

**F 3156**

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**Reg. No.....**

**Name.....**

**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Seventh Semester**

**Branch : Computer Science and Engineering / Information Technology**

**OBJECT ORIENTED MODELLING AND DESIGN (RT)**

**(Regular/Supplementary/Mercy Chance)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Part A**

*Answer all questions briefly.*

*Each question carries 4 marks.*

1. Explain the concept of abstract class using suitable example.
2. Explain how to define role names and qualification for associations.
3. Outline the concept of functional modelling?
4. Explain the significance of various components in Data Flow Diagrams.
5. Describe how the global resources are handled.
6. What is concurrency? How it is seen in the applications?
7. Illustrate the importance of documentation in designing?
8. What are layers and partitions of a system? Give examples.
9. Explain reusability and robustness?
10. What are the various notations used in Booch's methodology? Give their meanings.

**(10 × 4 = 40 marks)**

**Part B**

*Answer any one full question from each module.*

*Each full question carries 12 marks.*

**MODULE I**

11. Explain (i) aggregation ; (ii) candidate key ; (iii) metadata ; (iv) grouping construct.

**(4 × 3 =12 marks)**

*Or*

**Turn over**

12. With graphical representations, describe the concept of generalisation as extension and restriction.

MODULE II

13. With appropriate examples, explain the relation of Functional to Dynamic model?

Or

14. Discuss the use of Data Flow Diagram with suitable examples. Explain how it helps in functional modeling?

MODULE III

15. What are the various architectural frameworks common in system? Explain with an example.

Or

16. Describe various steps involved in the object analysis of a railway reservation application?

MODULE IV

17. Prepare an object diagram for printing and processing pre-registration forms for the scoring system. Include entering changes in address in two of the returned forms and two children unable to attend. Assign a number to each contestant.

Or

18. Explain : (i) physical packaging, (ii) design optimization, (iii) design of association.

(3 × 4 = 12 marks)

MODULE V

19. Explain Booch's methodology concepts with appropriate examples.

Or

20. Describe how the unified modeling language is used with the help of example.

(5 × 12 = 60 marks)

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**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Seventh Semester**

Branch : Computer Science and Engineering / Information Technology

**COMPUTER GRAPHICS (R, T)**

(Regular/Supplementary/Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions briefly.*

*Each question carries 4 marks.*

1. Explain with a neat diagram, the architecture of a Raster display.
2. What are the uses of computer graphics?
3. Compare window and viewport transformations.
4. Mention the new co-ordinates of triangle with vertices A (0,0), B (1, 1) and C (5, 2) with respect to origin with scale factors  $S_x = \frac{1}{2}$  and  $S_y = 1$ .
5. What are the data structures used in scan line polygon filling? Explain.
6. Explain the conceptual model of 3D viewing process.
7. Explain perspective and parallel projections.
8. Write translation and shearing transformation matrices for 3D Graphics.
9. Define fractal? What are its applications?
10. Explain various methods of controlling animation.

(10 × 4 = 40 marks)

**Part B**

*Answer any one full question from each module.*

*Each full question carries 12 marks.*

**MODULE I**

11. (a) Distinguish between graphics mode and graphics drivers. Give examples. (6 marks)
- (b) What is a Frame Buffer? Define aspect ratio and resolution of a monitor. (6 marks)

*Or*

**Turn over**

12. (a) Explain the conceptual framework model for interactive graphics. (6 marks)  
 (b) Describe the position interaction task along with issues related to that. (6 marks)

## MODULE II

13. (a) Explain mid-point line generating algorithm in detail. Illustrate the algorithm to draw line between end points (5, 8) and (10, 12). (6 marks)  
 (b) Describe Bresenham's algorithm to draw a circle. (6 marks)

Or

14. (a) Magnify a triangle with vertices A (0, 0), B (1, 1) and C (5, 2) to twice of its size with C as a fixed point in 2D. (6 marks)  
 (b) Obtain all the raster pixel positions to draw a circle with radius 6 and centre (20, 20) using mid-point circle drawing algorithm. (6 marks)

## MODULE III

15. (a) Explain the different types of sweep representation. (6 marks)  
 (b) Explain the properties of B-spline. How it differs from Bezier? (6 marks)

Or

16. (a) Describe the procedure for drawing Bezier curves. (6 marks)  
 (b) Explain the Z-buffer algorithm for hidden surface removal. (6 marks)

## MODULE IV

17. Describe the classification of visible surface detection algorithms. Discuss any *one* of them in detail.

Or

18. (a) Explain any *one* basic illumination model. (6 marks)  
 (b) Explain the ray-tracing method. (6 marks)

## MODULE V

19. What is segmentation? How segmentation can be used to produce animation? Explain.

Or

20. With the help of an example, illustrate how fractal is used in animation?

[5 × 12 = 60 marks]

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**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Seventh Semester**

Branch : Computer Science and Engineering

**THEORY OF COMPUTATION (R)**

(Regular/Supplementary/Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

**Part A**

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

1. Prove that the function  $f(x, y) = x * y$  is primitive recursive.
2. Explain the diagonalisation principle.
3. Explain the formal definition of DFA.
4. Design a DFA that accepts the Language  $L = \{w/w \text{ ends with } 01\}$  from the input alphabet  $\{0, 1\}$ .
5. Compare between a push down automata and a finite automata.
6. Explain ambiguous grammar with an example.
7. Differentiate between recursive and recursively enumerable language.
8. Explain Church's thesis.
9. What is a tractable problem ?
10. Explain the term NP hard.

(10 × 4 = 40 marks)

**Part B**

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

11. Differentiate between computable and non-computable functions with examples.  

Or
12. Explain the Chomsky classification of languages.
13. Design an NFA that accepts the language  $L = \{w/w \text{ contains sub/ring } 00\}$  from the input alphabet  $\{0, 1\}$ . Convert that NFA into DFA by the method of subset construction.  

Or
14. With the help of an example, explain the extended transition function for an t-NFA.
15. Design a PDA that accepts the language  $L = \{0^n 1^n / n \geq 0\}$ .

Or

**Turn over**

- 16. Explain the different applications of a PDA.
- 17. Design a turing machine that accepts  $L = \{0^n 1^n 2^n / n \geq 1\}$ .

Or

18. Explain the terms :

- (a) Undecidability.
- (b) Reducability.

(6 + 6 = 12 marks)

19. Prove that travelling sales man problem is NP complete.

Or

20. What is class P ? Explain a class P problem.

[5 × 12 = 60 marks]

- 1. Explain the function  $f(x, y) = x^2 + y^2$  in terms of recursive.
- 2. Explain the decomposition principle.
- 3. Explain the formal definition of DFA.
- 4. Explain a LR A that accepts the language  $L = \{a^n b^n / n \geq 1\}$ .
- 5. Compare between a push down automata and a finite automata.
- 6. Explain a context free grammar with an example.
- 7. Differentiate between recursive and recursively enumerable language.
- 8. Explain the term 'reducer'.
- 9. What is a reducible problem?
- 10. Explain the term 'NP-hard'.

Part B

Answer all questions.  
Each question carries 12 marks.

- 11. Differentiate between a context free language and a context sensitive language.
- 12. Explain the pumping lemma for context free languages.
- 13. Explain the pumping lemma for context sensitive languages.
- 14. Explain the pumping lemma for regular languages.
- 15. Explain the pumping lemma for linear bounded automata.
- 16. Explain the pumping lemma for Turing machines.
- 17. Explain the pumping lemma for pushdown automata.
- 18. Explain the pumping lemma for finite automata.
- 19. Explain the pumping lemma for shift register automata.
- 20. Explain the pumping lemma for vector addition machines.

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**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Seventh Semester**

Branch – Computer Science and Engineering  
ADVANCED SOFTWARE ENVIRONMENTS (R)  
(Regular/Supplementary/Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. What are the components of windows API?
2. Explain the procedure for creating windows.
3. With examples discuss MFC classes.
4. What are the procedures needed for drawing on MFC windows.
5. What is meant by CORBA? Explain.
6. Explain the functions of stub and skeleton.
7. What are the steps needed for the creation of CORBA object in JAVA?
8. Explain CORBA architecture.
9. Explain X-windows programming.
10. How child windows are operated?

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each question carries 12 marks.*

11. (a) With an example explain

12. (a) Describe in detail the life cycle of an MFC application.

*Or*

(b) In detail describe creating windows in MFC.

13. (a) Give the fundamental concepts in distributed objects.

*Or*

(b) With example, show how CORBA server is implemented.

14. (a) With example, explain CORBA Exceptions.

*Or*

(b) What is CORBA factories? Explain in detail.

15. (a) Explain briefly the simple Hello World Application in X.

*Or*

(b) Describe the details of creating windows and graphics context in X-windows.

(5 × 12 = 60 marks)



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**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Seventh Semester**

Branch : Computer Science and Engineering / Information Technology

**WEB TECHNOLOGIES (RT)**

(Regular/Supplementary/Mercy Chance)

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. Explain the difference between XML and HTML?
2. Write a note on C DATA?
3. What are the need of element type declarations?
4. Write a note on DTDs?
5. What are the bean properties?
6. Explain the features of java beans?
7. Explain response objects in JSP?
8. Discuss about serialized beans?
9. What is entity beans?
10. What is EJB?

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each question carries 12 marks.*

11. (a) List out the features of XML.
- (b) Compare XML and HTML.

(4 marks)

(8 marks)

Or

**Turn over**

12. Explain about XML documents and attributes of tags. (12 marks)
13. How an XML data can be displayed in HTML browser as HTML tables. (12 marks)
- Or*
14. How an XML data can be stored in HTML document? List out some XML applications? (12 marks)
15. What are java beans components? Explain different type of bean properties? (12 marks)
- Or*
16. How to create a BeanInfo class? How can we use it? How to create events in java beans? (12 marks)
17. Define JSP? How to create a JSP page? (12 marks)
- Or*
18. How execution handling in JSP with scriptlets can be done? (12 marks)
19. What are features of entity beans? Write the development of session beans? (12 marks)
- Or*
20. What are the steps involved in creating and implementing interfaces? (12 marks)
- (5 × 12 = 60 marks)

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**B.TECH. DEGREE EXAMINATION, DECEMBER 2012**

**Seventh Semester**

**Branch : Computer Science and Engineering / Information Technology**

**MOBILE COMPUTING (Elective I) (R T)**

**(Regular / Supplementary / Mercy Chance)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer all questions.**

**Part A**

**Each question carries 4 marks.**

1. Explain the advantages of cellular systems.
2. Sketch an example for network and reference model.
3. Write notes on : (a) BCCH ; (b) DCCA.
4. Explain the different types of orbits.
5. Write short note on Infrared vs. Radio transmission.
6. Explain MAC.
7. Explain IP packet delivery.
8. List the advantages and disadvantages of Cellular IP.
9. Write note on WAP.
10. Write notes on :
  - (a) Connection re-use.
  - (b) Bandwidth optimization.

**(10 × 4 = 40 marks)**

**Part B**

**Each question carries 12 marks.**

11. Explain Mobile Telephone System with neat diagram.

**Or**

12. Explain the short history of wireless communication.

**(12 marks)**

**Turn over**

13. Explain the following with advantages and disadvantages :

- (a) GEO ; (b) LEO ; (c) MEO.

(4 + 4 + 4 = 12 marks)

Or

14. Explain DVB.

(12 marks)

15. Explain the physical layer of IEEE 802.11

Or

16. Explain the advantages, disadvantages and design goals of WLANs.

(12 marks)

17. Write short notes on :

- (a) Optimizations.
- (b) Reverse tunnelling.

(6 + 6 = 12 marks)

Or

18. Write short notes on :

- (a) Snooping TCP.
- (b) Mobile TCP.

(6 + 6 = 12 marks)

19. Write short notes on :

- (a) WAE.
- (b) WTP-Class 2.

(6 + 6 = 12 marks)

Or

20. Explain WAP architecture.

(12 marks)

[5 × 12 = 60 marks]