(2115) CSE

Total Pages : 3

5922

B. Tech. VII Semester Examination
SOFTWARE ENGINEERING
Paper–IT (ID)–5001
(IT/CSE)
(New Syllabus)
Time : Three Hours
Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : (i) Attempt five questions in all, selecting one question from each of the **Sections–A, B, C** and **D** of the question-paper and **all** the sub-parts of the question in **Section–E**.

(ii) Use of non-programmable calculator is allowed.

Section–A

1. (a) What is the need of Software Engineering? Elaborate.
   (b) What are the issues in the design of large software? Explain.

2. (a) Discuss the following :
   (i) Software prototyping
   (ii) Finite state machines.

5922 / 600 (Q-9) [P.T.O.]

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   (b) What are the characteristics of good software requirement specification (SRS)?

Section–B

3. (a) What are software metrics? What are their applications?
   (b) What is constructive cost model? Explain.

4. (a) What are the problems in implementing metrics?
   (b) Explain the resource allocation model.

Section–C

5. (a) How test case design is done?
   (b) What are the graph-based testing methods? Explain.

6. (a) Explain the following :
   (i) Black-box testing
   (ii) Testing for real time system.
   (b) Compare and contrast unit testing and integration testing.

Section–D

7. (a) What are the categories of software maintenance?
   (b) Explain the following :
   (i) Iterative enhancement model
   (ii) Boehm model.

5922 (2)

8. (a) What are the software configuration management activities?

(b) What are the software quality assurance activities?

Section–E

9. Attempt *all* the following sub-parts :   10 × 2 = 20

(i) What is Software Engineering?

(ii) How decision trees are useful? ✓

(iii) What is the purpose of structured requirement specification?

(iv) What is the static single variable model for project planning?

(v) What is the time versus cost trade-off in project planning?

(vi) What are typical software risks?

(vii) What is orthogonal array testing?

(viii) What is done in system testing?

(ix) What is quick-fix model for software maintenance?

(x) What is the significance of software version?

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B.Tech. 5th Semester Examination

SOFTWARE ENGINEERING (IT/CSE)

Paper - IT (ID) 5001

Time Allowed : 3 Hours   **Maximum Marks : 100**

Note:- The candidates shall limit their answers precisely with the answer-book (40 pages) issued to them and no supplementary/continuation-sheet will be issued.

Attempt five questions. Attempt one question from each of section A, B, C & D. Question no. 9 is compulsary.

SECTION - A

1. (a) Discuss the software life cycle models.

    (b) Explain the following.

       (i) Data dictionary (ii) problem analysis

2. (a) Explain the purpose of entity relationship diagram with an example.

    (b) What are the structured analysis and design techniques? Explain.

SECTION - B

3. (a) Explain the basic information flow model

[P.T.O]

    (b) Explain the COCOMO model...

4. (a) What is the role of statistics in metrics analysis?

    (b) Explain the following.

       (i) Software risks (ii) Risk identification.

SECTION - C

5. (a) Explain the following :

       (i) Testability (ii) Cyclomatic complexity.

    (b) Compare and contrast alpha testing and beta testing.

6. (a) Elaborate (i) Recovery testing and (ii) Security testing.

    (b) What are the strategic approaches for software verification and validation?

SECTION - D

7. (a) What is the software maintenance process?

    (b) Explain the following.

       (i) Problems during maintenance

       (ii) Measures for software reliability and availability

8.   (a)   Explain any two software maintenance models.

    (b)   Discuss (i) Software version and (ii) Ripple effect

SECTION - E

9.   Attempt all the following sub-parts.   10x2=20

    (a) . What is the need of software engineering?

    (b)   What is software prototyping?

    (c)   What are the important characteristics of good SRS?

    (d)   What is the static multi-variable model for project planning?

    (e)   What is software risk?

    (f)   What is the purpose of cost models?

    (g)   What is regression testing?

    (h)   What is reuse oriented model for software maintenance?

    (i)   What are the cost impacts of defects in software maintenance?

    (j)   What is sofgtware reliability?

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B.Tech. 5th Semester Examination

Software Engineering (IT/CSE)

Paper - IT (ID) 5001

Time Allowed : 3 Hours   **Maximum Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note : Attempt five questions in all selecting one question from each of the sections A, B, C, D of the question paper and all parts in section E.

Section A

I. What do you mean by software life cycle? Compare and contrast Water fall model with spiral model.   **(20)**

II. Explain briefly the following :
1. Software Prototyping.
2. Nature of SRS.
3. Organization of SRS.
4. Structured analysis and design techniques. **(4x5)**

Section B

III. a) Describe the two methods used to estimate the cost of effort involved in a software project.   **(10)**

b) What do you mean by software matric? Name any three quality matrices and explain how they are used and their advantages and disadvantages.   **(10)**

IV. Define risk. What are the typical sofrware risks? How are these identified? What are the activities involved in risk management, explain?   **(20)**

Section C

V. a) Devise a set of three black box tests for a system that reads a textual words, from a document, up to a maximum of 100 words. The system outputs the most frequent word. In each test case explain what it is you are testing.   **(12)**

b) Explain regression testing in detail.   **(08)**

VI. Define and briefly describe the following terms:
1. Stress testing
2. Fault tolerance.
3. Verification and validation.
4. Orthogonal array testing.
5. Equalization partitioning.   **(5x4)**

Section D

VII. Define software maintenance. What are the categories of maintenance? Explain any one model for the estimation of maintenance cost.   **(20)**

VIII. Explain the following terms:
1. Cost of quality.
2. Quality Assurance.
3. Measurement of reliability.
4. SQA activities   **(4x5)**

Section E

IX. i) Define the following terms:

   a) Failure on demand

   b) Tolerable risk

ii) Write the three properties of good SRS.

iii) What is the need of software engineering.

iv) What do you mean by seize matrices?

v) Write short note on 'testing for real time systems'.

vi) What are the common problems faced during the software maintenance.

vii) What is the role of review meeting in software quality assurance.

viii) Define ripple effect.

ix) Differentiate between top down and bottom up integration techniques.

x) Write short note on finite state machines.   (2x10)

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Total No. of Questions - 9]

(2118)

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B.Tech. Vth Semester Examination

SOFTWARE ENGINEERING (CSE/IT)

Paper : IT(ID)-5001

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* each from Sections A, B, C and D. Section E is compulsory. Use of Non-programmable calculator is allowed.

SECTION–A

1. (a) Explain briefly the common software process framework.   8

   (b) List out (i) the operational principles, and (ii) the guiding principles for software requirements engineering.   7

2. (a) Discuss briefly the main elements of analysis model.   7

   (b) What are the characteristics of a good software requirement specification ?   8

SECTION–B

3. (a) What are software process metrics and how they improve software process ?   8

   (b) Discuss the basic COCOMO model.   7

4. (a) Differentiate between Size-oriented metrics and Function-oriented metrics.   8

   (b) What is Risk assessment ? How is it performed ?   7

SECTION–C

5. (a) Compare and contrast White box testing and Black box testing.   7

   (b) Discuss briefly the following :
       (i) Regression testing, and
       (ii) Alpha-Beta testing.   8

6. (a) What are the graph-based testing methods ?   7

   (b) What are the test performed in system testing ?   8

SECTION–D

7. (a) What are the categories of software maintenance ? 7

   (b) Explain briefly : (i) Iterative enhancement model, and (ii) Reuse oriented model for software maintenance.   8

8. (a) What are the problems in software maintenance and what are the potential solutions ? 8

(b) Discuss briefly the tasks involved in Formal technical reviews. 7

SECTION–E

9. Attempt all of the following :

(i) What are the issues in the design of large software ?

(ii) What is Requirements Engineering ?

(iii) What is the use of Decision Tables ?

(iv) What are the important phases in software development ?

(v) What are Software project metrics ?

(vi) What are the objectives of Project planning ?

(vii) What are the types of resources required for software development ?

(viii) Mention any four basic principles that guide software testing.

(ix) Mention any four metrics to measure testability.

(x) What is Software verification ?

(xi) What is the difference between unit testing and integration testing ?

(xii) What is Ripple effect in software maintenance ?

(xiii) What is Software reliability ? 13×3=39

(xiv) What is Software quality assurance ? 1

(40)

Total No. of Questions - 9]

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Total Pages : 3

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B.Tech. Vth Semester Examination
SOFTWARE ENGINEERING (CSE/IT)
Paper : IT(ID)-5001

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* question each from Sections A, B, C and D. Section E is compulsory. Use of non-programmable calculator is allowed.

SECTION-A

1. (a) Discuss briefly any *two* Software process models.
   (b) Explain briefly the prototyping methods and tools for rapid prototyping.   8+7

2. (a) Discuss the basic information flow model.
   (b) Discuss briefly the components in behavioural description of software requirement specification.
                                                      8+7

SECTION-B

3. (a) What are Software metrics ? What are their applications ?
   (b) Discuss briefly the Software equation.   8+7

4. (a) Describe the problems that can occur during implementation of metrics.
   (b) What are the Risk management activities ?   8+7

SECTION-C

5. (a) Discuss briefly the metrics that could be used to measure testability.
   (b) Explain (i) Recovery testing, and (ii) Performance testing.   8+7

6. (a) What is the Testing strategy for Real time systems?
   (b) Differentiate between Top-down and Bottom-up integration.   8+7

SECTION-D

7. (a) Discuss briefly Software Quality Concepts.
   (b) What tasks need to be performed in Software Quality Assurance ?   8+7

8. (a) What are (i) Boehm's model, and (ii) Reuse oriented model for software maintenance ?
   (b) What are the steps involved in statistical quality assurance ?   8+7

SECTION–E

9. Attempt all of the following :

(i) What is the need of Software Engineering ?

(ii) Define Data dictionary.

(iii) What are Decision trees ?

(iv) What are the important phases in software development ?

(v) What are Software process metrics ?

(vi) What is Software scope ?

(vii) Name typical Software risks.

(viii) What are the objectives of Software testing ?

(ix) What is Validation ?

(x) What is Configuration management in software maintenance ?

(xi) What are the measures of Software reliability and Software availability ?

(xii) What are the types of Costs that contribute to software quality ?

(xiii) What is Black-box testing ? $13 \times 3 = 39$

(xiv) What is meant by Time-*versus*-Cost trade off ? 1

(40)

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B.Tech. 5th Semester Examination

Visual Programming (IT/CSE)

Paper - IT (ID) 5004

Time Allowed : 3 Hours   Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note : Attempt one question each from Part A, Part B, Part C and Part D, and the entire section E.

Part A

1. What are Visual Basic programming conventions? Also explain the use of object browser.   **(15)**

2. How do we declare the variables implicitly and explicitly? How can we ask VB to enforce variable declaration? What is meant by scope of a variable? Also mention different control structures available in VB.   **(15)**

Part B

3. What is the difference between a procedure and a function? What are different ways of passing arguments? Explain by taking suitable examples.   **(15)**

4. Give list of different Active X components. What is an Active X controls? Write steps to add and remove Active X controls.   **(15)**

Part C

5. Explain the role of Visual Data Manager in creating databases in VB. Also explain the function of Data Control.   **(15)**

6. What is ADO? How it differs from RDO and DAO? **(15)**

Part D

7. How FTP and HTTP works. Differentiate between HTML and DHTML pages. How they are created?   **(15)**

8. Write a note on the FileSystemObject Object. Also explain createtextfile and opentextfile method.   **(15)**

Part E

9. Attempt all parts.

   1. What is windows API?

   2. What is the difference between Msg Box statement and MsgBox ( ) function.

   3. What are different ways of accessing files? Explain with example the difference between write # and input # statements.

   4. How MDI differs from SDI?

   5. What are control arrays?

   6. Define Inheritance.

   7. What is a recordset and how it is manipulated?

   8. Give significance of OLE.

   9. What is a VB script?

   10. Give function of an event handler.   **(10x4)**

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B.Tech. Vth Semester Examination

VISUAL PROGRAMMING (CSE/IT)

Paper : II (ID)-5004

Time : Three Hours]

[Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* each from Sections A, B, C and D. Section E is compulsory.

SECTION–A

1. What is the difference between Enabled property and Visible property of a menu control ? What are check marks in menu control ? 15

2. What is Multiple Document Interface (MDI) ? Give its significance. Write steps to create an MDI application. 15

SECTION–B

3. Differentiate between the following :
   (a) Class and Object.
   (b) Inheritance and Polymorphism. 15

4. Explain in detail Win 32 API in VB. 15

SECTION–C

5. Write a note on Data control's properties and methods. 15

6. Explain in detail the process of packaging and deployment in VB. 15

SECTION–D

7. Write short notes on the following :
   (a) Server-Client interaction.
   (b) Dynamic HTML. 15

8. What are the important features of a VB script ? Also explain the role of script control. 15

SECTION–E

9. Attempt all parts :
   (i) What is a control array ?
   (ii) What are the different control constructs available in VB ?
   (iii) What is the difference between MsgBox statement and MsgBox() function ?
   (iv) What is the purpose of shell programming ?
   (v) What is an event ? Give function of event handler.
   (vi) Give use of ActiveX documents.
   (vii) What are Data aware classes ?
   (viii) What is DAO ?
   (ix) An ActiveX DLL usually executes faster than an equivalent ActiveX EXE. (T/F). Give reason.
   (x) What are the different components of an e-mail ?

   10×4=40

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B.Tech. Vth Semester Examination

VISUAL PROGRAMMING (CSE/IT)

Paper : IT (ID)-5004

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* question each from Sections A, B, C and D. Section E is compulsory.

SECTION-A

1. Explain the VB environment.   20

2. (a) Explain User defined data types.   10

   (b) (i) What is the role of control array ?   5

       (ii) What is the difference between for and for each ?   5

SECTION-B

3. (a) How do we use OLE in VB ?   10

   (b) Mention the steps to create a new object for a new class.   10

4. Differentiate between Sequential and Random file organization with examples.   20

SECTION-C

5. (a) (i) How do we create reports in VB ?   5

       (ii) Write short note on Data controls properties and methods.   5

   (b) (i) Create a new dynaset using SQL.   5

       (ii) Explain steps to create tabbed dialog control.   5

6. (a) What is a Database ? Differentiate between ADO and DAO with examples.   10

   (b) How packaging and deployment is used in VB ?   10

SECTION-D

7. (a) Write short notes on the following :
       (i) CDO.
       (ii) Internet Programming.   10

   (b) Explain the method to send E-mail through MAPI controls.   10

8. Mention the salient features of a VB script. Also explain the role of script controls. 20

SECTION–E

(Compulsory Question)

9. Attempt all parts :

(i) What is the use of object browser ?

(ii) Explain different flow control statements.

(iii) What is the difference between msgbox statement and msgbox() function ?

(iv) What is Shell programming ?

(v) What is an About box ?

(vi) What are Dynamic link libraries ?

(vii) Give use of ActiveX documents.

(viii) What is a Dialog control ?

(ix) What is an API viewer ?

(x) Explain MDI forms. 10×2=20

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B.Tech. 5th Semester Examination

DATA BASE MANAGEMENT SYSTEM (IT/CSE/EE)

Paper - IT (ID) 5002

Time Allowed : 3 Hours   **Maximum Marks : 100**

Note:- *The candidates shall limit their answers precisely with the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

Attempt five questions. Attempt one question from each of section A, B, C & D. Question no. 9 is compulsary.

SECTION - A

1. (a) How many to many relationships are expressed in Network model and Hierarchical model?   10

    (b) Explain the Architecture of DBMS?   10

2. (a) What is a DBMS? What are the main characteristics of DBMS?   15

    (b) Explain the concept of Data Abstraction?   5

SECTION - B

3. (a) Construct an ER - diagram for a hospital with a set of patients and a set of doctors. Associate with each

patient a log of various tests and examination conducted?   10

    (b) Explain the term aggregation. Also give a suitable example?   10

4. What is a relational algebra? Explain all the fundamental operations of relational algebra with suitable example?   20

SECTION - C

5. (a) Find the dependency basis of X = AD with respect to the dependencies :   5

$$M = \{A \rightarrow BC, C \rightarrow\rightarrow DE, AE \rightarrow\rightarrow BF, BD \rightarrow\rightarrow CF\}$$

    (b) Explain BCNF (Boyce coDD normal form) with a suitable example?   15

6. Consider the following insurance database :

Person (SS#, name, address)

Car (Licence, Year, Model)

Accident (Date, Driver, Damage - amount)

Owns (SS#, Licence)

Log (Licence, Date, Driver)

Here, Primary keys are underlined. Construct the following SQL queries for this relational database.

(i) Find total number of people whose cars were involved in accidents in 2004.

(ii) Find number of accidents in which car belonging to "Mr. John" were involved.

(iii) Delete the "Maruti" belonging to "Mr. Sachin".

(iv) Add a new accident record for "Maruti" belonging to "Mr. John".   5x4=20

SECTION - D

7. Explain how data distribution and concurrency control is implemented in distributed database management system? 20

8. (a) Explain the steps involved in query processing? 10

 (b) How shadow paging recovery scheme is implemented in database system?   10

SECTION - E

9. (a) What are the two design goals for relational databases?

 (b) Give the formal definition of Domain relational calculus?

 (c) What is file organization? What are the different techniques of file organization?

[P.T.O]

(d) List any two merits of object oriented DBMS?

(e) What is the difference between a primary index and a secondary index?

(f) Explain why views are desirable in Databases?

(g) Explain the term Foreign key with an example?

(h) Why are certain functional dependencies called TRIVIAL functional dependencies?

(i) What is the difference between a procedural and a non procedural language?

(j) Write any two differences between hierarchical model and relational model?   2x10=20

[Total No. of Quesitons : 9]   [Total No. of Printed Pages : 4]

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B.Tech. 5th Semester Examination

Data Base Management System (CSE/IT/EE)

Paper - IT (ID) 5002

Time Allowed : 3 Hours   Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note : Attempt 5 questions in all selecting one question from each of the sections A, B, C, & D of the question paper and all the subparts of the questions in section E.

Section A

I. a) What are the main differences between File system and Database system?   (12)

    b) Discuss the role of Data manager in DBMS.   (08)

II. a) Give the architecture of 3 - level of SPARC.   (08)

    b) What do you understand by the term DATA MODEL? Give the difference between a data model and its implementation.   (12)

Section B

III. Consider the following database:

Player(player-code, player-name, match-played, total-runs, highest-score, centuries, half-centuries)

Plays-for (player-code, team-code, since-year)

Team (team - code, team-name, total - match - played, won, lost, ties, no -result)

For each of the following queries, give an expression in the relational algebra, the tuple relational calculus and the domain relational calculus.

a) Find all player names who have played for India since 2001 and have scored more than 10 centuries.

b) Find the teams who have won more than 100 matches.

c) Find the player names who belongs to a team whose winning success rate is greater than 50%.

d) Find the player-code who have played for Sri Lanka and have scored more than 3000 runs but could not make a century in his career.   (20)

IV. a) Give an ER diagram for a database showing fatherhood, motherhood and spouse relationship among men and women. (10)

b) How do you convert an ER diagram into its equivalent relational schema. Explain with a suitable example. (10)

Section C

V. a) Define first, second and third normal forms when only primary keys are considered. (10)

b) "Non loss decomposition" is an aid to relational database. Is it true, if yes justify it through an example. (10)

VI. a) Compare the sequential files and indexed sequential files. State their storage and access efficiencies. To what type of application is each of the organization suited. (15)

b) What is a VIEW in SQL and how it is defined? (05)

Section D

VII. a) Describe the concept of distributed database along with their advantages and disadvantages. (12)

b) Write a short note on query optimization. (08)

[P.T.O.]

VIII. a) Define and distinguish between Object Oriented database and object relational database. (12)

b) Discuss the deferred update technique of recovery. (08)

Section E

Note: Attempt all the questions.

IX. a) What is Data Independence? Why data-independence applications are undesirable?

b) What is the main difference between data manipulation and data control language?

c) Define Aggregation with respect to ER diagrams.

d) What are the various types of relationships in an ER diagram?

e) Why is normalization necessary in relational database design?

f) What are the advantages of nested queries?

g) Describe SQL retrieval operations.

h) What are the importance Integrity rules?

i) Write the steps required in query processing.

j) What is a query execution plan? (10x2=20)
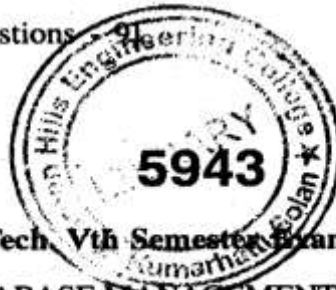
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B.Tech. Vth Semester Examination

DATABASE MANAGEMENT SYSTEM

(EE/CSE/IT)

Paper : IT(ID)-5002

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* question each from Sections A, B, C and D. Section E is compulsory.

SECTION–A

1. (a) Why would you choose a database system instead of simply storing data in system files ?   10

   (b) What is a Data model ? Give a brief overview of Hierarchical data model.   10

2. Explain the difference between External, Internal and Conceptual schema. How are these different schema layers related to the concept of logical and physical data independence ?   20

SECTION–B

3. (a) Construct an ER diagram for the database of a departmental store.   10

   (b) Explain all variations of join operation with suitable examples.   10

4. Specify the following relational algebra operations in both tuple and domain relational calculus :

   (a) $R(A, B) \times S(C, D)$

   (b) $\pi_{<B>}(R(A, B, C))$

   (c) $R(A, B, C) \div S(B)$

   (d) $\sigma_{A=B}((A, B, C))$

   (e) $R(A, B) - S(A, B)$. $4 \times 5 = 20$

SECTION–C

5. (a) What are the methods to handle collisions generated by Hashing ?   12

   (b) Write SQL construct for the following operations :
       (i)   Modification of relation instances.
       (ii) Deletion of a view.
       (iii) Enforcing integrity constraints.
       (iv) Grouping of data. $2 \times 4 = 8$

6. (a) Show that 5NF implies 4NF.   15

   (b) What is the highest normal form for the following relations :
       (i) $R(A, B, C, D)$ with $A \to BC$, $CD \to B$.
       (ii) $R(A, B, C, D, E)$ with $A \to BC$, $E \to A$, $CD \to E$. $2\frac{1}{2} \times 2 = 5$

SECTION-D

7. (a) Explain the major issues related to Database security. 10

    (b) How are nested subqueries optimized and evaluated ? 10

8. Describe the architecture for a distributed DBMS and identify the additional functions it requires over a centralized DBMS. 20

SECTION-E

9. Write short answers :

    (a) Define the term Data Dictionary.

    (b) What are the properties of Relational model ?

    (c) Give any four differences between Sequential and Direct files.

    (d) Explain the Null value and Dangling tuple problems.

    (e) In which step of database design is the ER model mainly used ?

    (f) Give a comparison between RDBMS and OODBMS.

    (g) What are the characteristics of a Knowledge Base database ?

    (h) Why Denormalization is required ?

    (i) How recovery is implemented using shadow paging ?

    (j) Explain the inference rules for functional dependencies.

    $2 \times 10 = 20$

Total No. of Questions - 9]   Total Pages : 4

(2119)

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B.Tech. Vth Semester Examination

DATABASE MANAGEMENT SYSTEM
(EE/CSE/IT)

Paper : IT(ID)-5002

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* question each from Sections A, B, C and D of the question paper, and all the subparts of Q. No. 9 in Section E.

SECTION–A

1. (a) What are the main differences between Network and Hierarchical models ?   12

    (b) Discuss the role of DBA in DBMS.   8

2. (a) Explain the capabilities that should be provided by a DBMS, and give the structure of a database management system.   15

    (b) What do you understand by the term DATA DICTIONARY ? Give an example of it.   5

SECTION–B

3. Consider the following database :

    EMPLOYEE (Emp_no., Name, Skill, Pay_rate)

    POSITION (Posting_no., Skill)

    DUTY ALLOCATION (Posting_no., Emp_no., Date, Shift)

    Write an expression in the relational algebra, the tuple relational calculus and the domain relational calculus for the following :

    (a) To increase the pay_rate of employees who work on the third shift at posting_no. 7 by 5%.

    (b) To find the 'chef' with lowest pay_rate.

    (c) To find all the employees with same skills.

    (d) To find the numbers of employees working in the same shift.   20

4. (a) Give an ER diagram for a University Registrar Office. The office maintains data about each class, including the instructor, the enrolment and the time and place of the class meetings. For each student-class pair a grade is recorded.   15

    (b) Describe the various types of JOIN operator with suitable examples.   5

SECTION-C

5. Find a lossless join and dependency preserving decomposition of the following relation scheme with the given set of functional dependencies and justify your answer :

   SHIPPING (Ship, Capacity, Date, Cargo, Value)

   Ship → Capacity

   ShipDate → Cargo

   CargoCapacity → Value.   20

6. (a) When are two sets of functional dependencies equivalent ? How can we determine their equivalence ? Explain.   15

   (b) Define Hashed files.   5

SECTION-D

7. (a) Describe the concept of cost based query optimization.   10

   (b) Analyze the importance of checkpoints in recovering a database from a crash.   10

8. (a) Write a short note on Distributed database management system.   10

   (b) State and explain the techniques to overcome the problems due to concurrency.   10

SECTION-E

(Compulsory Question)

9. Attempt all the following :

   (a) What is Referential integrity ?

   (b) What primary characteristics should an object-oriented database possess ?

   (c) How can the value of a host language variable be passed to an embedded SQL command ?

   (d) Define Boyce-Codd normal form.

   (e) Why does the redundancy avoided in database ?

   (f) How is the VIEW mechanism used as an authorization mechanism ?

   (g) List the advantages of database systems.

   (h) Define the term DDL.

   (i) What is Serializability ?

   (j) List the basic objectives of Object-oriented database.   10×2=20

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B.Tech. 5th Semester Examination

Computer Networks (IT)

Paper - IT - 5003

Time Allowed : 3 Hours   **Maximum Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note : 1) Attempt five questions in all, selecting one question from each of the sections A, B, C and D.

2) All subparts of questions in section E are compulsory.

Section A

I. a) List the layers of OSI reference model : How does information get passed from one OSI layer to the next?   (08)

b) Discuss how CRC is superior to LRC?   (07)

II. a) Name the two major catagories of transmission media. How do these differ from each other.   (07)

b) How does the checksum checker know that the received data unit is undamaged. Explain ? What kind of error is undetectable by the check sum?   (08)

Section B

III. Explain GO - Back-n ARQ and selective - Reject ARQ sliding window flow control protocols in detail.   (15)

IV. Explain IEEE 802.3 LAN standard in detail. What is the band rate of the standard 10 Mbps 802.3 LAN?   (15)

Section C

V. What is congestion? Explain leaky bucket algorithm of congestion control.   (15)

VI. a) How the connection is established and released in transport layer? Explain.   (10)

b) Write short notes on : Internetworking.   (05)

Section D

VII. a) What are the three ways of mapping session onto transport connections?   (10)

b) Explain the term "Quarantining".   (05)

VIII. Using MIT public key cryptosystem, with $a = 1, b = 2$ etc. If $p = 5, q = 11, d = 27$ find e and encrypt "$abcdefghij$".   (15)

Section E

IX.　a)　Define three transmission modes.　(02)

　　b)　What are the concerns of the physical layer?　(02)

　　c)　What does a decibel measure?　(02)

　　d)　Describe the components of a fiber optic cable. Draw a picture.　(02)

　　e)　Discuss the concept of redundancy in error detection.　(02)

　　f)　In what situation does the sender retransmit a packet?　(03)

　　g)　What is difference between palling & selecting.　(03)

　　h)　Short note on ISDN.　(04)

　　i)　Explain in brief about the performance of Token Ring protocol.　(03)

　　j)　Explain traffic shaping.　(03)

　　k)　Give brief note on Dead locks & their avoidance.　(04)

　　l)　Give OSI session primitives.　(03)

　　m)　Write short note on world wide web.　(03)

　　n)　Write short note on DES.　(04)

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Total No. of Questions - 9]   Total Pages : 4
(2119)

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B.Tech. Vth Semester Examination
COMPUTER NETWORKS (IT)
Paper : IT-5003

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* question each from Sections A, B, C and D. All parts of Q. No. 9 of Section E are compulsory.

SECTION–A

1. Explain OSI Reference model in detail. Summarize the important functions of the various layers of the OSI Reference model.   15

2. (a) Define Multiplexing. What are the various multiplexing techniques ? Explain.   6

    (b) Differentiate between Transmission media and Transmission devices. Explain the terms Fibre optic links and Satellite links.   9

5160/700/GGG/129   [P.T.O.

SECTION–B

3. (a) Differentiate between Go Back and Selective Repeat ARQs protocols.   7

    (b) What are the various layers in ATM ? Explain in brief about class 1, 2, 3, 4 traffic.   8

4. What are the various IEEE Lan standards ? Compare the performances of Ethernet and Token ring protocols.   15

SECTION–C

5. (a) What are the design issues of Network layer ? Explain.   6

    (b) Explain Distance vector routing algorithm with the help of suitable example.   9

6. (a) Define Congestion. Explain Leaky bucket algorithm of congestion control.   7

    (b) Explain in brief :
       (i) Crash recovery.
       (ii) UDP/TCP layering.   4+4

SECTION–D

7. (a) What are the two categories of Cryptography methods ? What is the main difference between these categories ?   5

    (b) Using the RSA algorithm, encrypt and decrypt the message "BE" with key pairs (3, 15) and (5, 15).   10

5160/700/GGG/129   2

8. Explain Dialog management and Synchronization in detail. 15

SECTION–E

(Compulsory Question)

9. Write short answers of the following :

(a) Differentiate between Bit rate and Baud rate.

(b) What is Nyquist theorem ?

(c) Is the transmission media a part of the physical layer ? Why or why not ?

(d) Discuss the concept of redundancy in error detection.

(e) List the steps involved in creating a checksum.

(f) What does the number on a NAK frame mean for selective repeat ARQ ?

(g) Why is the control from HDLC totally dropped from Frame relay ?

(h) What is Network address ? Which class of IP address is for multicast communication ?

(i) Name the five protocols in network layer.

(j) What is the difference between Unicast routing and Multicast routing ?

(k) Why would an application use UDP instead of TCP ?

(l) Define Traffic shaping. How is it used to improve the quality of service ?

(m) Name the policies to prevent Congestion.

(n) Write short note on ISDN.

(o) Write short note on Authentication protocols. (

(p) How is HTTP related to WWW ?

(q) How is triple DES different from the original DES ? Name 4 methods to encrypt and decrypt long messages.

(r) What is the role of Dijkstra algorithm in unicast routing ?

(s) Name the timers used by TCP.

(t) Define Finite state machine.   2×20=40

[Total No. of Questions - 9]   [Total No. of Printed Pages :3]
(2127)

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B.Tech. 5th Semester Examination

Microprocessor, Microcomputers and Interfaces (IT)

Paper - EC-5001

Time Allowed : 3 Hours   Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note : i) Attempt one question from each of the sections A, B, C and D.

ii) Section E is compulsory.

Section A

1. Draw pin configuration of 8085 and explain function of each pin. **(15)**

2. a) List the sequence of events that occures when 8085 reads from Memory. Also draw memory read cycle timing diagram. **(10)**

   b) Explain memory organization and memory map. **(5)**

Section B

3. Write a program to introduce a delay of 10 ms when clock frequency is 5 MHz. **(15)**

4. a) Explain how information is stored and retrieved from the stack using instruction PUSH, POP and stack pointer. **(10)**

   b) Explain 5 arithmatic instructions. **(5)**

Section C

5. With the help of appropriate diagram discuss Interrupt structure of 8085. Also list the steps to process an interrupt. **(15)**

6. Explain the basic circuit of D/A converter and define the terms resolution and settling time. **(15)**

Section D

7. Describe the functions of 8259, programmable interrupt controller and its operation in fully nested mode. **(15)**

8. a) Write initialization instructions for 8255 to set up Port A as an O/P port in Mode 0 and Port B as an O/P port in mode 1. **(10)**

   b) Explain the function SID and SOD lines. **(5)**

Section E

9.   Attempt all parts :

a)   What is the difference between micro processor and micro computer. Explain.   **(4)**

b)   Explain & differentiate LSI, MSI & SSI.   **(4)**

c)   Explain function of following signals :   **(4)**
     ALE, HOLD, HLDA, $\overline{INTA}$, READY.

d)   Explain the function of following control signals.
     $\overline{MEMR}$, $\overline{MEMW}$, $\overline{IOR}$, $\overline{IOW}$ **(4)**

e)   Explain IN and OUT instructions.   **(4)**

f)   Write special features of Pentium processor.   **(4)**

g)   Explain status register of 8085 (bit wise)   **(4)**

h)   Describe process of instruction fetch, decode and execute.   **(4)**

i)   Describe instructions EI, DI, SIM & RIM.   **(4)**

j)   Explain the difference between a synchronous and synchronous serial data transfer.   **(4)**

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B.Tech. Vth Semester Examination
MICROPROCESSORS, MICROCOMPUTER &
INTERFACES (IT)
Paper : EC-5001

Time : Three Hours]

[Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all, selecting *one* question each from Sections A, B, C and D. Section E is compulsory.

SECTION–A

1. Draw block diagram of 8085 based microcomputer system including interfacing devices such as Buffers, Decoders, Latches, Memory, Keyboard and Display device and explain the working of each unit. 20

2. Classify different types of Memories used in computers. Explain working of each type along with its specific application. 20

SECTION–B

3. (a) Write a program to load hexadecimal number 65H in register C and 92H in accumulator A. Display the number 65H at port 0 and 92H at port 1. 12

   (b) Explain CALL and RET instructions. 8

4. (a) Explain following instructions :
   MVI D, 3CH
   DAA
   INR B
   EI
   RNZ. 10

   (b) Write a program to count 00 to FF with 0.5 μs clock period. Use register C to set up 1 MS delay between each count. 10

SECTION–C

5. Draw block diagram of Successive approximation A/D converter and explain its working. 20

6. (a) List hardware interrupts of 8085. Discuss how these interrupts are processed by 8085. 12

   (b) Draw the circuit diagram to interface two 8K × 8 EPROM chips with 8085 starting from address 2000H. 8

SECTION-D

7. Draw circuit diagram interfacing PPI 8255 with a seven segment display at Port B and explain its working. 20

8. Discuss synchronous and asynchronous format of Data transmission in serial I/O. Also define following terms : Baud rate, Simplex, Duplex, Parity check, CRC. 20

SECTION-E

9. Attempt all parts :

(a) Explain RIM & SIM instructions.

(b) Define and differentiate Assembler and Compiler.

(c) Explain function of RESET IN & RESET OUT signals.

(d) Write format of 2 byte and 3 byte instructions.

(e) Differentiate between Microprocessor and Micro-computer.

(f) Explain the role of On Chip cache.

(g) What is MMU ?

(h) Define Resolution and Settling time.

(i) Write 2 rotate instructions and explain.

(j) Write control word of 8253. 2×10=20

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B.Tech. 5th Semester Examination

Management for I.T. Professionals (IT)

Paper - HU - 5001

Time Allowed : 3 Hours   Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary continuation sheet will be issued.

Note : Attempt FIVE questions in all. Select one question each from sections A, B, C and D. Section E is compulsory.

Section A

I.   Write a critical note on "Schools of Management Thought".   (20)

II.   a)   What questions can managers use to set priorities in decision making?   (15)

      b)   With examples explain nonprogrammed decisions   (05)

Section B

III. How are decentralisation and delegation related? Describe the key guidelines for effective delegation.(20)

IV.   Write notes on :

      a) Work division   b) organisational structure (8,12)

Section C

V.   'Managers link motivation - most often, employee motivation - to the achievement of organisational goals'. Evaluate the statement   (20)

VI.   Write notes on :

      a) Importance of feed back b) barriers to communication   (12,8)

Section D

VII. What types of stress do you think employees working in Indian organisations experience. Explain giving examples.   (20)

VIII. Write notes on

      a) Group Dynamics   b) Group norms.   (12,8)

Section E

IX.   Write notes on :

      a)   Erratic Group
      b)   Role identity
      c)   Managerial grid
      d)   Burnout
      e)   Staff authority
      f)   Esprit de corps
      g)   Scientific management
      h)   Authority Vs Responsibility
      i)   Planning premises
      j)   Charismatic leadership   (20)

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5158

B.Tech. Vth Semester Examination
MANAGEMENT FOR I.T. PROFESSIONALS (IT)
Paper : HU-5001

Time : Three Hours]   [Maximum Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/ continuation sheet will be issued.

Note : Attempt *five* questions in all. Attempt *one* question each from Sections A, B, C and D and the entire Section E.

SECTION–A

1. "Management is the development of men and not the direction of things." Discuss the statement.

2. What is Planning ? Discuss the steps involved in a planning process.

SECTION–B

3. Define Departmentation. Discuss the different bases of departmentation.

4. What is Line and Staff Organisation ? In what type of organisations this design is adopted ?

SECTION–C

5. Critically examine the different styles of leadership.

6. Point out the barriers to communication in an organisation. How can these be overcome ?

SECTION–D

7. Define Group dynamics. Why informal group comes into existence ?

8. What do you mean by Stress ? Explain the potential sources of stress.

SECTION–E
(Compulsory Question)

9. Define the following :
   (a) Japanese Management.
   (b) Policies.
   (c) Directing.
   (d) Delegation of Authority.
   (e) Organisational culture.
   (f) Control.
   (g) Authority.
   (h) Motivation.
   (i) Group cohesiveness.
   (j) Stress management.