

5E3259

Roll No. _____

[Total No. of Pages : 2]

5E3259**B.Tech. Vth Semester (Main) Examination, Dec.2010/Jan. 2011****Information Technology****5IT6.2 E - Commerce****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) What is e-commerce? Explain its advantages and disadvantages. (8)
- b) Explain network infrastructure for e-commerce. (8)

OR

- a) What is Global information distribution network? Explain its role in e - commerce. (8)
- b) Explain component of I way Access equipment. (8)

Unit - II

2. a) Explain wireless application protocols with WAP technology. (8)
- b) What is mobile commerce? Explain mobile computing applications. (8)

OR

- a) Explain various mobile information devices with their functionality. (8)
- b) Discuss web security and explain various security solutions. (8)

Unit - III

3. a) Why Encryption is required? Explain with example. (6)
- b) How secret key encryption provides security? Explain with example and neat diagram. (10)

OR

- a) What is VPM? Explain its implementation issues. (8)
- b) Explain public key encryption with example. Differentiate it with secret key encryption. (8)

Unit - IV

- 4. a) Explain Electronic payment system. Compare it with traditional payment system. (8)
- b) Explain ONline Banking. Explain its advantages and disadvantages also. (8)

OR

Explain followings in detail : (8+8)

- a) Smart cards
- b) Home Banking.

Unit - V

- 5. a) Explain supply chain management with diagram. (8)
- b) What is CRM? Discuss issues in customer relationship management. (8)

OR

- a) Explain legal requirements in E-commerce. (8)
- b) Explain various applications of EDI in business. (8)

5E3167

Roll No. _____

[Total No. of Pages : 2]

5E3167**B.Tech. Vth Semester Examination, Dec.2010/Jan.2011****Information Technology****5IT.1 System Software****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24*****Instructions to Candidates:****Attempt any five questions. All questions carry equal marks.***Unit - I**

1. a) Explain how a source program is generated, translated and executed by a language processing. (8)
- b) Write differences between the following :
 - i) Assembler and Compiler. (4)
 - ii) Scanning and Raising. (4)

OR

- a)
 - i) Compare Assembly and high level languages. (4)
 - ii) How many type of addressing modes. Explain each in details. (4)
- b) What are basic features of assembly language formate of assembly language instruction and explain different three kinds of statements. (8)

Unit - II

2. What is pass of an assembler? Explain in detail two pass assembler. (16)

OR

- a) What are the functions of the analysis and synthesis phase of assembler? (8)
- b) Discuss in brief various data structures and their usage that used for implementation of two pass assembler. (8)

Unit - III

3. a) What is a loader? Compare COM files in Ms-Dos with OBJ and EXE Files. (8)
- b) What are the functions of loader? Explain machine independent features of loader. (8)

OR

Explain absolute loader and relocating loader schemes, stating the differences between them. (16)

Unit - IV

4. a) Describe various models of a macro assembler. (8)
- b) What is a macro preprocessor? Give a complete design of a macro preprocessor. (8)

OR

- a) Explain machine independent features of a macro. (8)
- b) Explain data structure use in a macro processor. (8)

Unit - V

5. a) What is operator precedence parsing. Explain in detail. (8)
- b) Explain the tables designed in lexical analysis with example. (8)

OR

- a) Explain data structure of symbol table. How do you use Hashing function to create and access the symbol table. (12)

- b) Write the precedence tree of the expressions.

i) $A + B * C$

ii) $x = \text{SQUAR}(B) + \text{SQUAR}(A) - 2(A * B)$ (4)

B.Tech. Vth semester(Back) Examination 2011

Information Technology

5IT 6.3 IT for Forensic Sciences

5E3172

Time: 3 Hours

Maximum Marks: 80

Min Passing Marks:24

Instruction to Candidates:

Attempt overall Five Question selecting one question from each unit. All question carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

- Q.1 (a) What is Biometric? How the Biometric is helpful in System security?
(b) What are the authentication methods & authentication protocols in Biometrics?
(c) How we recognize the finger print in hiometrics and define FAR and FRR.
- (6+6+4)

OR

- (a) Explain the Biometric Identification and Biometric Verification.
(b) Explain the secure authentication protocols & access control security services in Biometrics.
(c) What is the Positive and Negative of Biometrics? What are the two kinds of errors.
- (6+6+4)
- Q.2 (a) What are the Principles of steganography?
(b) Compare Adaptive versus Non Adaptive Algorithms.
- (8+8)

OR

- (a) What is Linguistic Steganography? (8+8)
(b) Explain the information hiding in written Text.

- Q.3 (a) What are Substitution System and Bit Plane Tools? (8+8)
(b) Explain extracting hidden information.

OR

- (a) Explain the Transform Domain Techniques? (8+8)
(b) What is Disabling Hidden Information?

- Q.4 (a) What is Basic Watermarking? Write the Application of Water Marking.
(b) Explain the Evaluation and Bench Marking of Water Marking System. (8+8)

OR

- (a) What are the requirements of Water Marking System? (8+8)
(b) Explain the Algorithmic Design Issues.

- Q.5 (a) What do you understand by Fourier Transformation? Explain Discrete Cosine transformation. (8+8)
(b) What is Wavelets? Explain Spilt Images in perceptual bands.

OR

- (a) Explain Mellin Fourier Transformation. (8+8)
(b) What are the application of transformation in Steganography?

5E3168

Roll No. _____

[Total No. of Pages : 2]

5E3168**B.Tech. Vth Semester (Back) Examination, Dec. 2010/Jan. 2011****Information Technology****5IT2 E - Commerce****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any **five** questions, selecting **one** question from each unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) What is E-Commerce? Explain its applications. (8)
- b) Explain Broad band telecommunication in detail. (8)

OR

- a) Explain network infrastructure for E-commerce (8)
- b) What is C2B e-commerce? Explain its process steps in detail. (8)

Unit - II

2. a) What is mobile commerce? Differentiate it with e-commerce. (8)
- b) Explain wireless application protocol in detail. (8)

OR

- a) Discuss Client Server Security issues with its solutions. (8)
- b) Explain various mobile computing Applications. (8)

Unit - III

3. a) What is Encryption? How it provide security in WWW? Explain with example. (8)
- b) Explain Secret key Encryption. Also differentiate it with public key encryption. (8)

OR

What is VPN? Explain it in detail. Discuss its implementation and management issues. (16)

Unit - IV

4. a) What is Token based Electronic payment system? Explain. (10)
b) Describe benefits of Electronic payment system. (6)

OR

Explain followings -

- a) ONLINE Banking
b) Debit cards
c) Smart cards (6+5+5=16)

Unit - V

5. a) What is supply chain management? Explain. (8)
b) Explain CRM With example. (8)

OR

- a) What are legal requirement in E-commerce? Explain. (8)
b) Discuss issues in customer relationship management. (8)
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5E3171

Roll No. _____

[Total No. of Pages : 2]

5E3171**B. Tech. Vth Semester (Back) Examination, Dec. 2010/Jan. 2011****Information Technology
Advanced Software Engineering****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt overall Five questions selecting one question from each unit. All questions carry equal marks (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. You are the manager in charge of the software that controls the navigation system of a new fuel-efficient long -range aircraft. Three different user-reported faults have to be fixed, and you assign one each to Ron, Stella and Ted. A day later you learn that in order to implement each of the three fixes, the same four modules must be changed. However your configuration control tool is inoperative, so you will have to manage the changes yourself. How will you do it? (16)

OR

2. a) What is software quality? "Correct program may not exhibit good quality" Discuss this statement with the help of example. (8)
b) What is software Quality Assurance? Also explain the software quality assurance in development system. (8)

Unit - II

3. What factors should be taken into account when selecting staff to work on a software development project? Giving reasons for your answer, suggest which of these would be most important in choosing staff for a real-time system development project to develop a controller for a leg surgery machine. (16)

OR

4. a) What is the difference between testing and debugging? Explain the behavioural properties of software testing. (8)
b) Explain the debugging process in detail. (8)

Unit - III

5. What do you mean by leadership? Explain all the qualities of the project leader to successfully lead his team. (16)

OR

6. a) Explain the software development life cycle of ISO 12207. (8)
b) Write short notes on decision making. (8)

Unit - IV

7. a) What is web engineering? Explain all the attributes of web-engineering. (10)
b) Explain Web E-process model. (6)

OR

8. a) Explain analysis modeling for WebApps. (10)
b) Explain performance and configuration testing for WebApps. (6)

Unit - V

9. a) Explain software project management standards. (10)
b) Explain CBSE in brief. (6)

OR

10. Although software components are the most obvious reusable "artifact" many other work products produced as part of software engineering can be reused, consider project plans and cost estimates. How can these be reused and what is the benefit of doing so? (16)
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5E3159

Roll No. _____

[Total No. of Pages : 2]

5E3159**B.Tech. Vth Semester (Back) Examination, Dec. 2010/Jan. 2011****Computer Engineering
5CS1 Software Engineering****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt overall five questions selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) You are required to develop the MIS for good governance of the Engineering College where you are studying. Enlist the problems you will encounter in system development and their possible solutions. (8)
- b) Elaborate any SDLC. (8)

OR

- a) Explain how you will model the system architecture, give all the phases with diagrams & notations. (10)
- b) What is a system? Explain its characteristics. (6)

Unit - II

2. a) Explain LOC and FP estimation. Also elaborate COCOMO model and its variants. (8)
- b) Why do we need to do risk analysis and software project scheduling? (8)

OR

With the help of diagrams, explain the prototyping and spiral models of SWDLCS and highlight the differences between them. Also list advantages and disadvantages of each. (8×2=16)

Unit - III

3. a) Along with requirement analysis principles, explain the use of data dictionary. (8)
- b) Create an FSM which accepts valid identifiers of 'C' language. (8)

OR

For a photo copy machine software, draw : (4×4=16)

- a) level 1 DFD
- b) level 1 CFD
- c) STD
- d) PAT.

Unit - IV

4. Explain in detail the cohesion and coupling spectrum. (16)

OR

Draw the N-S chart and decision table for a program module which finds out the greatest of three numbers. (16)

Unit - V

5. In context of object oriented design, explain : (4×4=16)

- a) Class and object definition.
- b) Refining operations.
- c) Class and object relationships.
- d) Object modularization.

OR

Explain in context of UML : (4×4=16)

- a) Class diagram.
- b) Object diagram.
- c) Activity diagram.
- d) State diagram.

5E3160

Roll No. _____

[Total No. of Pages : 2]

5E3160**B.Tech. Vth Semester (Back) Examination, Dec.-2010/Jan.-2011****Computer Science****5CS2 Computer Architecture (Common With IT)****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any **five questions**, selecting **one question from each unit**. All Questions carry **equal marks**. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) Draw a circuitry diagram for common bus system for four register using multiplexers. Explain the bus selection by giving the function table, using two selection lines as input. (8)
- b) Draw and explain a graphical representation and block diagram for three State Bus Buffers. (8)

OR

Define the register transfer language. Design one stage of arithmetic logic unit circuit that include : (16)

- a) 4 bit adder and subtracter
- b) 4 bit logic unit
- c) 4 bit shift unit.

Unit - II

2. a) What is a program interrupt? Explain the types of interrupts. (8)
- b) Write all possible addressing modes also explain each by taking an appropriate example. (8)

OR

What is pipelining? What is the maximum speed up that can be attained? Construct an instruction pipeline? It is possible to attain maximum speed up in an instruction pipeline? (16)

Unit - III

3. Explain the algorithm of addition and subtraction for signed magnitude data. Also give the hardware implementation of explained algorithm. (16)

OR

Explain Booth's algorithm for performing multiplication of two binary numbers. What are its disadvantages over signed 2's complements, explain using suitable block diagram? (16)

Unit - IV

4. Give the schematic diagram of microprogram sequencer. Also describe horizontal and vertical microcode formats used in control unit design. (16)

OR

- a) With reference to micro programmed control unit; differentiate between : (8)
- i) Microinstruction and Microprogram.
 - ii) Horizontal and vertical Microinstruction.
- b) Explain the basic structure of a Micro programmed control unit. (8)

Unit - V

5. a) Why do we require Cache memory? Explain the working of DMA. (8)
- b) Differentiate between stroke based and handshake based communication. (8)

OR

- a) Design a 4×3 RAM. Draw the logic circuit of basic cell also. (8)
- b) In a virtual memory system, there are 8 pages in the program and only 3 block are allocated for execution. Compute the page fault ratio of LRU page replacement policy for the following page trace : (8)
- 7, 1, 0, 1, 7, 3, 7, 0, 1, 2.

5E3161

Roll No. _____

[Total No. of Pages : 3]

5E3161

B.Tech. Vth Semester (Back) Examination, Dec. 2010/Jan. 2011
Computer Engineering
5CS3 Database Management Systems
(Common with IT)

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions. All questions carry equal marks.

Unit - I

1. a) What is a DBMS? How is the data stored in DBMS and how data is accessed by users? Explain. (8)
- b) What is a transaction? How is the transaction managed in DBMS? (8)
2. a) Draw a diagram of database system architecture outlining its various components. (8)
- b) Define following terms : database schema and database instances, metadata, data dictionary, data independence. (8)

Unit - II

3. Construct an ER diagram for a Car insurance company whose customers own one or more Cars. Each car has associated with zero or more number of recorded accidents by different drivers. Convert the ER diagram into relations (tables). (16)
4. a) List the information we obtain from ER diagram about the data stored and relationship among them. (8)
- b) Discuss the concept of derived attributes and multi valued attributes. What happens to these attributes when ER diagram is converted into tables? (8)

Unit - III

5. a) Discuss various types of outer join operations in relational algebra. Explain with help of examples. (8)
- b) Differentiate between domain relational calculus and tuple relational calculus. (8)

6. Following tables are maintained by life insurance company.

Agents (AID, aname, branchname)

Policy holder (Pname, Paddress, DOB)

Policy (AID, Pname, policy-no, policy-type, amount, nominee name, start-date, duration).

Write the following queries in relational algebra :

- a) List all policy_ no held by person "John".
- b) List names of all policy-holders whose policy was done by an agent working in "EAST" branch.
- c) List name and address of persons holding a policy of type "S-5-W" for amount exceeding Rs. 1,00,000.
- d) List all policy numbers held by agents themselves. (4×4=16)

Unit - IV

7. a) What were the limitations of SQL which led to development of Embedded SQL? (8)
- b) Describe following in SQL : "with" clause, "except" clause, string comparison constructs in SQL. (8)

8. Consider following database schema :

Employee (EID, Ename, Ephoneno, DID)

department (DID, Dname, managedby, budget)

Phones (phoneno, DID).

Write SQL statements for following queries.

- a) List phone numbers of department "production". Which do not belong to any employee?
- b) Count number of phones for each department.
- c) List names of Employees Managed by "SMITH".
- d) Find out phoneno at all employees managed by "SMITH". (4×4=16)

Unit - V

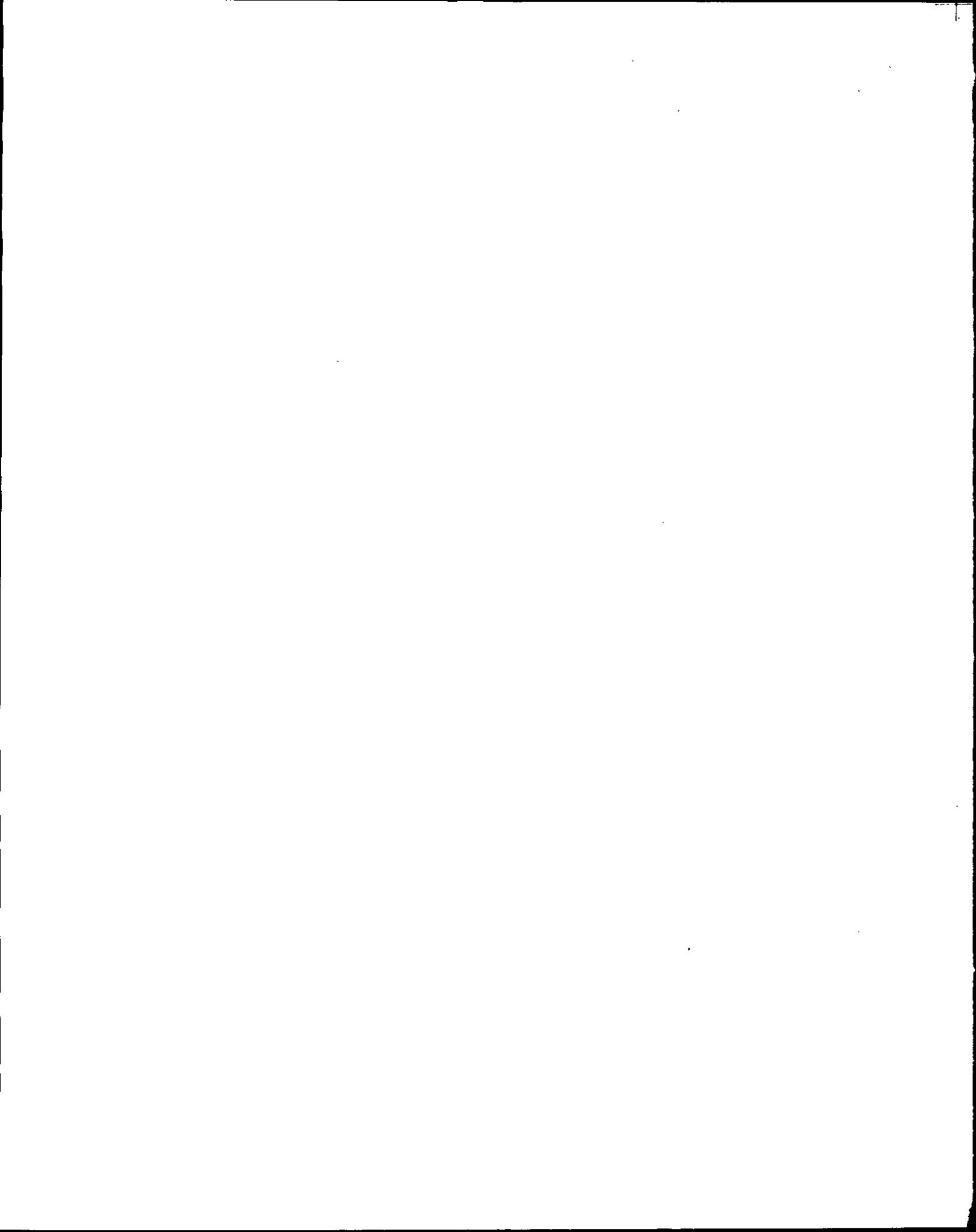
9. a) Define closure at a set of Functional dependencies. How do you compute this closure. (8)

b) Given the relation $r(A, B, C, D, E, F)$ and the set

$F = \{A \rightarrow B, CD \rightarrow A, BC \rightarrow D, AE \rightarrow F, CE \rightarrow D\}$. Verify that the decomposition $R_1(C, D, E), R_2(A, B), R_3(A, E, F)$ and $R_4(A, C, E)$ is a BCNF loss less decomposition. (8)

10. a) Given a set of FDs over a relation r , how do you find the candidate key for r . (8)

b) Define BCNF. How does it differ from 3NF? Why is it considered a stronger form of 3NF? (8)



5E3164

Roll No. _____

[Total No. of Pages : 2]

5E3164**B.Tech. Vth Semester (Back) Examination, Dec. 2010/Jan. 2011****Computer Science****(5CS6.1) Logic & Functional Programming****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly)

Unit - I

1. a) Define tautology, contradiction and contingency by giving suitable examples. (8)
- b) Explain implications of propositional logic with an example. (8)

OR

- a) Convert the following statements to if-then form in English then convert them into propositional form.
 - i) I go to the beach only if it is sunny.
 - ii) For me to go to the beach then it is sunny.
 - iii) Whenever it is sunny. I go to the beach.
 - iv) I go to the beach on a sunny day. (4×3=12)
- b) Convert the following directly into propositional form.
 - i) Either it is raining, or it is snowing and the sun is shining.
 - ii) It is raining but the sun is shining. (2×2=4)

Unit - II

2. a) Prove that $\neg T = F$ is equivalence, using the rule of substitution and transitivity. (8)
- b) Prove that $\neg F = T$ is equivalence, using the rule of substitution and transitivity. (8)

OR

- a) Prove the law of contradiction $\neg(b \wedge \neg b)$. (8)
- b) Prove the law of implication. $(\neg b \Rightarrow c) = (b \vee c)$ (8)

Unit - III

3. Explain quantification? Explain all different types of quantifiers. (16)

OR

- a) Explain free and bound identifiers with an example. (8)
- b) Explain textual substitution with an example. (8)

Unit - IV

4. a) Why the prolog is considered most popular logic programming language in the World. (8)
- b) What is unification? How it is achieved in prolog. (8)

OR

- a) Write application areas of prolog. (6)
- b) Write a prolog program which displays numbers from N to O, where N is supplied by user. (10)

Unit - V

5. a) How arrays are used in LISP? Explain with code. (8)
- b) Explain different types of iterative construct in LISP. (8)

OR

- a) Compare functional and imperative programming languages. (8)
- b) Explain declaration and use of functions in LISP? Give suitable example. (8)



5E3163

Roll No. _____

[Total No. of Pages : 3]

5E3163**B.Tech. Vth Semester (Back) Examination, Dec. 2010/Jan. 2011****Computer Engineering****5CS5 Telecommunication Fundamentals****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

*Attempt overall **five** questions selecting **one** question from **each** unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Unit - I

1. a) How can a composite signal be decomposed into its individual frequencies?(3)
- b) A non-periodic composite signal has bandwidth of 200 KHz, with a middle frequency of 140 KHz and peak amplitude of 20V. The two extreme frequencies have an amplitude of 0. Draw the frequency domain of signal.(4)
- c) What is the significance of the twisting in twisted pair cable. (3)
- d) What is the purpose of cladding in an optical fiber. (3)
- e) How does sky propagation differ from line of sight propagation. (3)

OR

- a) If data link layer can detect errors between hops, why do you think we need another checking mechanism at the transport layer. (6)
- b) If you have to construct LAN in your college's Lab. What will be the various requirements at the Hardware level and Software level. (6)
- c) Explain the various network topologies by giving suitable examples? (4)

Unit - II

2. a) Consider an audio signal with spectral components in the range 300 to 3000 Hz. Assume that a sampling rate of 7000 samples per second will be used to generate a PCM signal.
For SNR = 30 dB What is the number of uniform quantization levels needed?
What data rate is required? (8)

- b) An analog signal has bandwidth of 40 KHz. If we sample this signal and send it through a 50 Kbps channel what is SNR dB? (4)
- c) Make comparison between various data encoding technique by taking bit pattern 01010100. (4)

OR

- a) A multiplexer combines four 100 Kbps channels using a time slot of 2 bits. Show the output with four arbitrary inputs. What is the frame rate? What is frame duration. What is bit rate and bit duration. (6)
- b) What is SONET? Explain various component which can be used in SONET architecture. Find the data rate of STS - 3 signal. (5)
- c) Consider a transmission system using frequency division multiplexing. What cost factors are involved in adding one more pair of stations to the system. (5)

Unit - III

- 3. a) Explain why collision is an issue in a random access protocol but not in controlled access or channelizing protocols. (4)
- b) A pure ALOHA network transmits 200 bits frames on a shared channel of 200 Kbps. What is throughput if the system (all stations together) produce
 - i) 1000 frames/sec ii) 500 frames/sec. (8)
- c) Discuss the frame relay physical layer. There are no sequence number in frame relay why? (4)

OR

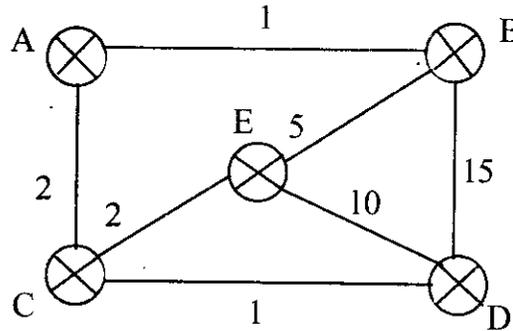
- a) Can frames collide in CSMA and how? What is the problem in CSMA that CSMA/CD is trying to resolve? (8)
- b) Explain CDMA and how it is different from FDMA and TDMA? (4)
- c) Explain the working of PPP? (4)

Unit - IV

- 4. a) Why does a circuit switched network need end to end addressing during the setup and teardown phases? Why are no address needed during the data transfer phase for this type of network. (8)
- b) We need a three stage space division switch with $N = 120$. We use 10 cross bars at the first and third stages and 4 cross bars at the middle stage.
 - i) Draw the configuration diagram
 - ii) Calculate the total no. of cross points. (8)

OR

- a) Explain adaptive and non adaptive routing? (4)
- b) Consider the network shown below and assume that each node initially knows the costs to each of its neighbors. Consider the distance vector algorithm and show the distance table entries at node E. (8)



- c) What is ISDN? Explain. (4)

Unit - V

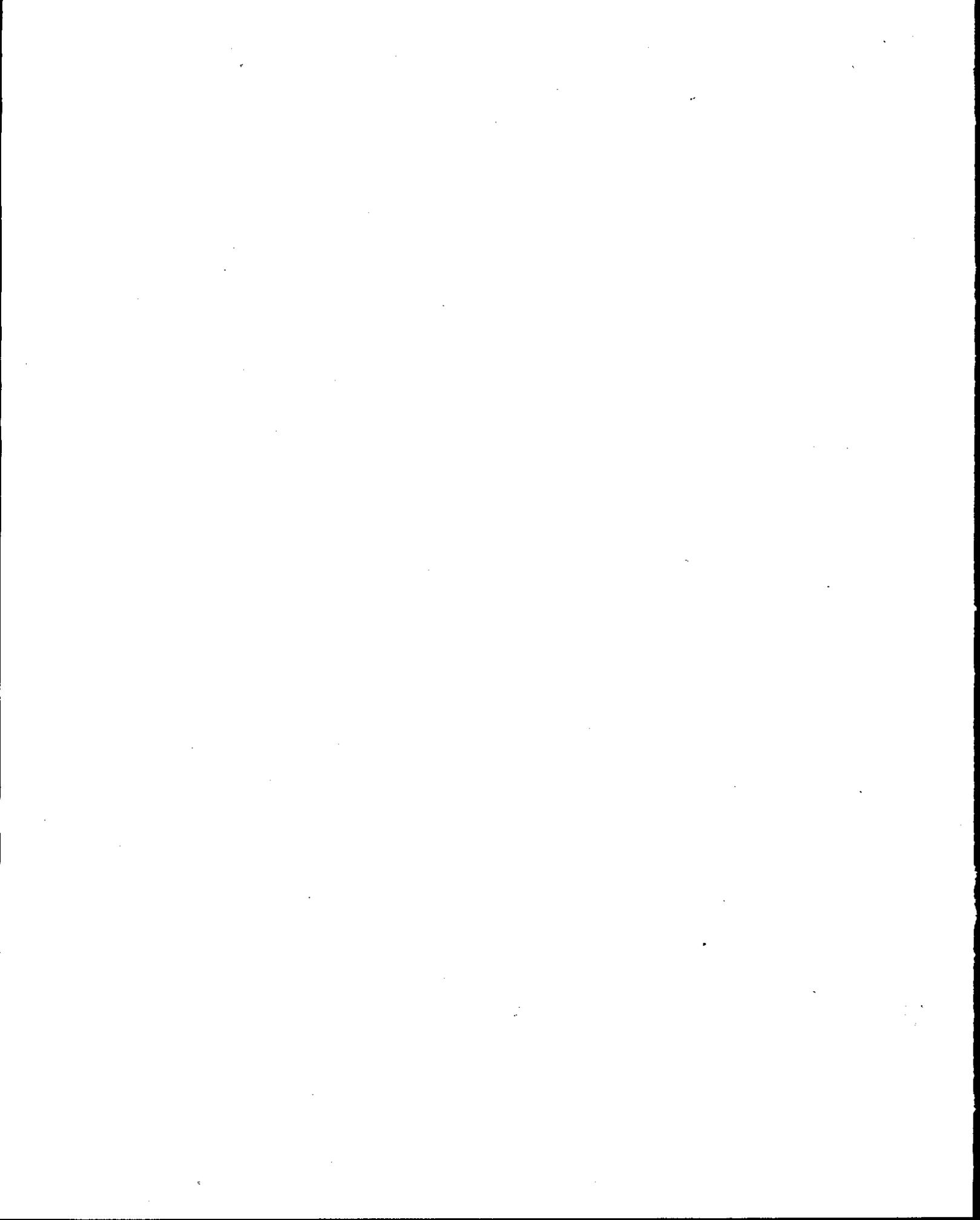
5. Explain the following :

- | | |
|-----------------------|--------------------|
| a) Gateway | b) Media converter |
| c) Router | d) Bluetooth |
| e) Protocol converter | f) Firewall |
| g) Proxy | h) Switch. |
- (8×2=16)

OR

Explain the working of following

- a) Mail server
- b) Web server
- c) Proxy server
- d) File server. (4×4=16)



5E3162

Roll No. _____

[Total No. of Pages : 2]

5E3162**B. Tech. Vth Semester (Back) Examination, Dec.2010/Jan. 2011****Computer Engineering****5CS4 Computer Graphics****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt overall five questions selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. List the operational characteristics for the following display technologies : (16)

Raster scan display, LCD, Vector scan display, plasma panels.

OR

- a) What advantages do LCD and plasma displays share over CRT? (12)
- b) List the differences between track ball and space ball. (4)

Unit - II

2. a) Modify the simple straight line DDA to draw either solid, dashed or dotted lines. (8)
- b) Why do we always fill polygons with horizontal lines? Can we do it with vertical lines? (8)

OR

- a) Explain the bresenham circle drawing algorithm. (8)
- b) Derive the Bezier curve. Write also the properties of Bezier curve. (8)

Unit - III

3. a) Explain the different types of Parallel Projections. (8)
b) Show that two successive reflections about either of the coordinates axis is equivalent to single rotation about the coordinate origin. (8)

OR

- a) Explain homogeneous coordinates. Why are these required? (6)
b) Derive the matrix to scale a point $p(x,y)$ by scaling factors S_x, S_y about a fixed point $F(X_F, Y_F)$. (10)

Unit - IV

4. a) What is a difference between viewport and window? (4)
b) Using Cohen-Sutherland line clipping algorithm clip a line $A(2,0)$ and $B(4,4)$ against a window which has lower left corner at $(1, 1)$ and upper left corner at $(3, 3)$. (6)
c) What do you mean by ray-tracing? Write Basic ray tracing algorithm. (6)

OR

- a) What is a difference between phong shading and Gourand shading? (4)
b) Explain factors on which illumination models are based. (4)
c) Explain and write expression for Z - Buffer algorithm. How A - Buffer method removes the drawback of Z - Buffer algorithm? (8)

Unit - V

5. What is the MPEG and JPEG? Describe their working. (16)

OR

- a) Explain multimedia communication model. What are the major application area of multimedia? (8)
b) What are multimedia authoring tools? Explain its various types. (8)

5E3251

Roll No. _____

[Total No. of Pages : 3]

5E3251**B.Tech. Vth Semester (Main) Examination, Dec. 2010/Jan. 2011****Computer Science****5CS1 Computer Architecture (Common for Computer & IT)****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any Five questions, selecting one question from each unit . All questions carry equal marks (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly . Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) Define control function in register transfer language. What do you understand by bus transfer? Explain with examples. (8)
- b) Represent the following conditional control statement by two register transfer statements with control function.

if ($P=1$) then ($R_1 \leftarrow R_2$)

else if ($Q=1$) then ($R_2 \leftarrow R_3$)

Draw Bus system for above with three stage device. (8)

OR

- a) Define register transfer language. What do you understand by arithmetic micro operations? Explain with examples? (8)
- b) Design an arithmetic circuit with one selection variable S and two n - bit data inputs A and B. The circuit generates the following four arithmetic operation in conjunction with the input carry C_m . Draw the logic diagram for the first two stages. (8)

S	$C_m = 0$		$C_m = 1$	
0	$D = A+B$	Addition	$D = A+1$	Increment
1	$D = A - 1$	Decrement	$D = A+\bar{B}+1$	Subtraction

Unit - II

2. What is pipelining? What is the maximum speed up that can be attained? Construct an instruction pipeline. Is it possible to attain maximum speed up in an instruction pipeline? (16)

OR

Write a program to evaluate the arithmetic statement :

$$X = \frac{A - B + C * (D * E - F)}{G + H * K}$$

- a) Using a general register Computer with three address instructions.
- b) Using a general register Computer with two address instructions.
- c) Using an accumulator type Computer with one address instructions.
- d) Using a stack organized Computer with zero address operation instructions. (4×4=16)

Unit - III

3. a) Design an array multiplier that multiplies a binary number of four bits with a binary number of three bits. (8)
- b) Explain carry look ahead adder. (8)

OR

- a) Explain Booth's algorithm for multiplication of sign 2's Complement numbers. (10)
- b) Explain Ripple Carry adder. (8)

Unit - IV

4. a) What is content Addressable memory? Describe its design procedure. What is the role of match register. (10)
- b) Design a 4×3 RAM. Draw the logic circuit of basic cell also. (6)

OR

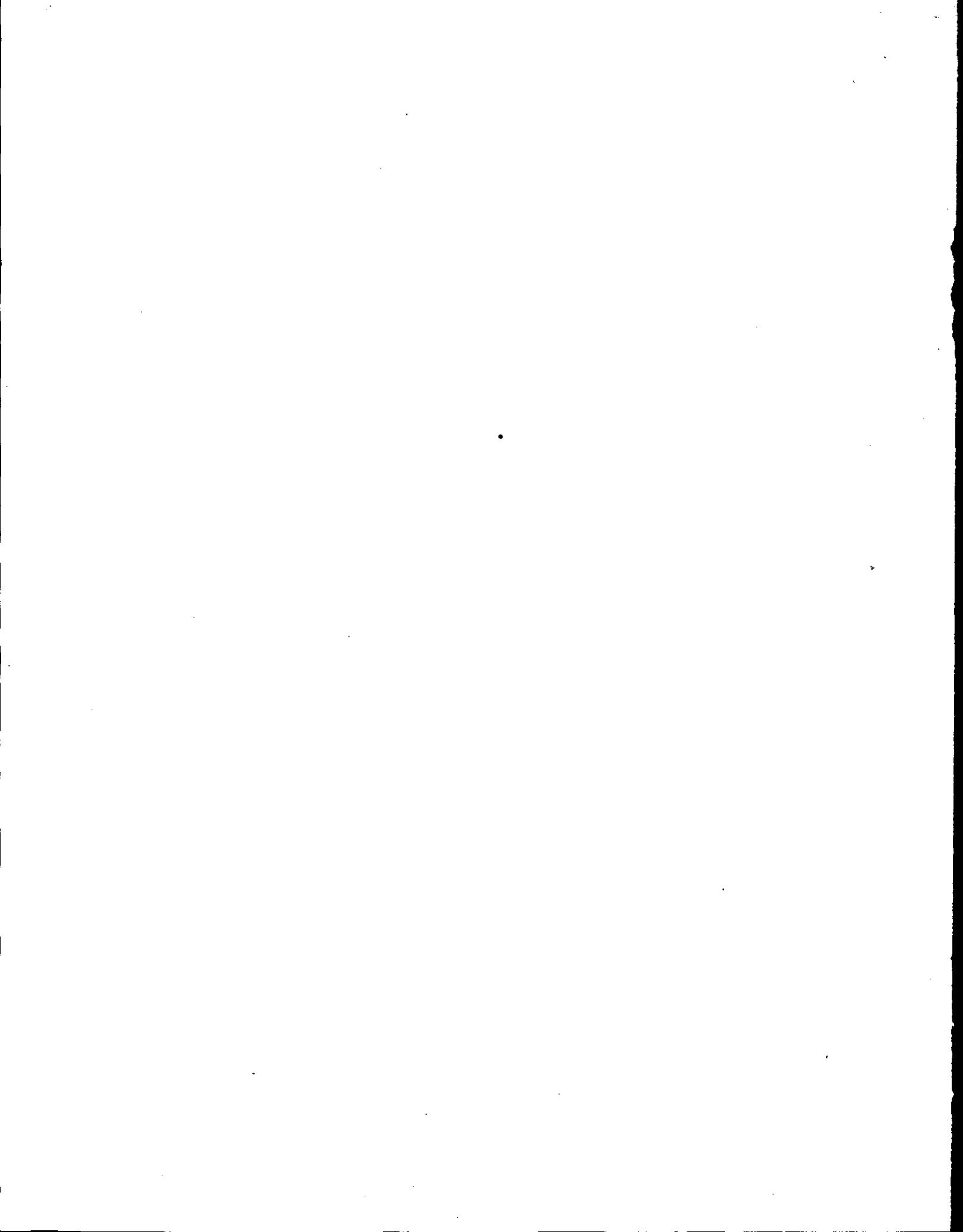
- a) Explain cache memory and mapping procedures used with cache memory organization. (10)
- b) Explain memory hierarchy in a computer system. (6)

Unit - V

5. a) How many character per second can be transmitted over a 1200 band line in each of the following modes assuming a character code of eight bits.
- 1) Synchronous serial transmission.
 - 2) Asynchronous serial transmission with 2 stop bits. (4×2=8)
- b) Explain CPU - IOP communication with a diagram. (8)

OR

- a) Explain the difference between programmed I/O and interrupt initiated I/O giving an example of each. (8)
 - b) What is DMA technique? Explain DMA controller and DMA transfer, with suitable diagram. (8)
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5E3257

Roll No. _____

[Total No. of Pages : 3]

5E3257

B.Tech. Vth Semester (Main) Examination, Dec. 2010/Jan. 2011
Computer Science
5CS6.2 Digital signal Processing
(Common for Computer & IT)

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly)

Unit - I

1. Consider a system whose output $y(n)$ is related to the input $x(n)$ by

$$y(n) = \sum_{k=-\infty}^{\infty} x(k)x(n+k).$$

Determine whether or not the system is

- a) Linear,
- b) Shift-invariant,
- c) Stable,
- d) Causal,

(16)

OR

2. Consider a system described by the difference equation $y(n) = y(n-1) - y(n-2) + 0.5x(n) + 0.5x(n-1)$ Find the response of this system to the input $x(n) = (0.5)^n u(n)$ with initial conditions $y(-1) = 0.75$ and $y(-2) = 0.25$ (16)

Unit - II

3. a) Prove the convolution theorem of DTFT. (8)

b) Find the inverse DTFT of $X(e^{j\omega}) = \frac{1}{1 - \frac{1}{3}e^{-j10\omega}}$ (8)

OR

4. a) Find the Z-transform of $x(n) = |n| \left(\frac{1}{2}\right)^{|n|}$ (8)
- b) Find the inverse Z-transform of the second-order system.

$$X(Z) = \frac{1 + \frac{1}{4}Z^{-1}}{\left(1 - \frac{1}{2}Z^{-1}\right)^2}, \quad |Z| > 2 \quad (8)$$

Unit - III

5. Define and prove the sampling theorem. (16)

OR

6. Suppose that $x_a(t)$ is band limited to 8KHz (that is, $X_a(f) = 0$ for $|f| > 8000\text{Hz}$).

- a) What is the Nyquist rate for $x_a(t)$?
- b) What is the Nyquist rate for $x_a(t) \cos(2\pi \cdot 1000t)$? (8+8=16)

Unit - IV

7. Explain Overlap-Add and Overlap-Save Method for computing linear convolution using DFT for longer input sequence $x(n)$. (16)

OR

8. Derive Radix-2 decimation-in-frequency FFT algorithms for evaluating 8-point DFT. (16)

Unit - V

9. Consider the causal linear shift-invariant filter with system function

$$H(Z) = \frac{1 + 0.875Z^{-1}}{(1 + 0.2Z^{-1} + 0.9Z^{-2})(1 - 0.7Z^{-1})}$$

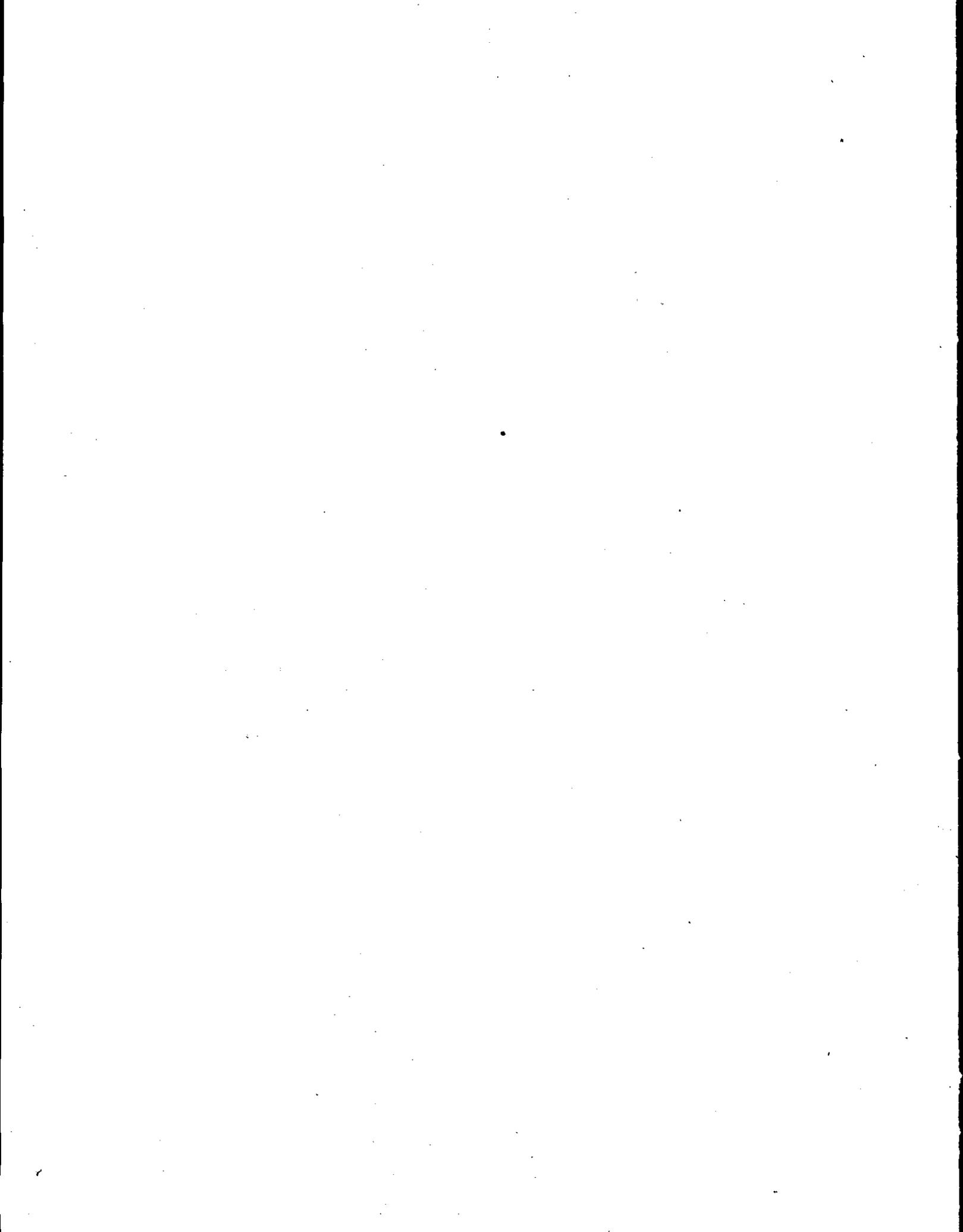
Draw a signal flow graph for this system using

- a) Direct form - I (2)
- b) Direct form - II (2)
- c) A cascade of first-and second-order system realized in direct form II (4)
- d) A cascade of first-and second-order system realized in transposed direct form II (4)
- e) A parallel connection of first-and second-order systems realized in direct form II (4)

OR

10. Use the window design method to design a Linear Phase FIR filter of order $N=24$ to approximate the following ideal frequency response magnitude : (16)

$$|H_d(e^{j\omega})| = \begin{cases} 1 & |\omega| \leq 0.2\pi \\ 0 & 0.2\pi < |\omega| \leq \pi \end{cases}$$



3/1/11

5E3252	Roll No. _____	[Total No. of Pages : 2]
	5E3252	
B. Tech. Vth Semester (Main) Examination, Dec.-2010/Jan.-2011		
Computer Science		
5CS3 Telecommunication Fundamentals		
(Common for Computer & IT)		

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

Attempt any Five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) Describe channel capacity. Compare the transmission media: twisted pair and coaxial cable. (8)
- b) Explain antenna gain in wireless transmission. What are free space losses in LOS Communication. (8)

OR

- a) Compare OSI and TCP/IP network reference models. (8)
- b) Explain the need of line coding. Give specific properties of line coding. (8)

Unit - II

2. a) Explain the functions performed by data link layer. (8)
- b) Name some of the linear codes with brief notes. (8)

OR

- a) Explain standardized polynomial codes. (8)
- b) Describe stop and wait protocols for error control. (8)

Unit - III

3. a) Compare pure and slotted Aloha. Give through-put analysis of pure and slotted Aloha. (10)
- b) Describe the functions of MAC sublayer. (6)

OR

- a) Describe CSMA protocol. Give through put analysis of CSMA and CSMA/CD. (8)
- b) Describe HDLC and PPP. (8)

Unit - IV

4. a) Compare TDM and FDM. (8)
- b) Describe space division and time division switching. (8)

OR

- a) Explain TDMA Burst structure and super frame structure. (8)
- b) Explain ADSL with specific features. (8)

Unit - V

5. a) Why we go for spread spectrum technique. Describe time hopped and frequency hopped spread spectrum. (10)
- b) What is IMT - 2000. (6)

OR

- a) Explain the generation of PN sequence. (8)
- b) Describe the following :
- i) Gold sequence.
- ii) walsh codes synchronization. (8)

5E3253

Roll No. _____

[Total No. of Pages : 2]

5E3253**B.Tech. Vth Semester (Main) Examination, Dec. 2010/Jan. 2011****Computer Science****5CS2 Digital Logic Design****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24*****Instructions to Candidates:***

*Attempt any **five** questions, Selecting **one** question from **each** unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly)*

Unit - I

1. a) Explain with example the lexical elements of VHDL language.
- b) What is the modelling concept of VHDL? Explain.

OR

2. Explain the concept of look ahead carry adder in VHDL language.

Unit - II

3. a) Explain the concurrent statements with suitable examples.
- b) What is the use of VHDL in synthesis? Explain with a suitable example.

OR

4. a) What do you understand by resolved signals? Explain.
- b) Explain packages and use clauses of VHDL language.

Unit - III

5. a) Is there any difference between Moore and mealy machines? Explain.
- b) Explain clock skew, set up time and hold time with suitable examples.

OR

6. a) Is there any difference between PAL and PLA? Explain with examples.
- b) What is meant by FPGA? Explain briefly.

Unit - IV

7. a) Explain the procedure of state reduction of incompletely specified machine with a suitable example.
- b) Explain function hazards with suitable examples.

OR

8. a) What do you understand by dynamic hazards? Explain with examples.
- b) What is meant by race-free assignments?

Unit - V

9. What are the differences among SRAM, EAPROM and flash memory.

OR

10. a) What is the importance of Altera Stratix?
- b) Why should one prefer Xilinx Virtex-II pro.?

5E3255

Roll No. _____

[Total No. of Pages : 3]

5E3255**B.Tech. Vth Semester (Main) Examination, Dec. 2010/Jan. 2011****Computer Engineering****5CS5 Operating System (Common with IT)****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt overall five questions selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly)

Unit - I

1. a) Differentiate, process and program. Also, describe PCB and its contents. (8)
b) Explain System calls. How does it differ from function call. (8)

OR

- a) Explain different states of process. (8)
b) Explain how operating system act as a Resource Manager? Differentiate between Multi-programming and multi-threading. (8)

Unit - II

2. a) What is race condition? (4)
b) Explain critical section problem. How are semaphores used for solving critical section problem? (8)
c) Explain Peterson solution for mutual exclusion. (4)

OR

- a) Explain clearly short-term and long-term scheduling. (8)
b) Consider the following set of process with the arrival time and CPU burst time given in milliseconds.

Processes	Arrival time	CPU burst time
P ₁	0	5
P ₂	1	3
P ₃	2	3
P ₄	3	1

What is avg. waiting time for these process with the preemptive shortest Job first scheduling? (8)

Unit - III

3. a) What is deadlock? What are necessary conditions for deadlock? (8)
- b) Explain with all data structures, the Banker algorithm for deadlock avoidance. (8)

OR

- a) Explain various memory allocation schemes-first-fit, next-fit, best-fit worst-fit, and quick - fit. (6)
- b) Consider the following snapshot of a system :-

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P ₀	0	0	1	2	0	0	1	2	1	5	2	0
P ₁	1	0	0	0	1	7	5	0				
P ₂	1	3	5	4	2	3	5	6				
P ₃	0	6	3	2	0	6	5	2				
P ₄	0	0	1	4	0	6	5	6				

Answer the following questions using the Banker's Algorithm :-

- i) What are the content tents of matrix need? (2)
- ii) Is the system in safe state? (4)
- iii) If the request from process P₁ arrives for (0, 4, 2, 0), can the request be granted immediately. (4)

Unit - IV

4. a) How does pre paging differ from demand paging? How does demand paging affect the performance of system? (8)
- b) Explain Pure segmentation and segmentation with paging scheme. (6)
- c) What do you understand by memory fragmentation? (2)

OR

- a) Consider 3-page frames and the following reference string, use LRU page replacement algorithm to calculate the number of page faults in each. Preference string is :

7 0 1 2 0 3 0 4 2 3 0 3 2 1
2 0 1 7 0 1. (10)

- b) What is Belady's anomaly? (6)

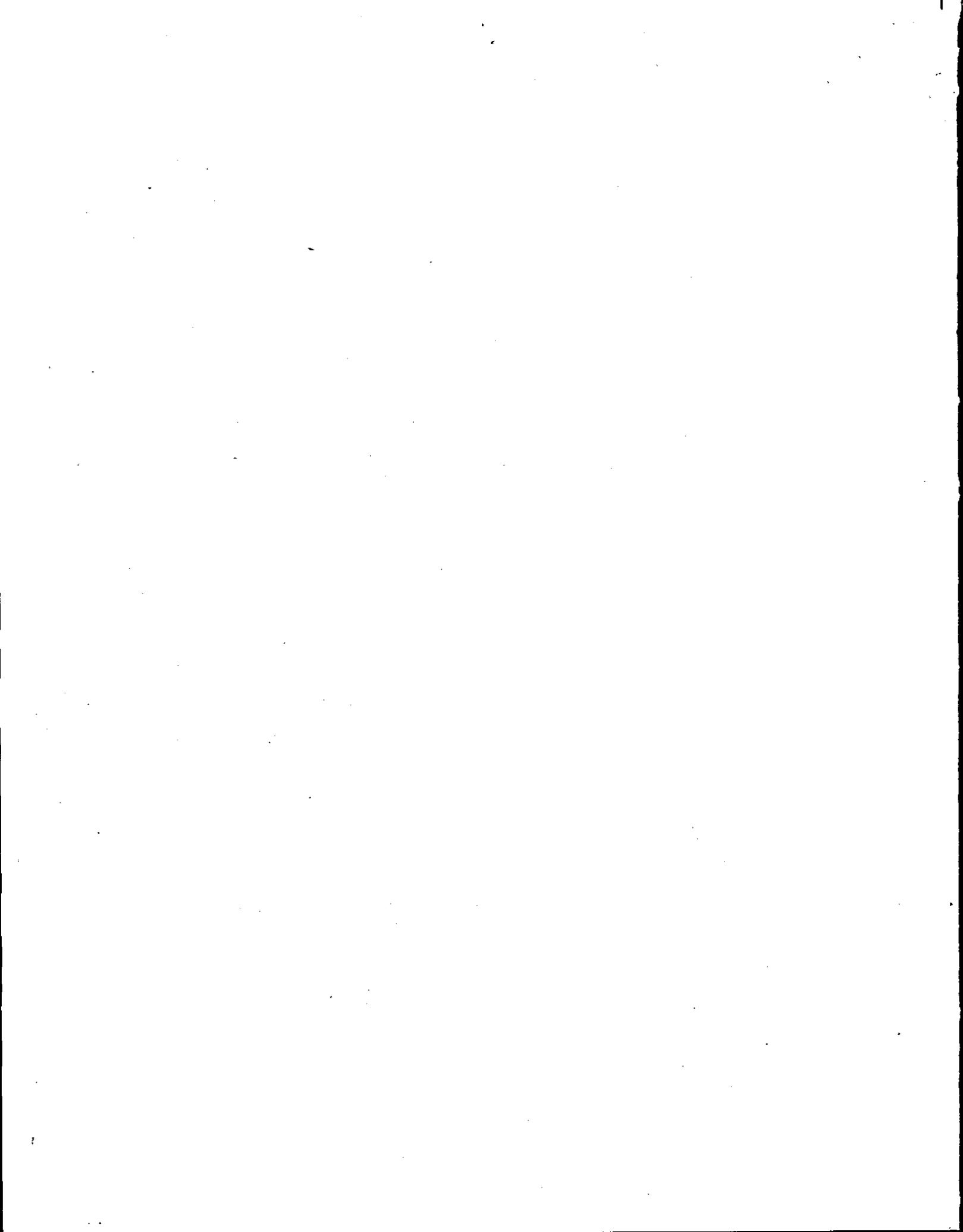
Unit - V

5. Explain :- (4×4=16)

- i) Two level directory ;
- ii) Tree structured directory,
- iii) Acyclic graph directory,
- iv) General graph directory.

OR

- a) Explain all disk scheduling algorithm. (8)
 - b) Explain Network file system. (4)
 - c) What do you understand by interrupts? What is difference between Hardware interrupt and software interrupt. (4)
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5E3254

Roll No. _____

[Total No. of Pages : 3]

5E3254

B.Tech Vth Semester (Main) Examination, Dec.-2010/Jan.-2011
Computer Science
Data Base Management System
5CS3 (Common for Computer & IT)

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) State and explain functional components of a database system and show the connections among them with neat sketch. (8)
- b) Explain following with example :
- i) Binary Vs Ternary relationship
- ii) Aggregation. (4+4)

OR

- a) Explain Relational, network and Hierarchical data model in brief with suitable example. Also point out difference among them. (8)
- b) What is data Independence? Differentiate between all types of data independence. Explain its use in DBMS. (8)

Unit - II

2. a) What is the difference between relational algebra and relational calculus. (8)
- b) Let R and S be the relation shown in table.

R		S	
B	A	C	B
b	a	c	b
b	c	a	e
e	d	d	b

Compute :- i) RUS ii) R-S iii) Π_A iv) $\sigma_{A=C}^{(R \times S)}$

Ignore attributes names in the result of union and difference. (8)

OR

Following relations Keep track of airline flight information :

Flights (flno, from, to, distance, departs, arrives, price)

Aircraft (aid, aname, cruising range)

Certified (eid, aid)

Employees (eid, ename, salary)

Note that the Employees relation describes pilots and other kinds of employees as well ; every pilot is certified for some aircraft, and only pilots are certified to fly. Write each of the following queries in SQL.

- a) Find the names of aircraft such that all pilots certified to operate them earn more than Rs. 50000
- b) For each pilot who is certified for more than three aircraft, find the eid and the maximum Cruising range of the aircraft for which he or she is certified.
- c) Find the names of pilots whose salary is less than the price of the cheapest route from Bombay to Delhi.
- d) Find the names of pilots certified for some Boring aircraft.
- e) Compute the difference between the average salary of a pilot and the average salary of all employees (including pilots).
- f) Find the name and salary of every nonpilot whose salary is more than the average salary for pilots.
- g) Find the names of employees who are certified only on aircrafts with cruising range longer than 1000 miles.
- h) Identify the routes that can be piloted by every pilot who makes more than Rs.100000. (16)

Unit - III

3. a) Why BCNF considered to be stricter than 3NF? How is non BCNF scheme decomposed into BCNF scheme? (8)
- b) Suppose we decompose the scheme R (A,B,C,D,E) into (A,B,C) and (A,D,E). Show that this is a lossless-join decomposition if the $Set F = \{A \rightarrow BC, CD \rightarrow E, B \rightarrow D, E \rightarrow A\}$ of functional dependencies hold. (8)

OR

- a) What is a transaction? List the properties of a transaction that a database system maintains. Discuss the various states of transaction. (8)
- b) Explain the distinction between the terms serial schedule and rerealisable schedule. (8)

Unit - IV

- 4. What do you understand by concurrency in databases? Explain the various concurrency control techniques without locking with examples. (16)

OR

- a) What is the need of performing recovery? Describe log-based and check point schemes for data recovery. (8)
- b) Describe the shadow paging recovery scheme along with a diagram. (8)

Unit - V

- 5. Construct a B-tree for the following set of key values :-

(2, 3, 5, 7, 11, 17, 19, 23, 29, 31)

assuming that the tree is initially empty, values are added in ascending order, and the number of pointers will then fit in one node is 4.

Show the form of the tree after each of the following series of operations :-

- a) Insert 6
- b) Insert 12
- c) Delete 29
- d) Delete 19 (16)

OR

What is the difference between static hashing and dynamic hashing? Explain with example. (16)

