



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Tech (BT)/SEM-4/CS-415/2010**

**2010**

**DATABASE MANAGEMENT SYSTEM &  
COMPUTER NETWORKING**

Time Allotted : 3 Hours

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 )**

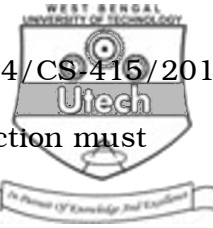
1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Both way communications at a time is possible in
  - a) Simplex
  - b) Half Duplex
  - c) Full Duplex
  - d) All of these.
- ii) Signaling and interpretation of bits are done in OSI
  - a) Data link layer
  - b) Physical layer
  - c) Network layer
  - d) Presentation layer.
- iii) The interconnection network is very much costly in
  - a) BUS
  - b) RING
  - c) MESH
  - d) STAR.



- iv) "End to end delivery" is done by
- a) Transport layer                      b) Network layer
  - c) Data link layer                      d) Session layer.
- v) Routing of packet is done in
- a) Transport layer                      b) Network layer
  - c) Session layer                      d) Data link layer.
- vi) In guided media, communication will be faster in
- a) UTP cable                      b) Coaxial cable
  - c) STP cable                      d) Fiber optics.
- vii) DBA is a
- a) Software                      b) Hardware
  - c) Person                      d) Others.
- viii) View is a
- a) Temporary table                      b) Virtual table
  - c) SQL statement                      d) Permanent table.
- ix) Relational algebra is a
- a) Procedural language
  - b) Non-procedural language
  - c) Query language
  - d) Structured language.



- x) In a two phase locking protocol a transaction must
- a) Release all locks at the same time
  - b) Not obtain any new locks once it has started locks
  - c) Only obtain locks on item not used by any other transactions
  - d) Ensure that deadlock will never occur.
- xi) Cardinality ratio means
- a) Number of attributes associated with any entity
  - b) Number of relation in E-R diagram
  - c) A ratio between number of relation and number of entity of an E-R diagram
  - d) The number of entities to which another entity can be associated via relationship set.
- xii) Referential integrity means
- a) Super key – candidate key relation ship
  - b) Primary key – foreign key relationship
  - c) Integrity between two relationships
  - d) The way one database in the distribute system references another database.
- xiii) Redundancy is dangerous as it is potential threat to data
- a) Integrity
  - b) Consistency
  - c) Sufficiency
  - d) None of these.



**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following.

3 × 5 = 15

2.    a)    What is strong entity set ? Give example. 3  
  
      b)    What is “Partial key” ? 2
  
3.    a)    What is “Cardinality Ratio” ? Explain with suitable  
          example. 3  
  
      b)    What is “Specialization” ? 2
  
4.    a)    What are “Data Independence” and “Data  
          Abstraction” ? 3  
  
      b)    What is “view” ? 2
  
5.    a)    What is “Location Transparency” ? 2  
  
      b)    Explain the process of query optimization. 3
  
6.    Explain “Deadlock” in case of transactions. What are  
          deadlock prevention and detections ? 5



**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.

3 × 15 = 45

7. Design an E-R diagram of hospital management system with the following entity :

Try to include the constraints in the E-R.

User ( login, password ), Admin ( login, password ),

Test ( diag\_no, diag\_date, remark, advice\_date, final\_diag,

ecg, others )

Patients ( reg\_no, reg\_date, name, add, city, contact\_no )

Medicine ( diag\_no, med\_no, med\_name, precaution, no\_of\_

doses )

Blood\_test ( reg\_no, test\_date, haemoglobin, tlc, esr, other )

Patient\_fee ( receipt\_no, reg\_no, amt\_due, amt\_paid,

date\_payment ).

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8. a) Consider the following table :

Emp ( empid (pk), ename, dateofjoin, salary, add )

Project ( projid (pk), pname, investamount, empid )

Give an expression in SQL for each of the following :

- i) Find all employees names whose project investment amount is more than 20,000.
  - ii) Find all employees name, pname, and invest-amount in descending order of their salary.
  - iii) Find the maximum invest amount for each salary types.
  - iv) Find the employee name who are not assigned in any project.
  - v) Find the HRA, DA, PF and GROSS of each employee ascending order of their GROSS pay ( HRA is 20% of salary, DA is 50% of salary, PF is 15% of salary, GROSS =salary + hra + da-Pf ). 10
- b) What do you mean by DML function in SQL ? Explain at least five with proper Syntax. 5



9. a) How do guided media differ from unguided media ? 2
- b) Explain the three major classes of guided media. 5
- c) Explain IP addressing system with example. 8
10. a) What are weak entity and strong entity ?
- b) What is DBA ?
- c) Explain foreign key.
- d) What are the ACID properties in transaction ?

3 + 3 + 4 + 5

11. Write short notes on any *three* of the following : 3 × 5

- a) Router
- b) Search engine
- c) SMTP
- d) ISO-OSI model
- e) LAN, MAN, WAN.

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