characteristic of a document database ?

(a) Supports transactions and joins

(b) Stores data in a document format

(c) Provides full-text search capabilities

(d) Stores data in column families

44. Which of the following is a benefit of using a column-family store database?

(a) Flexible data modeling

(b) High scalability

(c) Easy querying and indexing

(d) Strong support for ACID transactions

45. Which of the following is a disadvantage of using a document database ?

(a) Limited data modeling options

(b) Limited scalability

(c) High complexity

(d) Limited support for ACID

46. Which of the following is a characteristic of NoSQL databases ?

(a) They use SQL for querying and data manipulation

(b) They have a rigid schema

(c) They are primarily used for transactional data

(d) They can handle unstructured or semi-structured data

47. What is the purpose of the pg_catalog Schema in Postgres SQL?

(a) Contains system catalogs

(b) Stores user-defined tables

(c) Holds temporary tables

(d) None of the above

48. Which of the following is not a valid data type in Postgres SQL?

(a) Integer   (b) Char

(c) Array   (d) Currency

49. What is the purpose of the EXPLAIN command in Postgres SQL ?

(a) To display the query plan

(b) To execute a query

(c) To create a new table

(d) To delete data from a table

50. Which statement is used to add a new column to an existing table in Postgres SQL

(a) ALTER TABLE

(b) CREATE TABLE

(c) INSERT INTO

(d) UPDATE

51. Which of the following is not a valid index type in Postgres SQL?

(a) B-tree   (b) Hash

(c) R-tree   (d) Graph
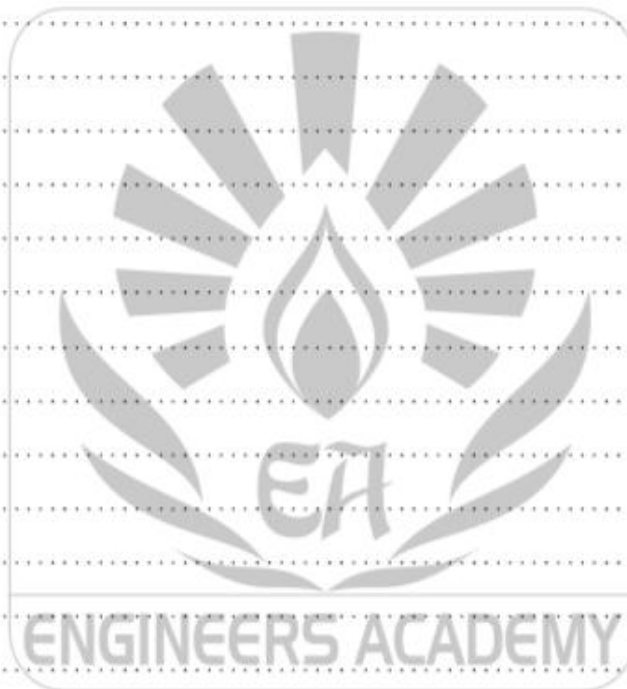
52. Which statement is used to delete a table in Postgres SQL?

(a) DROP TABLE

(b) DELETE FROM

(c) TRUNCATE TABLE

(d) UPDATE

53. What is the purpose of the VACUUM command in Postgres SQL?

(a) To free up space in the database

(b) To create a new table

(c) To modify the structure of a table

(d) None of the above

54. Which statement is used to create a new index on a table in Postgres SQL?

(a) CREATE INDEX

(b) CREATE TABLE

(c) ALTER INDEX

(d) ALTER TABLE

55. Which of the following is not a valid constraint type in Postgres SQL ?

(a) CHECK

(b) PRIMARY KEY

(c) DEFAULT

(d) SELECT

56. Which statement is used to update data in a table in Postgres SQL ?

(a) UPDATE

(b) INSERT INTO

(c) DELETE FROM

(d) ALTER TABLE

57. What is the purpose of the SERIAL data type in Postgres SQL?

(a) To store large amounts of text

(b) To generate a unique identifier for a row

(c) To store binary data

(d) None of the above

58. What does PostgreSQL stand for?

(a) Post-Graphical SQL

(b) Post-Generated SQL

(c) Post-Global SQL

(d) Postgres Structured Query Language

59. Which language is used to write stored procedures and triggers in PostgreSQL ?

(a) Java   (b) Python

(c) C   (d) PL/pgSQL

60. Which command is used to create a new database in PostgreSQL ?

(a) CREATE   (b) SELECT

(c) UPDATE   (d) INSERT

61. Which command is used to connect to a PostgreSQL database from the command line?

(a) PSQL   (b) SQL

(c) MySQL   (d) MSSQL

62. Which command is used to view the list of tables in a PostgreSQL database ?

(a) SHOW TABLES

(b) LIST TABLES

(c) DISPLAY TABLES

(d) \DT

63. Which command is used to add a new column to an existing table in PostgreSQL ?

(a) CREATE COLUMN

(b) ADD COLUMN

(c) ALTER COLUMN

(d) UPDATE COLUMN

□□□

ANSWER KEY

1. Ans. (c)		33. Ans. (d)	
2. Ans. (c)		34. Ans. (a)	
3. Ans. (a)		35. Ans. (b)	
4. Ans. (c)		36. Ans. (d)	
5. Ans. (b)		37. Ans. (d)	
6. Ans. (d)		38. Ans. (a)	
7. Ans. (d)		39. Ans. (b)	
8. Ans. (d)		40. Ans. (a)	
9. Ans. (b)		41. Ans. (a)	
10. Ans. (c)		42. Ans. (a)	
11. Ans. (a)		43. Ans. (b)	
12. Ans. (c)		44. Ans. (b)	
13. Ans. (a)		45. Ans. (a)	
14. Ans. (a)		46. Ans. (d)	
15. Ans. (b)		47. Ans. (a)	
16. Ans. (b)		48. Ans. (d)	
17. Ans. (d)		49. Ans. (a)	
18. Ans. (a)		50. Ans. (a)	
19. Ans. (c)		51. Ans. (d)	
20. Ans. (a)		52. Ans. (a)	
21. Ans. (c)		53. Ans. (a)	
22. Ans. (c)		54. Ans. (a)	
23. Ans. (c)		55. Ans. (b)	
24. Ans. (d)		56. Ans. (a)	
25. Ans. (a)		57. Ans. (b)	
26. Ans. (a)		58. Ans. (d)	
27. Ans. (c)		59. Ans. (d)	
28. Ans. (a)		60. Ans. (a)	
29. Ans. (a)		61. Ans. (a)	
30. Ans. (a)		62. Ans. (d)	
31. Ans. (a)		63. Ans. (b)	
32. Ans. (a)			

□□□

NOTES