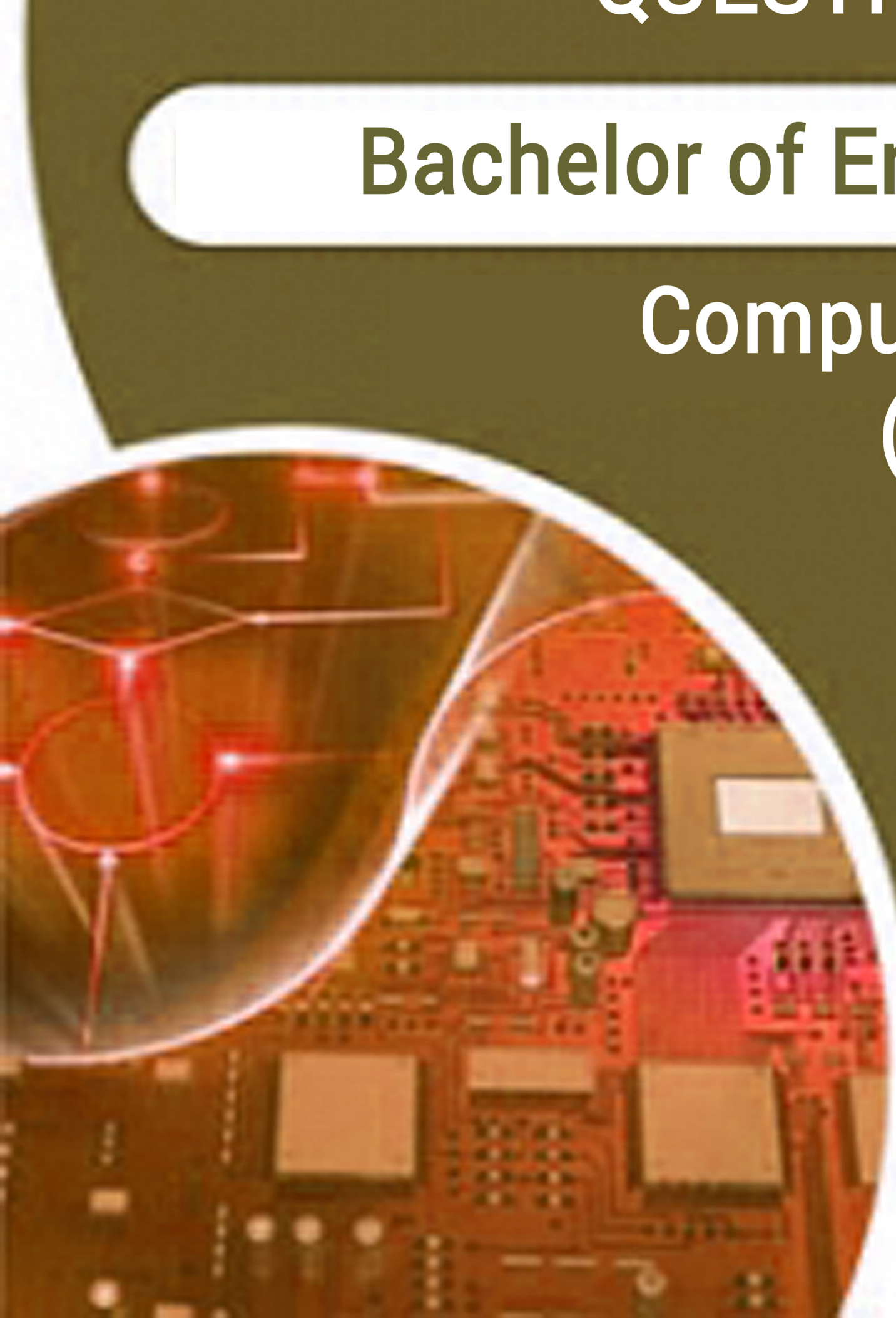
RTU

7th & 8th Semester QUESTION PAPERS

Bachelor of Engineering

Computer Science (2009-2014)



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RTU
Computer Science
Question Paper of Subjects

1. Advance Database Management Systems
2. Compiler Construction
3. Computer Aided Design for VLSI
4. Computer Graphics And Multimedia Techniques
5. Data Mining And Ware Housing
6. Software Project Management
7. Wireless Communication And Networks
8. Digital Image Processing
9. Distributed Systems
10. Hardware Testing And Fault Tolerance
11. Information System Security
12. Mobile Computing
13. Real Time Systems

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7E4242

Roll No. :_____ Total Printed Pages : 2

7E4242

B.Tech. (Sem. VII) (Main) Examination, Nov-Dec - 2011
Computer Science
7CS6.1 Advance Database Management Systems

Time : 3 Hours

Total Marks : 80
Min. Passing Marks : 24

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. Suppose that three buffer page available and the only join method that is implemented is simple nested loops.
   (a) Compute the cost of doing the projection followed by the join.
   (b) Compute the cost of doing the join followed by the projection.
   (c) Compute the cost of doing the join first and thus the projection on the fly.
   (d) Would your answer changes, if its bugger were available. **(4×4=16)**

OR

1. What is optimization? How can you optimize a SQL query and how we estimate cost of query plan? Explain with suitable examples. **(4+6+6=16)**

UNIT - II

2. (a) Define and describe abstract data type. How methods of abstract data types define in an external programming language? **(2+6=8)**
   (b) How is an object identifier (oid) different from a record id in a relational DBMS? **(8)**

OR

2. (a) Compare OODBMS with ORDBMS. In particular. Differentiate between OQL and SQL and discuss the data models. **(8)**
   (b) What is reference type? Define deep and shallow equality and illustrate them through an example. **(4+4=8)**

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UNIT - III

3. Why we need to consider optimizing queries for parallel execution? Discuss inter-operation parallelism, left deep tress versus trees and cost estimation? **(8+6+2=16)**

OR

3. (a) Describe the three main architecture for distributed DBMS. **(8)**
   (b) What is sub transaction? What issue must be considered in optimizing queries over distributed data in addition to where the data is located? **(2+6=8)**

UNIT - IV

4. Define and describe integrity constrains and multilevel relational and polyinstantiation with an example. **(4+6+6=16)**

OR

4. Describe role of database administrator in statical DBMS. Write all security and authorization method in detail. **(10+6=16)**

UNIT - V

5. (a) What is XML query? Write all application of XML in detail. **(4+4=8)**
   (b) How will you process SQL query? Explain postagre system architecture. **(4+4=8)**

OR

5. Write short notes on :
   (a) Querying and Transformation
   (b) Optimization System
   (c) Structure of XML data
   (d) DoD Security Levels **(4×4=16)**

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B.Tech. (Sem.VII) (Main) Examination- Dec. 2012
Information Technology
7IT6.1 Advance Database Management Systems (Common to CS & IT)

Time : 3 Hours | Total 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 information is stored in the stored in the system catalog of a DBMS and how is it used in query optimization? **(10)**
   (b) What are query evaluation plans and how are they represented ? **(6)**

OR

1. (a) What is the role of relational algebra equivalences in query optimization ? **(6)**
   (b) How is the cost of a plan estimated ? **(4)**
   (c) What is the goal of query optimization ? Is it to find the best plan ? **(6)**

UNIT - II

2. (a) Compare ORDBMS and OODBMS with various database system. **(8)**
   (b) Discuss how a DBMS exploits encapusulation in implementing support for ADT's ? **(8)**

OR

2. (a) Describe two objects that are deep equal but not shallow equal. **(8)**
   (b) What is late binding of methods ? Give an example that illustrates how collection hierarchies facilitate quering. **(8)**

UNIT - III

3. (a) How are data flow concept used to parallelize existing sequential code ? **(8)**
   (b) How can we evaluate and optimize queries over distributed data ? **(8)**

OR

3. (a) Define the term scale-up and speed up. **(4)**
   (b) What are the similarities and differences between parallel and distributed database management system ? **(8)**
   (c) What are the alternative architectures for parallel database system? **(4)**

UNIT - IV

4. (a) What is the role of the database administrator with respect to security ? **(8)**
   (b) Discuss the DoD security levels for database system. **(8)**

OR

4. (a) Explains the term security policy and security mechanism and how they are related ? **(8)**
   (b) Describe AES and its relationship to DES. **(8)**

UNIT - V

5. (a) What is the POST GRES user interface ? Explain its architecture. **(8)**
   (b) Explain transaction management with various key notation. **(8)**

OR

5. Write short notes on :
   (i) Extensibility
   (ii) XML Application
   (iii) Storage and Indexing
   (iv) Quering and Transformation. **(16)**

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B. Tech. VII Semester (Main/Back) Examination 2013

COMPUTER ENGINEERING # 7CS6.1 Common with CS & IT

ADVANCE DATABASE MANAGEMENT SYSTEM

Time : 3 Hours **Min. Passing Marks : 24** **Maximum Marks : 80**

Instruction 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 are the goal of Query Optimization. Explain pushing section in alternative plan? **[8]**

   (b) Explain the term system catalog? Also explain how catalog are stored? **[8]**

OR

1. **(a)** Describe Enumeration of alternative plan in brief? **[8]**

   (b) Write short note on:

   (i) Decomposition of query into blocks

   (ii) Estimation cost of a plan. **[4 × 2 = 8]**

Unit–'II'

2. **(a)** Explain ORDBMS and OODBMS in brief? **[8]**

   (b) What are different structured data types available in object database system? **[8]**

OR

2. **(a)** What is the object database system? How object database system support for complex object and types of object? **[8]**

   (b) Compare ORDBMS and OODBMS with various database system? **[8]**

Unit–'III'

3. **(a)** What is concurrency control? What are the recovery techniques to overcome from concurrency ? **[8]**

   (b) Explain parallelizing individual operation. **[8]**

OR

3. **(a)** What is distributed DBMS? Explain its architecture. **[8]**

   (b) Write short note on:

   (i) Data replication and allocation.

   (ii) Distributed query processing. **[4×2=8]**

Unit–'IV'

4. **(a)** What is the database security? Explain Secrecy, integrity and availability within database security? **[8]**

   (b) Explain Access control in briefly? **[8]**

OR

4. **(a)** Explain the additional Issues related to security? **[8]**

   (b) Write a short note on:

   (i) Authorization

   (ii) DOD Security level. **[4×2=8]**

Unit–'V'

5. **(a)** Describe POSTGRES user interface? Explain its architecture? **[8]**

   (b) Explain storage and indexing in brief? **[8]**

OR

5. **(a)** Explain in brief Query processing, Optimization and system architecture? **[8]**

   (b) What is XML? What is the background of XML with SGML & HTML? **[8]**

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Roll No. :_____ Total Printed Pages : 3

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B.Tech. (Sem. VII) (Main) Examination, Nov-Dec - 2011
Computer Science
7CS3 Compiler Construction

Time : 3 Hours

Total Marks : **80**
Min. Passing Marks : **24**

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) Explain the different phases of compiler design with the help of suitable diagram. **(8)**

(b) Explain the following terms

(i) Translators, compilers and interpreters

(ii) Bootstrapping **(2+2)**

(c) Illustrate the translation of the following statement on all phase of compiler A: = B * C + D/E. **(4)**

OR

1. (a) Write short note on "Input Buffering" **(2)**

(b) Construct minimum state DFA for the following regular expressions.

b(a/b)*a

(a/b)* - a(a/b) (c/b)

((a/b) / (b/c))* **(6)**

(c) What is role of lexical analyzer **(2)**

(d) Define the term NFA and DFA with an example. What are the rules to get a NFA for a regular expressions? And also describe the applications and limitations of finite automata. **(6)**

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UNIT - II

2. (a) Consider the following grammar G:

$E \rightarrow TE'$

$E' \rightarrow + TE'/\in$

$T \rightarrow FT'$

$T' \rightarrow * FT'/\in$

$F \rightarrow (E)/id$

Where $\in$ denotes the empty string of symbols

(i) Complete FIRST and FOLLOW for each non terminal of the grammar G.

(ii) Construct a predictive parsing table for grammar G. **(3+3)**

(b) What do you mean by context free grammar? Give distinction between regular and context free grammar and limitations of context free grammar. **(4)**

(c) Show whether the following grammar is LL(1) or not

$E \rightarrow TE/ + TE/\in$

$T \rightarrow FT/ * FT/ \in$

$F \rightarrow (E)/id$

And explain the model of a predictive parser. **(3+3)**

OR

2. Explain top down and bottom up parsing technique detail. **(16)**

UNIT - III

3. Write a program to translate an infix expression into postfix form. Also write syntax directed definition for the same. **(16)**

OR

3. (a) Define syntax directed definition. Explain the various forms of syntax directed definition. **(10)**

(b) Write specifications of a simple type checker with example. **(6)**

UNIT - IV

4. (a) Write short notes on

(i) Activation Record

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(ii) Parameter Passing **(6×2)**

(b) Differentiate between stack and heap allocation. **(4)**

OR

4. (a) What are various runtime storage management techniques? Explain with programming examples. **(10)**

(b) Write short note on symbol table **(6)**

UNIT - V

5. (a) Construct the DAG and generate the code for given block

d; = b + c

e: = a * b

b: = b – c

a: = e * d **(8)**

(b) Write short note on code optimization and DAG. **(8)**

OR

5. Construct the tree for following expression and apply labeling algorithm for optimal ordering x*(y + z) –z/(u – v). **(16)**

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B. Tech. VII Semester (Main/Back) Examination 2013

COMPUTER ENGINEERING # 7CS3

COMPILER CONSTRUCTION

Time : 3 Hours **Min. Passing Marks : 24** **Maximum Marks : 80**

Instruction 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 are the different phases of compiler? Explain them with the help of suitable example. **[10]**

(b) Explain the following terms in brief

(i) Input buffering.

(ii) Functions of lexical analyzer. **[3×2=6]**

OR

1. **(a)** Consider context free grammar S→SS+|SS*|a.

(i) Show how the string aa+a* can be generated by this grammar.

(ii) Construct a parse tree for this string.

(iii) What language is generated by this grammar? Justify your answer. **[8]**

(b) Construct minimum state DFA's for following regular expression.

(i) (a|b)*a(a|b)

(ii) (a|b)*a(a|b)(a|b)

(iii) (a|b)*a(a|b)(a|b)(a|b) **[8]**

Unit–'II'

2. Consider the following grammar G:

E→E+T|T

T→TF|F

F→F*|a|b

(i) Construct the SLR parsing table for this grammar.

(ii) Construct the LALR parsing table. **[8×2=16]**

OR

2. Write down a short note on following:

(i) Operator precedence parser for regular expressions.

(ii) Difference between bottoms up and top down parsing with suitable example.

(iii) YACC error handling in LR parser.

(iv) Context free grammar. **[4×4=16]**

Unit–'III'

3. **(a)** Give a syntax-directed definition to translate infix expression into infix Expression without redundant parenthesis. For example, since + and* Associate to the left, ((a*(b+c))*(d)) can be rewritten as a*(b+c)*d. **[10]**

(b) Write simplifications of a simple type checker with example. **[6]**

OR

3. Write a program to translate an infix expression into postfix form. Also writes down syntax directed definition for the same. **[16]**

Unit–'IV'

4. **(a)** Explain the various runtime storage management techniques? Explain these with the help of suitable programming example. **[10]**

(b) Explain the differences between stack allocation and heap allocation strategies. **[6]**

OR

4. Write short notes on (any two):

(i) Symbol table and Dangling References.

(ii) Activation Records and Parameter Passing.

(iii) Storage allocation strategies. **[8×2=16]**

Unit–'V'

5. **(a)** Construct a DAG for the basic block whose code is given below:

D:=B*C

E:=A+B

B:=B*C

A:=E–D **[10]**

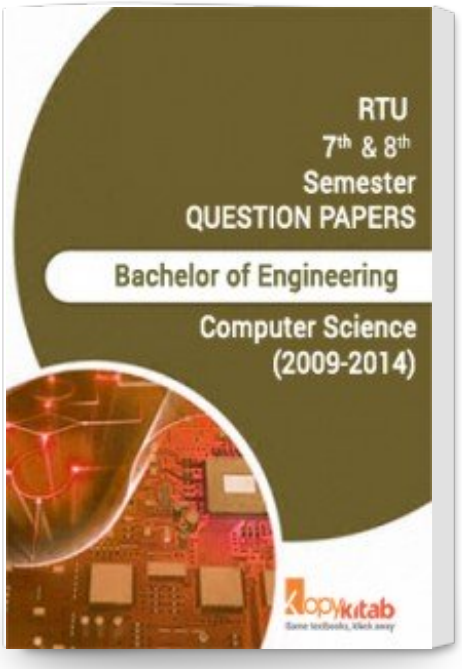
(b) What is peephole optimization? Explain it. **[6]**

OR

5. **(a)** Explain in brief the various issues of design of a code generator. **[8]**

(b) Explain the basic block and control flow graph. **[8]**

RTU QUESTION PAPERS 4TH YEAR COMPUTER SCIENCE (2009-2014)



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