

G 727

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

CS 010 703 – COMPUTER GRAPHICS (CS)

(2010 Admissions)

[Improvement/Supplementary]

Maximum : 100 Marks

Time : Three Hours

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. Define Random Scan displays.
2. State line drawing DDA algorithm.
3. Define Cubic Spline Interpolation.
4. What is meant by 3D Rendering?
5. State various properties of shading model.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Describe briefly about Flat Panel displays.
7. Explain Bresenham's circle drawing algorithm.
8. Illustrate the representation of 3D objects.
9. Explain briefly Parallel and Perspective Projections.
10. Describe the classification of Fractal images.

(5 × 5 = 25 marks)

**Turn over**

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. Explain various components and functions of Raster Scan display system.

*Or*

12. Explain any *two* Hard copy devices in detail.

13. Describe various 2D Transformations with examples.

*Or*

14. Illustrate Sutherland-Hodgman polygon clipping algorithm.

15. Explain B-Spline Curves and Surfaces.

*Or*

16. Explain various 3D Transformations.

17. Explain Scan Line Coherence algorithm for hidden surface removal.

*Or*

18. Explain Depth Buffer algorithm for visible surface detection.

19. Describe Gouraud and Phong shading methods.

*Or*

20. Explain various Fractal Geometry methods.

(5 × 12 = 60 marks)

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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

CS 010 704—OBJECT ORIENTED MODELLING AND DESIGN (CS)

(Improvement/Supplementary)

[2010 Admissions]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. What is inheritance ?
2. What is concurrency ?
3. How operations added during analysis ?
4. Why design optimisation is necessary in object design ?
5. What is a sequence diagram ?

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. What are multiple inheritance ? Explain with examples.
7. What are constraints in functional modelling ?
8. Explain on handling of global resources in detail.
9. What is meant by design of association ?
10. Explain the significance of component diagram.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. Discuss object oriented methodology in detail.

*Or*

12. Give a brief description on aggregation and abstract classes.

**Turn over**

13. With examples discuss events, states and nested state diagrams in dynamic modelling.

*Or*

14. Explain in detail a sample functional model.

15. Discuss the analysis in dynamic modelling in detail.

*Or*

16. What are the techniques adopted for breaking system into subsystems ? Explain with an example.

17. Discuss in detail implementation of control.

*Or*

18. Briefly explain physical packaging.

19. Explain with figures the representations of UML diagrams.

*Or*

20. With a case study, explain deployment diagram, state diagram and activity diagram.

(5 × 12 = 60 marks)

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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

CS 010 705—PRINCIPLES OF PROGRAMMING LANGUAGES (CS)

(Improvement/Supplementary)

[2010 Admissions]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. What are the three general methods of implementing a programming language ?
2. What are the design issues for names ?
3. Define operator precedence and operator associativity.
4. What are the advantages and disadvantages of dynamic local variable ?
5. What is the difference between checked and unchecked exceptions in Java ?

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. What does it mean for a program to be reliable ? Explain the various features of a language that have an effect on reliability.
7. Compare and contrast static scoping and dynamic scoping.
8. What is a user-defined iteration control ? Explain with examples.
9. What is an overloaded subprogram ? Explain with an example.
10. How are exceptions detected and handled in PL/I ? Discuss.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. Explain static binding and dynamic binding with examples.

*Or*

12. Discuss the various criteria used to evaluate a programming language.

**Turn over**

13. Dynamic type binding is closely related to implicit heap-dynamic variables. Explain this relationship.
- Or
14. Discuss elaborately on user-defined ordinal types.
15. Explain the design issues for arithmetic expressions.
- Or
16. What common programming language borrows part of its design from Dijkstra's guarded commands ? Explain.
17. Discuss the various parameter-passing methods.
- Or
18. In what ways are coroutines different from conventional subprograms ? Explain.
19. Elaborate on exception handling in Ada.
- Or
20. Explain any *four* functions for list manipulation with respect to functional programming.

(5 × 12 = 60 marks)

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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

CS 010 706 L06—CLIENT-SERVER ARCHITECTURE AND APPLICATIONS  
(Elective II) (CS)

(Improvement/Supplementary)

[2010 Admissions]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. What are the uses of client-server computing ?
2. How will you prepare applications for client-server ?
3. What is multiprogramming ? Explain.
4. Explain the term synchronization.
5. What is TCP ? Explain.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. What is distributed computing ? Explain.
7. Explain client-server interaction using message.
8. List and explain the advantages and drawbacks of multiple processors.
9. What is mutual exclusion ? Explain.
10. Explain secure client-server communication.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. Explain how the cost of client-server computing is estimated.

*Or*

12. Explain heterogenous computing and its advantages, disadvantages and uses.

**Turn over**

13. Discuss in detail the protocols used in client-server interaction.

Or

14. Describe the steps for preparing applications and optimising applications for client server.

15. Explain the server communication model in detail.

Or

16. Describe in detail multiprogramming and multitasking in detail.

17. With an example, describe processing queues.

Or

18. Discuss the steps for semaphore implementation in Netware.

19. Explain password security at system level and application level.

Or

20. Discuss in detail different type of Network Communications.

(5 × 12 = 60 marks)



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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering and Information Technology

**OBJECT ORIENTED MODELLING AND DESIGN (R T)**

(Old Scheme – Prior to 2010 Admissions)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. List and explain object oriented methodologies.
2. What are grouping constructs? Explain.
3. List the operations in dynamic modelling and explain.
4. Discuss the relation of functional modelling to object models.
5. Discuss the steps for analysis in object modelling.
6. How do you handle the problems of global resource sharing?
7. Discuss the overview of object design principles.
8. What is physical packaging in object design? Explain.
9. What are Notations? Explain.
10. Explain the rule of UML.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each question carries 12 marks.*

11. Explain in detail the object oriented methodologies.

*Or*

12. With examples, explain the multiple inheritance in advanced object modelling.

**Turn over**

13. What are Events and States? Explain the Nested state diagrams in dynamic modelling.

Or

14. Explain a sample functional model. Bring out a comparison between functional modelling and dynamic modelling.

15. Briefly explain an Iterating process analysis with examples.

Or

16. Give a description of Architectural frameworks in system design.

17. Explain how the three models are combined.

Or

18. Discuss the role of documenting design decisions in object design.

19. Make a comparative study of Broch's methodology and Jacobson methodology.

Or

20. Discuss the mechanisms used in UML.

(5 × 12 = 60 marks)

**G 625**

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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

COMPUTER GRAPHICS (RT)

(Old Scheme – Prior to 2010 Admissions)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. List and explain some applications of Computer Graphics.
2. Explain briefly the working of Touch panels.
3. What is Clipping? Explain.
4. With example, explain composite 2D transformations.
5. Explain Polygon meshes briefly.
6. Explain the properties of B-Spline curves.
7. With figure, explain parallel projections.
8. Explain Gourand shading.
9. Explain Animation.
10. What are fractals? Explain.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each question carries 12 marks.*

11. Explain with a diagram a raster scan system.

*Or*

12. Describe in detail different types of input devices.

**Turn over**

13. Explain with example, Bresenham's circle drawing algorithm.

Or

14. With example, explain 2D transformations.

15. With figures, explain polygon surfaces.

Or

16. With examples, describe the 3D display methods.

17. Explain Back-face detection.

Or

18. Describe in detail the basic illumination models.

19. Explain Geometric construction of deterministic self-similar fractals.

Or

20. Describe in detail the morphing methods in graphics.

(5 × 12 = 60 marks)

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Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

**THEORY OF COMPUTATION (R)**

(Old Scheme—Prior to 2010 admissions)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. What are equinumerous sets ?
2. Explain a non-computable function with an example.
3. Define the term epsilon closure with example.
4. Design the NFA accepting the language over the alphabet  $\{0, 1\}$  that have the set of strings which contain 01 as substring.
5. Explain the instantaneous description of a PDA.
6. Explain any *one* application of PDA.
7. Design a Turing machine to add two numbers.
8. Explain the term Godelization.
9. What is meant by polynomial time reducibility ?
10. Explain any *one* class P problem.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each full question carries 12 marks.*

11. Briefly explain diagonalisation principle with an example. (12 marks)

*Or*

12. What is a primitive recursive function. Show that  $f(x, y) = x * y$  is primitive recursive.

(6 + 6 = 12 marks)

**Turn over**

13. State the pumping lemma for regular languages. Prove that the language :

$$L = \{O^P / \text{where } P \text{ is prime}\} \text{ is not regular.}$$

(6 + 6 = 12 marks)

Or

14. Let L be a language accepted by an NFA. Prove that there exist a DFA that accepts L.

(12 marks)

15. Design a push-down automata which accepts the language  $L = \{a^n b^{2n} / n \geq 1\}$  over  $\Sigma = \{a, b\}$ .

(12 marks)

Or

16. Briefly explain the different steps involved in the simplification of context free grammar.

(12 marks)

17. What is a universal Turing machine ? Show that the universal language is undecidable.

(4 + 8 = 12 marks)

Or

18. Design a Turing machine which accepts the language,  $L = \{a^{2^n} b^n / x \geq 0\}$  over  $\Sigma = \{a, b\}$ .

(12 marks)

19. Briefly explain the terms :

- (a) NP.
- (b) NP-complete.
- (c) NP hard.

(4 + 4 + 4 = 12 marks)

Or

20. Prove that travelling salesman problem is NP-complete.

(12 marks)

[5 × 12 = 60 marks]

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Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

**ADVANCED SOFTWARE ENVIRONMENTS (R)**

(Old Scheme – Prior to 2010 Admissions)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. Distinguish Ordinary programs from Windows programs.
2. What is a message loop? Explain its functions.
3. What are the advantages of MFC? Explain.
4. How do you handle the keyboard events?
5. Explain the checking account object interfaces.
6. Explain the functions of IOL stub and IOL skeleton.
7. Expand CORBA Factories.
8. Give a brief account of CORBA Exceptions.
9. Distinguish Clients and Servers in X-windows.
10. Write the steps for handling events in X-windows.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each question carries 12 marks.*

11. Describe the components of Window API and its functions.

*Or*

12. With an example, explain WinMain function and message loop.

**Turn over**

13. Explain the life-cycle of an MFC application.

Or

14. Describe how message maps and event handling is carried out in MFC.

15. Explain in detail CORBA. IDL its elements and interfaces.

Or

16. Write the implementation steps for CORBA client with C++.

17. Explain the steps for destroying CORBA objects.

Or

18. With figure, explain the architecture of DCOM.

19. With example, explain X-windows programming.

Or

20. Describe Command line options and resources.

(5 × 12 = 60 marks)



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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch—Computer Science and Engineering/Information Technology

**WEB TECHNOLOGIES (RT)**

(Old Scheme—Prior to 2010 Admissions/Supplementary)

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.  
Each question carries 4 marks.*

1. What is meant by comments ? Explain.
2. Give a brief idea about starting and Ending of Tags.
3. With an example explain document type declaration in XML.
4. List and explain XML Applications.
5. What is customization in Java Beans ? Explain.
6. Explain introspection in Java.
7. How do you read parameter values in ISPS ?
8. What is serialized beans ? Explain.
9. Explain the steps for using a the bean from a client.
10. What are entity beans ? Explain

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.  
Each question carries 12 marks.*

11. Explain in detail the features of XML and HTML.

*Or*

12. Write notes on :

- (a) Simple XML documents.
- (b) Entity References.

(6 + 6 = 12 marks)

13. With examples explain element type and attribute list declarations.

*Or*

**Turn over**

14. Give the procedure for storing XML data in HTML document.

15. Explain bound and constrained properties of Java Beans.

Or

16. Describe in detail about providing custom property editors and GUI interfaces.

17. Explain reading and setting properties of Java Beans.

Or

18. With examples explain how will you use Java beans in JSPS.

19. Explain the basics and types of EJB.

Or

20. Explain packaging and deploying beans in detail.

(5 × 12 = 60 marks)

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**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch—Computer Science and Engineering/Information Technology

MOBILE COMPUTING (Elective I) (RT)

(Old Scheme—Prior to 2010 Admissions—Supplementary)

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. Explain the frame structure used for time in GSM.
2. With figure describe the MOC in GSM.
3. Differentiate device portability and user mobility.
4. Briefly explain a short history of wireless communication.
5. Briefly explain the design goals of WLAN.
6. Differentiate infrastructure and ad hoc networks ?
7. Explain the entities and terminologies used in mobile IP.
8. With figure explain the working of DHCP.
9. What are the capabilities offered by WML script which is not supported by WML ?
10. Explain the components and interfaces of WAP architecture.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each question carries 12 marks.*

11. With figure explain in detail the functionalities of different layers in the simplified reference model used for mobile communication ?

*Or*

12. Explain in detail the cellular systems.
13. With figure explain the protocol architecture of DECT.

*Or*

14. Illustrate the DAB frame structure. With figure, explain the components of a DAB sender.

**Turn over**

15. Briefly explain the MAC mechanism adopted in WLANs.

*Or*

16. With neat sketch, explain the several access scenarios of the WATM based on the reference model.

17. With necessary figure, illustrate Indirect-TCP ?

*Or*

18. With an example, explain DSR in ad hoc networks.

19. Write a note on www ?

*Or*

20. Illustrate in detail wireless transaction protocol.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

CS 010 701—WEB TECHNOLOGIES (CS)

(Improvement/Supplementary)

[2010 Admissions]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. Explain hypertext links.
2. List XML applications.
3. Describe the parameters and actions of champ function.
4. How can a cookie be created in a PHP script ?
5. Explain the features of AJAX.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. With example, explain XHTML document validation.
7. Explain XML document structure.
8. With examples, explain control statements in Perl.
9. Describe the actions of the next, reset and prev functions with examples.
10. Discuss the overview of AJAX.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each question carries 12 marks.*

11. Explain with examples Forms and Frames of XHTML.

*Or*

12. Explain Selector forms and Box model on cascading style sheets.

**Turn over**

13. Describe in detail the views of an XML document and a simple XML document.

Or

14. Explain the steps for creating XML DTDs and conversion of XML to HTML.

15. Explain the functions and parameter passing techniques in Perl.

Or

16. Explain how to use Perl for CGI programming also show a simple programs in Perl.

17. Briefly explain with examples the pattern matching and form handling in PHP.

Or

18. Write briefly on files and session tracking in PHP.

19. Describe Revils application with databases and layouts.

Or

20. Discuss the overview of AJAX and also explain Revils with AJAX.

(5 × 12 = 60 marks)

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Seventh Semester**

Branch : Computer Science and Engineering

CS 010 702—COMPILER CONSTRUCTION (CS)

(Improvement/Supplementary)

[2010 admissions]

Time : Three Hours

Maximum : 100 Marks

**Part A**

Answer all questions.

Each question carries 3 marks.

1. Write a LEX pattern that recognizes decimal integers divisible by 3.
2. What is a left recursive grammar ? What is its effect in design of parsers ?
3. Write a CFG to represent floating point numbers in binary notation.
4. What is the need for intermediate code generation ?
5. What is a cross compiler ?

(5 × 3 = 15 marks)

**Part B**

Answer all questions.

Each question carries 5 marks.

6. With an example, explain the structure of a LEX program.
7. What is an ambiguous grammar ? Give an example.
8. Explain run time stack.

Turn over

9. Convert the following statement to quadruples :

```

if (i < j)
{
switch (i)
{
case 1: j = j + 1;
      Break;
case 2: j = j + 2;
case 3: j = j + 3;
      Break;
default: j = 0;
}
}

```

10. Give the significance of next use information in code generation.

(5 × 5 = 25 marks)

### Part C

Answer all questions.

Each question carries 12 marks.

11. (a) For the following regular expression, draw the NFA and convert it into DFA :

$a(a|b)^*b^*a$ .

Or

(b) Explain in detail the various phases of a compiler.

12. (a) Given the following already augmented grammar :

```

S' → S
S → AB | AA | bC
A → bCa | b
B → Bd | ε
C → c

```

Construct a SLR (1) parser and show the moves of the parser for the input bdd.

Or

(b) Write the top-down parser for the following grammar after rewriting it in the required format.

$E \rightarrow E + E | E - E | E * E | (E) | id$ .

13. (a) Write syntax directed translation to convert :

- (i) Assignment statements.
- (ii) Relational expressions.
- (iii) For statements to three address code.

Or

(b) List the different parameter passing methods. Discuss each one of them.

14. (a) Write and explain the Global optimization techniques.

Or

(b) Explain how temporaries are manipulated in intermediate code generation.

15. (a) (i) Explain the concept of next use information and its significance in code generation.

(ii) Write an algorithm for the allocation of registers.

(7 + 5 = 12 marks)

Or

(b) Explain the different data structures used for symbol table organization.

[5 × 12 = 60 marks]