

Hall Ticket Number :

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**R-14**

**Code: 4G151**

*III B.Tech. I Semester Regular Examinations November 2016*

## **Computer Networks**

(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70Marks )

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### **UNIT-I**

1. a) Describe the layers of ISO OSI model with neat diagram. 7M
- b) Explain about fibre optic transmission with its advantages and disadvantages. 7M

**OR**

2. a) Illustrate about computer networks with examples. 7M
- b) Distinguish between multiplexing and switching. 7M

### **UNIT-II**

3. a) Explain in detail about stop and wait protocol. 7M
- b) Discuss about wireless LANs. 7M

**OR**

4. a) Describe about go back N sliding window protocol. 7M
- b) Explain the structure of IEEE 802.X standard Ethernet. 7M

### **UNIT-III**

5. a) What are different routing algorithms in network layer? Explain about distance vector routing algorithm. 7M
- b) Draw and explain the IPV4 header format. 7M

**OR**

6. a) Compare broadcasting and multicasting 7M
- b) Define congestion. Explain the leaky bucket algorithm for congestion control. 7M

### **UNIT-IV**

7. a) Explain about transport service primitives. 7M
- b) Describe the TCP header format. 7M

**OR**

8. a) Compare connection oriented and connection less services in transport layer. 7M
- b) Explain the header format of UDP. 7M

### **UNIT-V**

9. a) Briefly explain about DNS in internet. 7M
- b) Write short notes on World Wide Web. 7M

**OR**

10. a) Write short notes on Electronic mail. 7M
- b) Explain about FTP and HTTP. 7M

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**Code: 4G451***III B.Tech. I Semester Regular Examinations November 2016***Design and Analysis of Algorithms**

(Common to CSE &amp; IT)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70Marks )

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**UNIT-I**

1. a) Explain the properties of an algorithm with an example. 4M  
b) Explain the set representing using tree and develop algorithms for UNION and FIND using weighing and collapsing rules. 10M

**OR**

2. a) Define 9M  
    i) Profiling  
    ii) Time Complexity  
    iii) Space Complexity.  
b) Explain about Amortized Analysis 5M

**UNIT-II**

3. a) Write Divide – And – Conquer recursive Quick sort algorithm and analyze the algorithm for average time complexity. 8M  
b) What is a Minimum Cost Spanning tree? Explain Kruskal's Minimum cost spanning tree algorithm with suitable example. 6M

**OR**

4. a) Explain Recursive Binary search algorithm with suitable examples. 6M  
b) State the Job – Sequencing with deadlines problem. Find an optimal sequence to the n=5 Jobs where profits (P1,P2,P3,P4,P5) = (20,15,10,5,1) and deadlines (d1,d2,d3,d4,d5) =( 2,2,1,3,3). 8M

**UNIT-III**

5. a) Draw an Optimal Binary Search Tree for n=4 identifiers (a1,a2,a3,a4) = ( do, if, read, while) P(1:4)=(3,3,1,1) and Q(0:4)=(2,3,1,1,1). 8M  
b) What is a backtracking? Give the explicit and implicit constraints in 8 queen's problem. 6M

**OR**

6. a) Explain how Matrix – chain Multiplication problem can be solved using dynamic programming with suitable example. 7M  
b) Explain the Graph – coloring problem. And draw the state space tree for m=3 colors n=4 vertices graph. Discuss the time and space complexity. 7M

**UNIT-IV**

7. a) What are connected and bi-connected components? Explain with suitable example. 7M  
b) Define the terms Branch and Bound. Explain about its general method 7M

**OR**

8. a) Write short notes on Graph Traversal Techniques. 7M  
b) Solve 0/1 knapsack problem using Branch and Bound. 7M

**UNIT-V**

9. State and prove Cook's Theorem 14M

**OR**

10. Discuss about the complexity of NP-Hard problems. 14M

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**R-14**

**Code: 4G452**

*III B.Tech. I Semester Regular Examinations November 2016*

**Web Technologies**  
( Common to CSE & IT )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Explain Table Attributes with suitable example. 7M
- b) What is a list? Discuss types of lists with example. 7M

**OR**

2. a) Write a Java script for Registration form email validation 7M
- b) Discuss about form elements and give example for creation of forms. 7M

**UNIT-II**

3. a) What is XML? Differentiate with HTML. 7M
- b) Define XML Schema. Show how an XML schema can be created 7M

**OR**

4. a) What is Document Object Model? 7M
- b) Explain Presenting XML. 7M

**UNIT-III**

5. a) Explain about Java Beans and give its Advantages. 7M
- b) List all the classes and interfaces in JavaBeans API. 7M

**OR**

6. a) How to handle Http request and Response? 7M
- b) Explain session tacking using cookies. 7M

**UNIT-IV**

7. a) What is a servlet? Explain life cycle of a servlet. Illustrate with an example program 7M
- b) Explain javax.servelet Package. 7M

**OR**

8. a) What is a cookie? Give the information that is saved for each cookie on users machine 7M
- b) Explain the components of JSP 7M

**UNIT-V**

9. a) Explain the data sharing process between JSP's. 7M
- b) Describe implicit JSP objects 7M

**OR**

10. a) Explain error Handling and debugging methods in JSP. 7M
- b) Explain conditional processing using an expression and set to attributes. 7M

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**R-14**

**Code: 4G152**

*III B.Tech. I Semester Regular Examinations November 2016*

**Operating Systems**  
(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

- 1. a) What are Virtual Machines? Explain the functions of Virtual Machine. 7M
- b) Discuss generation of Operating Systems. 7M

**OR**

- 2. a) Explain Thread Scheduling. 7M
- b) Describe Inter process communication. 7M

**UNIT-II**

- 3. a) Explain the Critical Section Problem. 7M
- b) Describe Semaphores. 7M

**OR**

- 4. a) What are the characterization of Deadlock? Explain Deadlock Prevention process. 7M
- b) Explain Deadlock detection algorithm. 7M

**UNIT-III**

- 5. a) Explain Demand Paging. 7M
- b) Explain Thrashing in UNIX. 7M

**OR**

- 6. a) Explain Transforming I/O requests to Hardware Operations. 7M
- b) Explain STREAMS. 7M

**UNIT-IV**

- 7. a) Describe file access methods. 7M
- b) Explain free space management. 7M

**OR**

- 8. a) Explain Disk Scheduling. 7M
- b) Explain RAID Structure. 7M

**UNIT-V**

- 9. a) What is meant by protection? Explain goals and principles of Protection. 7M
- b) Explain Capability based system. 7M

**OR**

- 10. a) Explain system and network threats. 7M
- b) Explain Windows Security System. 7M

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**R-14**

**Code: 4G357**

*III B.Tech. I Semester Regular Examinations November 2016*

**Microprocessors and Interfacing**

( Common to CSE & IT )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) What is the purpose of instruction stream byte queue in 8086? 6M
- b) Describe the importance of segmentation registers. How to calculate physical address? Describe with an example. 8M

**OR**

2. a) Develop an assembly language program for sorting of even numbers. 10M
- b) Describe the purpose of BHE signal in 8086  $\mu$ P. 4M

**UNIT-II**

3. a) Describe 8255 PPI mode-0 operation with an example. 8M
- b) Distinguish SRAM & DRAM 6M

**OR**

4. a) Interpret I/O mapped and memory mapped I/O techniques in 8086  $\mu$ P 6M
- b) Explain seven segment display interface with 8086  $\mu$ P 8M

**UNIT-III**

5. a) What is DMA? Explain about Master and Slave mode concept. 8M
- b) Discuss about the architectural features of 8257. 6M

**OR**

6. a) Describe Interrupt service routines. 7M
- b) Interpret Vector interrupt table related to 8086  $\mu$ P. 7M

**UNIT-IV**

7. a) How TTL to RS232C and RS232C to TTL conversion is possible? 7M
- b) Distinguish asynchronous and synchronous data transfer schemes. 7M

**OR**

8. a) Describe the architectural features of 8251 USART. 8M
- b) Distinguish asynchronous and synchronous data transfer schemes. 6M

**UNIT-V**

9. a) List out the salient features of Pentium pro processors 6M
- b) Explain about paging with an example. 8M

**OR**

10. a) Distinguish the architectural features of 80286 and 80386  $\mu$ Ps. 7M
- b) List out the features of protected mode segmentation 7M

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**Code: 4G453**

*III B.Tech. I Semester Regular Examinations November 2016*

**Automata and Compiler Design**  
(Information Technology)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70Marks )

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**UNIT-I**

- 1 a) Write in brief about Chomsky hierarchy of languages and recognizers. 7M  
 b) Construct NFA for recognizing the language generated by the following regular expression. Check the acceptance of the string ababab.  $(a+b)^*ab$  7M

**OR**

- 2 a) Discuss in brief about the applications of Finite Automata. 5M  
 b) Minimize the following FA. Q0 is the initial state and Q3 is the final state.

	A	B
Q0	Q1	Q2
Q1	Q3	Q4
Q2	Q5	Q6
Q3	Q3	Q4
Q4	Q5	Q6
Q5	Q3	Q4
Q6	Q5	Q6

9M

**UNIT-II**

- 3 a) Explain the role of intermediate code generation and code optimization phases in a compiler with suitable example(s). 7M  
 b) Discuss in brief about top down parsing. 7M

**OR**

- 4 a) What do you mean by ambiguity in context free grammars? Give an example for ambiguous grammar. Show that the grammar in your example is ambiguous. 6M  
 b) Discuss in detail about the LEX tool. 8M

**UNIT-III**

5. Construct the SLR parsing table for the following grammar. Write the SLR parsing routine and show the moves of the parser for the string  $a+a^*a$ .  
 $E \rightarrow E+A/A$        $A \rightarrow A^*F/F$        $F \rightarrow (E)/a$  14M

**OR**

- 6 a) Write about the type checking of overloaded functions and operators. 7M  
 b) Write the general format of a YACC program. Explain each section with an example. 7M

**UNIT-IV**

- 7 a) Write syntax directed translation scheme for generating three address code for if-else and switch-case statements. 7M  
 b) What is a process control block? Explain how is it used in storage allocation? 7M

**OR**

8. Discuss in detail about various data structures used in symbol table organization. 14M

**UNIT-V**

9. What is a basic block? Give an example. Write three address code for the following code segment. Identify the basic blocks.  
 $a = b+c;$   
 $\text{for } (i=1; i \leq n; i++) \{ a[i] = 0;\}$   
 $\text{while } (a \leq n)$   
      $\{ a[i] = b + a[i]*c; \quad a--; \}$   
 $\text{for } (i=1; i \leq n; i++) \{ \text{printf}(\text{"\%d"}, a[i]);$  14M

**OR**

10. a) What are the principal sources of optimization? Explain with examples. 7M  
 b) Discuss about the generic code generation algorithm. 7M

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III B.Tech. I Semester Regular Examinations Nov/Dec 2016

**Software Engineering**

( Information Technology )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. Explain about software myths and different types of the myths.

**OR**

2. a) Which process model leads to software reuse? Justify.  
b) Illustrate the functioning of Unified process.

**UNIT-II**

3. a) Explain difference between Functional and Non-functional Requirements?  
b) Define the following  
i) Risk Refinement  
ii) RMMM Plan

**OR**

4. a) Explain About Requirement Validation?  
b) Explain About Elicitation and Analysis Process of Requirement Engineering?

**UNIT-III**

5. Describe software design process in detail.

**OR**

6. a) What is Architecture? Explain a Brief taxonomy of Architectural Styles?  
b) Define the following  
i) Design Classes  
ii) Functional Independence  
iii) Refactoring  
iv) Abstraction

**UNIT-IV**

7. a) Write short notes on User Interface Design  
b) Explain the types of Black Box Testing in detail

**OR**

8. a) Explain about user interface design systems.  
b) Explain about issues in user interface design.

**UNIT-V**

9. a) Explain about ISO9000 standards.  
b) Explain about Formal Technical Review.

**OR**

10. a) What is an indirect measure and why such measures are common in software metrics work? Explain size – oriented metrics.  
b) Explain ISO 9126 Quality factors? And Also Explain Architectural Design Metrics and Component Level Design Metrics?

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