2068 (I)

Group A

Attempt any Two questions : **(2*12=24)**

1. Explain the various components of a real time system with suitable block diagram. State and prove the optimal Earliest-Deadline-First (EDF) algorithm.

2. Explain the multiprocessor priority ceiling protocol with suitable example.

3. Explain the Stack Stealing in deadline-driven system with suitable example

Group B

Attempt any Eight Questions : **(8*7=56)**

4. Explain the real-time command and control system with suitable example.
5. What is hard real time system? Explain with example.
6. Differentiate between data dependency and temporal dependency.
7. State and prove the Optimal Least-Stack-time-first (LST) algorithm.
8. Define the clock-driven scheduling. What are the advantages and disadvantages of it?
9. Differentiate between fixed-priority algorithm and dynamic-priority algorithm.
10. Explain the sporadic server in fixed-priority systems with example.
11. What is rate monotonic algorithm? Explain with suitable example.
12. Explain the priority based service disciplines for switched networks.
13. Write shorts notes on:

(a) Scheduling hierarchy

(b) Communication in multicomputer system.

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology
Course Title: Net Centric Computing
2068

Time : 3 Hours
Full Marks : 60
Pas Marks : 24

1.) Answer the following questions in brief :
   a.) Web Services
   b.) HTTP Protocol
   c.) COM
   d.) CSS
   e.) The GLOBAL ASA file

2.) a.) Differentiate between request and response object with example.
   b.) Differentiate between database access component (i.e. ADO) and file access component with sample code.

3.) a.) Write a program for entering employee basic information in one ASP page and display it another.
   b.) Explain file access component and its uses with code.

4.) a.) What do you mean by connection ? Illustrate record set with example for deleting data record from the database.
   b.) Explain the steps required for designing an ASP based application. List different applications of ASP.

5.) a.) Explain Microsoft .NET framework and its components.
   b.) Differentiate between ASP .NET and classical ASP. Explain the structure of general ASP page.

6.) a.) What are input validation controls ? How do they help in .NET framework? Explain with example.
   b.) Explain exception with suitable example in C# programming.

2068 (II)

Group A

Attempt any Two questions : **(2*12=24)**

1. Explain the hard real time system and soft real time systems with example.
2. Differentiate between rate-monotonic and deadline monotonic algorithms with example.
3. Explain the Greedy Weighted Round Robin (WWR) disciplines and time. Driven Weighted Round Robin (WWR) disciplines with example.

Group B

Attempt any Eight Questions : **(8*7=56)**

4. Explain the Kalman filter with example.
5. Explain the digital controller with example.
6. Explain the diagram of radar signal processing and tracking system.
7. Differentiate between clock-driven scheduling and priority-driven scheduling.
8. Explain the schedulability of sporadic jobs in deadline –driven systems.
9. Explain with diagram of real time communication model.
10. What is constant utilization server algorithm? Explain.
11. What is RTCP control protocol? Explain with example.
12. Write down the total bandwidth server algorithm and explain it.
13. Write short notes on:

a. Real time protocol.
b. IEEE 802 token ring.

Tribhuvan University
Institute of Science and Technology

2069

Bachelor Level/ Third Year/ Sixth Semester/ Science — Full Marks: 60
Computer Science and Information Technology — Pass Marks: 24
(CSC- 356 – Fundamentals of E-commerce) — Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Attempt all questions.

Section A [3x10=30]

1.) How does e-commerce differ from e-business? Discuss the e-commerce success factors.
2.) How security in e-commerce systems can be ensured? What mechanisms can be used to enforce the security? What possible vulnerabilities may lead to compromise in client-server security?
3.) How layers of EDI ensure transmission of message and data between the trading partners in e-commerce transactions? Also mention the tangible benefits of EDI.

Section A [3x10=30]

4.) Compare and contrast pure Vs. Partial e-commerce. Support your answer with proper examples.
5.) Illustrate and explain the components of the information super highway.
6.) Describe the functionality of digital wallet. Write the requirements of e-payments.
7.) Explain the merchantile model from the consumer's perspective.
8.) How digital documents enhance businesss data processing. Differentiate physical data warehouse and the logical.
9.) What services or functionalities does the e-commerce application architecture consist of ? Discuss briefly.

2069

Group A

Attempt any Two questions : **(2*12=24)**

1.) What is a real time system ? Explain it's various components with a suitable block diagram. Explain the RADAR signals processing with block diagram .
2.) What do you understand by static slack computation in fixed – priority systems? Explain with example.
3.) What are the three commonly used approaches to scheduling the real time systems? Compare each of them.

Group B

Attempt any Eight Questions : **(8*7=56)**

4.) What is digital control? Explain with example.
5.) What is soft real time systems? Explain with example.
6.) Differentiate between dynamic system and static systems with example.
7.) Explain the sporadic server in fixed priority system.
8.) Explain the slack computation in fixed priority system with example.
9.) What are the procedure of a simple acceptance test in deadline-driven systems ? Explain.
10.) What are the properties of the priority-inheritance protocol ? Explain.
11.) Explain the weighted round robin service disciplines with example.
12.) Explain the real time communication model with diagram.
13.) Write Short notes on :
    a.) Fixed Priority scheduling in CAN
    b.) Greedy WRR discipline

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology
Course Title: Net Centric Computing
2071

Time : 3 Hours
Full Marks : 60
Pas Marks : 24

Attempt all Questions :

1.) Answer the following questions in short :
   a.) Client and Server side scripting
   b.) PWS
   c.) ODBC
   d.) Active X Control
   e.) Server Control and its advantages

2.) a.) Explain interner information server with detail features. What are the different functions of IIS?
   b.) Differentiate between session and cookies with example.

3.) a.) Write a program for entering student basic information in one ASP page and display it in another page.
   b.) Explain file access component and it's uses with sample code/

4.) a.) What do you mean by record set? Illustrate it with suitable example for inserting data record from the database.
   b.) Explain the steps required for designing an ASP based application. List different applications of ASP.

5.) a.) Explain exception handling with suitable example in C# programming.
   b.) Differentiate between ASP .NET and classical ASP. Explain the structure of general ASP page.

6.) a.) What are the input validation controls? How do they help in .NET framework? Explain with example.
   b.) Write in short about Microsoft .NET framework data types.

Tribhuvan University
Institute of Science and Technology
2071

Bachelor Level/ Third Year/ Sixth Semester/ Science — Full Marks: 60
Computer Science and Information Technology — Pass Marks: 24
(CSC- 356 – Fundamentals of E-commerce) — Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Attempt all questions.

Section A [3x10=30]

1.) What is e-commerce? Explain the framework of e-commerce.
2.) Explain the electronic payments system and its types.
3.) Differentiate between B2B and B2C. Explain the major activities of B2C.

Section B [6x5=30]

4.) Mention the various advantages and disadvantages of e-commerce.
5.) Define EDI and it's components.
6.) Discuss the application of e-commerce in service sector.
7.) Explain the brief architecture of internet.
8.) Explain the digital signature and it's application .
9.) Short notes on (any two):
    a.) Hypertext Vs Hypermedia
    b.) Credit card with encryption
    c.) Advantages of Datawarehouses

2071

Group A

Attempt any Two questions : **(2*12=24)**

1.) Describe how is the polling, priority scheduling and schedulability analysis performed for prioritized access in IEEE 802.5 Token Rings. What are the other factors those should be taken into account?
2.) Define priority driven algorithms. State and prove the optimal earliest deadline first (EDF) theorem.
3.) What do you understand by slack stealing in a deadline driven system ? explain the operation of a slack stealer with example.

Group B

Attempt any Eight Questions : **(8*7=56)**

4.) Define schedule and scheduler. List out the conditions under which a schedule becomes a "valid schedule".
5.) What do you understand by timing constraints and tardiness ? Why does a hard real time system require timing guarantees?
6.) Differentiate between offline and online scheduling in a real time system.
7.) List out the advantages and disadvantages of a clock driven approach to scheduling.
8.) Explain the meaning of "priority-inversion" with the help of timing diagram.
9.) Differentiate between priority inheritance and priority ceiling protocols.
10.) Describe a simple bin parking formulation method of task assignment in a multiprocessor system .
11.) How is the connection established in a Greedy WRR scheduling algorithms ? Explain.
12.) Describe a real time communication architecture of distributed system with diagram.

Tribhuvan University
Institute of Science and Technology

2071(II)

Bachelor Level/ Third Year/ Sixth Semester/ Science — Full Marks: 60
Computer Science and Information Technology — Pass Marks: 24
(CSC- 356 – Fundamentals of E-commerce) — Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Attempt all questions.

Section A [3x10=30]

1.) Explain the e-commerce framework and its anatomy of applications.
2.) What do you mean by client-server network security? Explain the data and message security with example.
3.) Define the electronic payment systems. Explain the types of electronic payment system with example.

Section B (6*5=30)

4.) What do you mean by internet governance? Explain.
5.) Explain the consumer oriented application of e-commerce.
6.) Explain the threat on electronic payment system.
7.) Explain the EDI application in business.
8.) Explain the corporate data warehouses.
9.) Explain the dimensions of electronic commerce system.

Tribhuvan University

Institute of Science and Technology

2068

Bachelor Level/ Third Year/ Sixth Semester/ Science **Full Marks: 60**

Computer Science and Information Technology **Pass Marks: 24**

(CSC- 352 – Compiler Design and Construction) **Time: 3 hours.**

Candidates are required to give their answers in their own words as for as practicable.

Attempt all questions. **(10x6=60)**

1. What do you mean by compiler? How source program analyzed? Explain in brief.
2. Discuss the role of symbol table in compiler design.
3. Convert the regular expression **'0 + (1 + 0)* 00'** first into NFA and then into DFA using Thomson's and Subset Construction methods.
4. Consider the following grammar:

   $$S \rightarrow (L) | a$$
   $$L \rightarrow L, S | S$$

   (a) Eliminate left recursion.
   (b) Computer FIRST & FOLLOW for the symbol in the grammar.

5. Consider the grammar

   $$C \rightarrow AB$$
   $$A \rightarrow a$$
   $$B \rightarrow b$$

   Calculate the canonical **LR(0)** items.

6. Describe the inherited and synthesized attributes of grammar using an example.
7. Write the type expressions for the following types.
   (a) An array of pointers to real's, where the array index range from 1 to 100.
   (b) Function whose domains are function from two characters and whose range is a pointer of integer.
8. What do you mean by intermediate code? Explain the role of intermediate code in compiler design.
9. What is operation of simple code generator? Explain.
10. Why optimization is often required in the code generated by simple code generator? Explain the unreachable code optimization.

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology
Course Title: Compiler Design and Construction
Model Question Paper

Course No.: CSC-352 **Time: 3 hours**

Full Marks: 60
Pass Marks: 24

(There may be 10 questions each of carrying 6 marks or 5 questions with partitions each of carrying 12 marks in total)

Attempt all questions. **[10x6=60]**

1. Discuss the phases of compiler construction briefly.
2. Discuss the role of symbol table in compiler design.
3. Why regular expressions are used in token specification? Write the regular expression to specify the identifier like in C.
4. Consider the grammar:

E→TE'
E'→TE'/Ɛ
T→FT'
T'→*FT'/Ɛ
F→(E)/id

Compute the FIRST and FOLLOW for each symbol.

5. Discuss with a suitable example the operation of stack implementation of shift-reduce parsing.
6. Define the L-attributed definitions. How L-attributed definitions are evaluated?
7. Define the process for Bottom-Up Evaluation of Inherited Attributes.
8. Consider the grammar:

E→E+T/T
T→num.num/num

The grammar generates the expression of +to integer or real. Give a syntax-directed definition to determine the type of expression. When two integers are added, the resulting type is integer otherwise, it is real.
9. Write the grammar with semantic rules that translate the C like while statement into three addresses code representation.
10. How next-use information is useful in code generation? Explain steps of computing next-use information.

2068 (I)

Attempt all questions. **(10x6=60)**

1. What do you mean by compiler? How source program analyzed? Explain in brief.
2. Discuss the role of symbol table in compiler design.
3. Convert the regular expression **'0 + (1 + 0)* 00'** first into NFA and then into DFA using Thomson's and Subset Construction methods.
4. Consider the following grammar:

   $$S \rightarrow (L) | a$$
   $$L \rightarrow L, S | S$$

   (a) Eliminate left recursion.
   (b) Computer FIRST & FOLLOW for the symbol in the grammar.

5. Consider the grammar

   $$C \rightarrow AB$$
   $$A \rightarrow a$$
   $$B \rightarrow b$$

   Calculate the canonical **LR(0)** items.

6. Describe the inherited and synthesized attributes of grammar using an example.
7. Write the type expressions for the following types.
   (a) An array of pointers to real's, where the array index range from 1 to 100.
   (b) Function whose domains are function from two characters and whose range is a pointer of integer.
8. What do you mean by intermediate code? Explain the role of intermediate code in compiler design.
9. What is operation of simple code generator? Explain.
10. Why optimization is often required in the code generated by simple code generator? Explain the unreachable code optimization.

2068 (II)

Attempt all questions. **(10x6=60)**

1. Explain the phase of a compiler with block diagram. (6)
2. Define token, pattern and lexeme with suitable example. How input buffering can be implemented for scanner, explain. (6)
3. Give the regular expression (0+1)*011, construct a DFA equivalent to this regular expression computing follow pos (). (6)
4. Explain the role of the parser. Write an algorithm for non-recursive predictive pursing. (6)
5. Construct the grammar

   $E \rightarrow E+T|T$

   $T \rightarrow T*F|F$

   $F \rightarrow (E) \ |id$

   Compute the complete LR(0) collection of item set from above grammar. (6)
6. Show that the following grammar is not in a LL(1) grammar. (6)

   $S \rightarrow cAd \ , \ A \rightarrow Ab/a$
7. What do you mean by Kernel and non-kernel items? Compute the Kernel items for LR(0) for the following grammar. (6)

   $S \rightarrow CC$

   $C \rightarrow bC/d$
8. What do you mean by S-attributed definition and how they are evaluated? Explain with example. (6)
9. What do you mean by three-code representation? Explain with example.(6)
10. How next-use information is useful in code-generation? Explain the steps involved on computing next-use information. (6)

2069

Attempt all questions. **(10x6=60)**

1.) What do you mean by compiler? Explain the semantic analysis phase of compiler construction.

2.) Why are regular expressions used in token specification? Write the regular expression to specify the identifier like in C.

3.) Discuss the specification of lexical analyzer generator Lex.

4.) Consider the grammar :

S……Sbs | bsas | ε

a.)Show that this grammar is ambiguous by constructing two different leftmost derivations for sentence abab.

b.) Construct the corresponding rightmost derivations for abab.

c.)Construct the corresponding parse trees for abab.

5.) Consider the grammar :

E→E+T | T
T→T*F|F
F→(E) | id

a.) Show steps of shift-reduce parsing for the input string id+id*id.
b.) Identify conflicts during the parsing

6.) Describe the L-attributed definitions. How L-attributed definitions are evaluated ?

7.) Write the type expressions for the following types :
a.) An array of pointers to reals where the array index ranges from 1 to 100.
b.) Funtion whose domains are functions from two characters and whose range is a pointer of integer.

8.) What do you mean by three address code? Write the syntax diected definition for following grammar to produce the three address codes for assignments

>if = E
>id

9.) Discuss the issues in design of simple code generator.

10.) Define the following optimization techniques :
a.) Unreachable code elimination
b.) Flow-of-control optimization

2071

Attempt all questions. **(10x6=60)**

1.) Explain the various phases of compiler in detail with practical example.

2.) Explain about design of lexical analyzer generator with its suitable diagram.

3.) What are the problem with top down parsers ? Explain the LR parsing algorithm.

4.) Define finite automata. Construct a finite automata that will accept a string at zeros and ones that contains an odd number of zeros and an even number of ones.

5.) What are the different issues in the design of code generator ? Explain with example about the optimization of basic blocks.

6.) What are the main issues involved in designing lexical analyzer ? Mention the various error recovery strategies for a lexical analyzer.

7.) Define a context free grammar. What are the component of context free grammar? Explain.

8.) What are the various issues of code generator ? Explain the benefits of intermediate code generation.

9.) Explain the peephole organization. Write a three address code for the expression r; = 7*3+9.

10.) Differentiate between Pascal compiler and C++ compiler.

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology

Course Title: Compiler Design and Construction
2071 (II)

Course No.: CSC-352 **Time: 3 hours**

Full Marks: 60
Pass Marks: 24

Attempt all questions. **[10x6=60]**

1.) Define the compiler. Explain the phases of compiler.
2.) Design a lexical analyzer generator and explain it.
3.) Differentiate between top-down parsing and bottom-up parsing.
4.) Translate the arithmetic expression a*-(b+c) into syntax tree. Explain the ambiguous grammar.
5.) Explain the dynamic programming code generation algorithm with example.
6.) What do you mean by code optimization ? Explain the basic blocks and their optimization.
7.) What are the generic issues in the design of code generators? Explain.
8.) What are the compiler construction tools? Explain.
9.) Explain the principle sources of code optimization with example.
10.) Differentiate between C compiler and Pascal compiler.

Tribhuvan University
Institute Of Science and Technology
2068 (II)

Bachelor Level /Third Year/Six Semester/Science — Full Mark: 60
Computer Science and Information Technology–(CSc.356) — Pass Mark: 24
(Foundation of E-Commerce) — Time: 3hours.

Candidates are required to give their answer in their own words as for as possible.
The figures in the margin indicate full marks.

Attempt all questions.

Section A (3×10=30)

1. Explain the e-commerce framework and its application.
2. What is electronic data interchange? Explain the building blocks of an EDI system.
3. Explain the digital token based electronic payment system and its types.

Section B (6×5=30)

4. Explain B2B and its benefits.
5. What are the elements of e-commerce application? Explain.
6. Explain the client network security.
7. Explain the e-commerce security tools.
8. Mention the types of Digital documents and explain in brief.
9. Write short notes on (nay two):
   a. Properties of e-cash.
   b. Digital/Electronics wallets
   c. Data warehouses

Tribhuvan University
Institute of Science and Technology

2068(I)

Bachelor Level/ Third Year/ Sixth Semester/ Science — Full Marks: 60
Computer Science and Information Technology — Pass Marks: 24
(CSC- 356 – Fundamentals of E-commerce) — Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Attempt all questions.

Section A [3x10=30]

1. Explain the various categories of e-commerce. Define the role of e-commerce in business, service, learning and community.
2. Explain the B2B commerce and its advantages and disadvantages.
3. Explain the various features and advantages of electronic payments system. What are the problems in implementation? Explain.

Section B [6x5=30]

4. Compare between traditional and electronic commerce.
5. Explain the components of the Information superhighway infrastructure.
6. Define the firewall and its types.
7. Explain the Mercantile process models from Merchant's perspective.
8. Explain the cryptography and its types.
9. Write shorts notes on (any two):

   (a) Digital signature

   (b) Secure socket layer

   (c) EDI

Tribhuvan University
Institute of Science and Technology

2068(I)

Bachelor Level/ Third Year/ Sixth Semester/ Science — Full Marks: 60
Computer Science and Information Technology — Pass Marks: 24
(CSC- 356 – Fundamentals of E-commerce) — Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Attempt all questions.

Section A [3x10=30]

1. Explain the various categories of e-commerce. Define the role of e-commerce in business, service, learning and community.
2. Explain the B2B commerce and its advantages and disadvantages.
3. Explain the various features and advantages of electronic payments system. What are the problems in implementation? Explain.

Section B [6x5=30]

4. Compare between traditional and electronic commerce.
5. Explain the components of the Information superhighway infrastructure.
6. Define the firewall and its types.
7. Explain the Mercantile process models from Merchant's perspective.
8. Explain the cryptography and its types.
9. Write shorts notes on (any two):

   (a) Digital signature

   (b) Secure socket layer

   (c) EDI

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology
Course Title: Net Centric Computing
2069

Time : 3 Hours
Full Marks : 60
Pas Marks : 24

Attempt all questions :

1.) Answer the following questions in short :
   a.) Dynamic HTML
   b.) IIS
   c.) Active X Data Objects
   d.) Microsoft Transaction Server
   e.) J script

2.) a.) Differentiate between session and cookies with examples.
   b.) Differentiate between database access components (i.e. ADO) and file access components with sample code.

3.) a.) Write a program for entering college general information in one ASP page and display it in another page.
   b.) Explain exception handling in ASP page with sample code.

4.) a.) What do you mean by record set? Illustrate it with example for updating data record into the database.
   b.) Explain the steps required for designing an ASP based application. List different applications of ASP.

5.) a.) Differentiate between ASP .NET and classical ASP .NET . Explain the structure of general ASP .NET page.
   b.) Why do we need generic rather than collection ? Define properties in C# with an example.

6.) a.) What are the input validation controls? How do they help in .NET framework . Explain with example.
   b.) Explain in Microsoft .NET framework and its components.

Tribhuvan University

Institute of Science and Technology

2068

Bachelor Level/ Third Year/ Sixth Semester/ Science **Full Marks: 60**

Computer Science and Information Technology **Pass Marks: 24**

(CSC- 354 –Real Time System) **Time: 3 hours.**

Candidates are required to give their answers in their own words as for as practicable.

The figures in the margin indicate full marks.

Group A

Attempt any two questions. **(2x12=24)**

1. Explain the various components of a real time system with suitable block diagram. State and prove the optimal Earliest-Deadline-First (EDF) algorithm.
2. Explain the multiprocessor priority ceiling protocol with suitable example.
3. Explain the Stack Stealing in deadline-driven system with suitable example.

Group B

Attempt any Eight questions. **(8x7=40)**

4. Explain the real-time command and control system with suitable example.
5. What is hard real time system? Explain with example.
6. Differentiate between data dependency and temporal dependency.
7. State and prove the Optimal Least-Stack-time-first (LST) algorithm.
8. Define the clock-driven scheduling. What are the advantages and disadvantages of it?
9. Differentiate between fixed-priority algorithm and dynamic-priority algorithm.
10. Explain the sporadic server in fixed-priority systems with example.
11. What is rate monotonic algorithm? Explain with suitable example.
12. Explain the priority based service disciplines for switched networks.
13. Write shorts notes on:
    (a) Scheduling hierarchy
    (b) Communication in multicomputer system.

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology

Course Title: Real Time System
2071 (II)

Time : 3 Hours
Full Marks : 80
Pas Marks : 32

Group A

Attempt any Two questions : **(2*12=24)**

1.) Describe the rules for basic priority inheritance protocol with example.
2.) Define resource reservation protocol. Explain in brief, the different types of issues that a resource reservation protocol must deal with.
3.) Define rate-monotonic (RM) and deadline-monotic (DM) algorithms. Describe the DM algorithm with example.

Group B

Attempt any eight questions : (8*7=56)

4.) What do you understand by "Tracking" and " Gating" in a Radar system? Explain.
5.) What are the meanings of hard real time system, hard timing constraints and temporal quality of service guarantees?
6.) Define release time jitter, relative deadline, and hyper period. If the execution times of three periodic tasks are 1,1, and 3, and their periods are 3,4 and 10, then find out the total number of jobs in the hyper-period, and total utilization of jobs.
7.) Describe the significance of laxity type with the help of suitable diagram.
8.) Differentiate between dynamic systems and static system in real time systems.
9.) Why does the scheduler perform an acceptance test while scheduling sporadic jobs? Explain.
10.) Define Deferrable server. State and explain the consumption and replenishment rules of deferrable servers.
11.) Describe the meaning of resource conflict, blocking, priority inversion, and deadlock caused by resource contention.
12.) Describe the meaning of job shops and flow shops of end to end tasks in a multiprocessor scheduling.
13.) Write short notes on any two:
    a.) Service discipline in real time communication
    b.) Critical section and outermost critical section
    c.) Context switches

Tribhuvan University

Institute of Science and Technology

2068

Bachelor Level/ Third Year/ Six Semester/ Science **Full Marks: 60**

Computer Science and Information Technology **Pass Marks: 24**

(CSC 351 – Software Engineering) **Time: 3 hours.**

Candidates are required to give their answers in their own words as for as practicable.

The questions are of equal value.

Attempt any ten questions. **(10x6=60)**

1. Differentiate between software process and software process model.
2. What are the key challenges facing in Software Engineering? Explain.
3. Explain the system design process.
4. Why program are developed using evolutionary development are likely to be difficult to maintain? Explain.
5. What is the critical distinction between a milestone and deliverable? Explain.
6. Why elicitation and analysis is a difficult process in requirement engineering process? Explain.
7. Explain the rapid prototyping techniques with example.
8. What do you mean by formal specification? Explain.
9. Explain the control models and its types.
10. Explain the use case diagram with example.
11. Explain the verification and validation planning.
12. Write short notes on (any two):

    (a) Data flow models
    (b) COCOMO model
    (c) Security assessment

Tribhuvan University

Bachelor of Computer Science and Information Technology

Course: **Software Engineering**

Course No.: CSC-351

Model Question

Full Marks: 60

Pass Marks: 24

Attempt 10 Questions Only (10*6=60.)

Q.1. What is software engineering? Justify its importance.

Q.2.Describe spiral model with its advantages?

Q.3. What is risk in software development? List out the steps of risk management?

Q.4. What is requirement engineering? Describe about requirement engineering process?

Q.5.What is rapid prototyping techniques?

Q.6.Define repository model with example?

Q.7.Prepare Use CASE diagram for ATM system?

Q.8. Define V (Validation) and V (Verification) model for software testing?

Q.9. Compare and contrast about white box and black box testing?

Q.10.What is cost estimation? How cost can be estimated using COCOMO model?

Q.11. Differentiate between forward and reverse engineering?

Q.12. Write short notes on any two:

a) System Engineering

b) Reliability Validation

c.) Functional Vs. Non-Functional Requirements

2068 I

Attempt any ten questions. **(10x6=60)**

1. Differentiate between software process and software process model.
2. What are the key challenges facing in Software Engineering? Explain.
3. Explain the system design process.
4. Why program are developed using evolutionary development are likely to be difficult to maintain? Explain.
5. What is the critical distinction between a milestone and deliverable? Explain.
6. Why elicitation and analysis is a difficult process in requirement engineering process? Explain.
7. Explain the rapid prototyping techniques with example.
8. What do you mean by formal specification? Explain.
9. Explain the control models and its types.
10. Explain the use case diagram with example.
11. Explain the verification and validation planning.
12. Write short notes on (any two):
    (a) Data flow models
    (b) COCOMO model
    (c) Security assessment

2068 II

Attempt any ten questions. **(10x6=60)**

1. Explain the software engineering and its role in Nation Development.
2. Explain the waterfall model with its merits and demerits.
3. What are the important activities that are carried sot during the feasibility study phase? Explain.
4. What are the different categories of software development projects according to the COCOMO estimation model? Explain.
5. What are the five desirable characteristics of a good software requirements specification (SRS) document?
6. What are the main advantages of using an object-oriented design approach over a function-oriented approach? Explain.
7. Differentiate between black box testing and white box testing.
8. What do you mean by functional and non-functional requirements? Explain.
9. Explain the rapid prototyping techniques.
10. Differentiate between interface specification and behavioral specification.
11. Explain class diagram with example.
12. Write short notes on(any two):
    a. Software inspection
    b. Software validation
    c. Reverse Engineering

2069

Attempt any ten questions. **(10x6=60)**

1.) Explain the software and it's characteristics.
2.) Explain the prototyping model of software development.
3.) Define the COCOMO model with example.
4.) Why an evolutionary prototyping is used in software development ? Explain.
5.) What do you mean by behaviourial specification?
6.) Why modular decomposition is used in architectural design ? Explain.
7.) Explain the sequence diagram with example.
8.) Explain the clean room software development with example.
9.) What are the types of software testing? Explain.
10.) Explain the reliability validation with example.
11.) What is USE CASE diagram? Explain with example.
12.) Write short notes on (any two) :-
    a.) User Interface Prototyping
    b.) Software Inspection
    c.) Source Code Translation

2071

Attempt any ten questions. **(10x6=60)**

1.) What is software ? Discuss generic products and bespoke products with example. Discuss functional and non-functional system properties with example.
2.) What is software process model ? Discuss reuse-oriented development in detail.
3.) Discuss the importance of project management. What are the different sections of project plan?
4.) Discuss requirements elicitation and analysis activity of requirements engineering process.
5.) Discuss evolutionary prototyping and throw-away prototyping in the software process.
6.) Why do we need formal specification ? Discuss behaviorial specification in detail.
7.) What are the advantages of designing and documenting software architecture? What is repository model?
8.) Discuss the use of control models. Differentiate between centralized control and event based control.
9.) Discuss sequence diagram with suitable example.
10.) What is verification and validation ? briefly explain verification and validation planning.
11.) What is integration testing? Differentiate between top-down and bottom-up integration testing.
12.) Write short notes on :
    a.) Functional Point
    b.) Source Code Translation

Tribhuvan University

Bachelor of Computer Science and Information Technology

Course: **Software Engineering**

Course No.: CSC-351

2071 (II)

Time : 3 hrs.

Full Marks: 60

Pass Marks: 24

Attempt 10 Questions Only (10*6=60.)

1.) What are the different phases in software development life cycle? Explain.
2.) Explain the software process model with example.
3.) Explain the software specification , software validation and software evolution with example.
4.) What do you mean by project management? Explain the project planning and project scheduling with example.
5.) What do you mean by software requirement? Explain the requirements engineering process with example.
6.) Define formal specification. Explain the formal specification method used in software process.
7.) Explain the software maintainance and its types.
8.) Explain the clean room software development with example.
9.) Explain the validation planning steps.
10.) Explain the security assessment.
11.) Explain the software quality standard with example.
12.) Write short notes on (any two) :
    a.) CASE tools
    b.) Reverse Engineering
    c.) Reliability validation

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology
Course Title: Web Technologies
Model Question Paper

CSc. 353

Time : 3 Hours
Full Marks : 60
Pas Marks : 24

Candidates are required to answer the questions in their own word as far as practicable

Group 'A'

Attempt any Two Questions : **(2*10=20)**

1.) Describe in details about the Tier Technology and its Architecture.

2. Write the structure of a XML file with example. Write an XML and DTD to describe "weather_report" as an element and "date, location, city, state, and temperature_range" as its attributes.

3. Make a simple Web site that takes information about the user and stores the information in a database. Use client-side script to validate the user input.

Group 'B'

Attempt any Eight Questions : **(8*5=40)**

4. What is Internet? Discuss some of its services.
5. Discuss different ways of inserting style sheets in HTML documents.
6. Discuss the use of Cookies with suitable example.
7. What are HTTP Protocol Methods? Explain.
8. What is HTML DOM? Explain some DOM methods used in web technology.
9. What is XSLT? Explain the XSL<xls:choose> Element.
10. What is Session? Explain its use with suitable example.
11. What are anit-overload techniques in web Server?
12. Discuss about Tag Libraries.
13. Discuss file handling with suitable example.

2068 (I)

Group 'A'

Attempt any Two Questions : **(2*10=20)**

1. Explain the web server concept. Why internet is a client/server technology?

2. Define DTD. What are its applications? Create the HTM2 document with the paragraph using <p>, <h1>, for the first word for every sentence and for all the capital letters.

3. Design DOM for the time table of your classes in the present semester. Save at web server that is local or on the Internet. Later view it using the browser.

Group 'B'

Attempt any Eight Questions : **(8*5=40)**

4. List the common application of web server.
5. Explain the functions of web caches.
6. What are the different types of headers in an HTTP message from a client? Explain.
7. What are the attributes of list tag? Explain.
8. What are the advantages of XML over the HTML?
9. How XSL is different from CSS? Explain.
10. Why is it important to specify a DTD for an XML document? Explain.
11. What are the components of an XML file? Explain.
12. Differentiate between domain name and domain name system.
13. Explain the form handling with example.

2068(II)

Group 'A'

Attempt any Two Questions : **(2*10=20)**

1. How does a web server link physically on the Internet? How do we navigate from one URL to another from a page displayed at a browser? Explain.

2. List the protocols and their use at the application layer in the Internet. Why World Wide Web is use? Explain.

3. What is DOM Hierarchy? Explain the use of *, ? and t in defining a DOM element.

Group 'B'

Attempt any Eight Questions : **(8*5=40)**

4. What are the tags and attributes for a table in HTML document?
5. Write short notes on various services offered by the Internet.
6. What is the functionality and purpose of HTTP?
7. Explain the XML syntax and structure rules.
8. Mention the application of XSL.
9. What are the benefits and drawbacks of using XML name space?
10. What is the syntax of declaring an attributes in a DTD?
11. Explain briefly, how the domain names are translated to IP addresses.
12. Explain the client/server concepts of web.
13. What do you mean by cookies? Explain with example.

2069

Group 'A'

Attempt any Two Questions : **(2*10=20)**

1.) Explain the 2-Tier, 3-Tier and n-Tier technology with it's architecture.

2.) Create a small XML file designed to contain information about student performance on a module. Each student has a name, roll no, a subject mark and an exam mark.

3.) Using test structuring toys, create a homepage for the curriculum vitae. Save at web server that is local or on the internet. Later view it using the browser.

Group 'B'

Attempt any Eight Questions : **(8*5=40)**

4.) Explain the uses of a web server.
5.) Explain the SMTP with example.
6.) What are the color attributes in HTML ? Explain.
7.) What are the important uses of cookies? Give some examples.
8.) Explain the client/server concepts of web.
9.) How is XML defined? What are the benefits of using XML namespace ?
10.) What are the various contents of an element in a DTD? Explain.
11.) What are the essential features of web browser ? Explain .
12.) Describe the significance of IP addresses and their types.
13.) Differentiate between file handling and form handling.

2071

Group 'A'

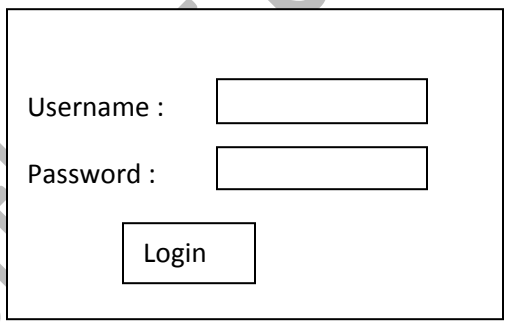
Attempt any Two Questions : **(2*10=20)**

1.) Develop a website that checks validity of a user during the log-in process . Assume that the login data (username and password) are already stored in a database. Use client-side script to validate the user input during login process.
2.) What is FTP ? Discuss it's functions in detail.
3.) Discuss the benefits of using XML. Differentiate XML schema with DTD. Write an XML DTD to describe "person" as an element and "Name, address, phone-no, and Age" as it's attributes.

Group 'B'

Attempt any Eight Questions : **(8*5=40)**

4.) Discuss internet as a client/server technology.
5.) Discuss the structure of HTML document with suitable example.
6.) Write an HTML code to display the following :



7.) How can you insert internet stylesheet in your HTML document? Discuss with example.
8.) Write an example of client side script to validate a form.
9.) What is HTTP ?
10.) Discuss the rules of writing XML document.
11.) Why do we need session ? Explain with suitable example.
12.) Discuss server side file handling with example.
13.) Write short notes on :
    a.) Tag Libraries
    b.) Anonymous access

Tribhuvan University

Institute of Science and Technology

2068

Bachelor Level/ Third Year/ Sixth Semester/ Science **Full Marks: 60**

Computer Science and Information Technology **Pass Marks: 24**

(CSC- 353 – Web Technologies) **Time: 3 hours.**

Candidates are required to give their answers in their own words as for as practicable.

Section A

Attempt any two questions. ***(2x10=20)***

1. How does a web server link physically on the Internet? How do we navigate from one URL to another from a page displayed at a browser? Explain.
2. List the protocols and their use at the application layer in the Internet. Why World Wide Web is use? Explain.
3. What is DOM Hierarchy? Explain the use of *, ? and t in defining a DOM element.

Section B

Attempt any eight questions. **(8x5=40)**

4. What are the tags and attributes for a table in HTML document?
5. Write short notes on various services offered by the Internet.
6. What is the functionality and purpose of HTTP?
7. Explain the XML syntax and structure rules.
8. Mention the application of XSL.
9. What are the benefits and drawbacks of using XML name space?
10. What is the syntax of declaring an attributes in a DTD?
11. Explain briefly, how the domain names are translated to IP addresses.
12. Explain the client/server concepts of web.
13. What do you mean by cookies? Explain with example.

Tribhuvan University
Institute of Science and Technology
Bachelor of Computer Science and Information Technology

Course Title: Web Technologies
2071 (II)

Time : 3 Hours
Full Marks : 60
Pas Marks : 24

Candidates are required to answer the questions in their own word as far as practicable

Group 'A'

Attempt any Two Questions : **(2*10=20)**

1.) Develop a simple website that asks the users to register using username, password, and email address. Store these informations in a database. Use client side script to validate the user input during registration.
2.) What is XML? Discuss the structure of XML file with example. Write an XML schema to describe "address" as an element and "city, state, street and house-no" as it's attributes.
3.) What is HTTP? Discuss its function in detail.

Group B

Attempt any eight questions : (8*5=40)

4.) What is client/server technology? Differentiate between web client and web server.
5.) How can you draw a table in HTML? Discuss with suitable example.
6.) Write an HTML code to display the following :

Example
$(a+b)^2=a^2+2ab+b^2$
Thank You

7.) How can you insert external stylesheets in your HTML document? Discuss with example.
8.) Write a simple client side script to set and retrieve cookies.
9.) What is FTP?
10.) Discuss public external declaration of DTD with example.
11.) Define session. Explain its use with example.
12.) What are anti-overload techniques in web server?
13.) Write short notes on :
    a.) HTML DOM
    b.) Tag libraries