Con. 3019–10.   AN–2575

(3 Hours)   [Total Marks : 100

N.B.: (1) Question no. 1 is compulsory.
     (2) Answer any **four** out of the remaining questions.

1. (a) What do you mean by E-R diagram ?Draw E-R diagram for university database
       consisting of four entities : Student, department, Class ,faculty   10
       - student has a unique id,the student can enroll for multiple classes
         and has at most one major.
       - Faculty must belong to department and faculty can teach multiple classes
       - Each class is taught by only one faculty
       - Every student will get grade for the class he/she has enrolled.
   (b) Describe the overall architecture of a DBMS with a diagram   10

2. (a) Explain following Relational algebra operators with suitable examples :–   10
       (i)   Select
       (ii) Project
       (iii) Join
       (iv) Division
       (v)   Cartesion product
   (b) Give four advantages that a DBMS has over that of a file system.   10

3. (a) Explain the following controls of Visual basic :–   10
       (i)   Listbox
       (ii) Command button
       (iii) Combo Box
       (iv) Message box
       (v)   Checkbox
   (b) Explain Murphy's law of GUI Design with the help of an example.   10

4. (a) Design Active X control for the following GUI screen and explain the procedure for
       Adding the control to component dialog box   10

   Calendar.OCX

   [   ]   [Set date]

   (b) Discuss ADO and COM Remote Architecture.   10

5. (a) What do you understand by deadlocks in database system ? Explain how it is
       prevented .   10
   (b What is transaction ? Discuss state transition diagram and properties
       of transaction.   10

6. (a) For the given employee database give an expression in SQL for the following : –   10
      Employee(empname,street,city)
      Works(empname,company-name,salary)
      Company (company-name , city)
      Manages (empname , manager-name)
   (i)   Create table ,insert values for all the tables given
   (ii)   Modify the database so that 'jones' now lives in 'Newtown'
   (iii)   Give all employees of First bank corporation a 10 percent raise.

   (b) Define Serializability ? Explain conflict and view serializability.   10

7. Write short notes on :-   20
   (i)   Validation Based protocol
   (ii)   Total participation, Partial participation, Unique key , primary key and partial key
   (iii)   Logbased and checkpoint based recovery mechanisms .

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