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Code: 5G151

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

**Compiler Design**

( Computer Science &amp; Engineering )

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) Draw block diagram of phases of compiler and indicate the main functions of each phase 7M
- b) Describe the steps involved for creating a lexical analyzer with Lex 7M

**OR**

2. a) Explain the data structures used in a compiler 7M
- b) Differentiate interpreter and compiler 7M

**UNIT-II**

3. a) Define context free grammar and give examples 7M
- b) Construct a recursive descent parser for the following grammar  
 $E \rightarrow E + T, T \rightarrow TF / F, F \rightarrow F * / a / b$  7M

**OR**

4. What are the limitations of recursive descent parser and Construct recursive descent parser for the following grammar  
 $E \rightarrow E + T, T \rightarrow TF / F, F \rightarrow F * / a / b$  14M

**UNIT-III**

5. a) Explain shift reduce parsing with an example 7M
- b) How operator precedence parse table is constructed for an operator grammar. Also explain operator precedence parsing 7M

**OR**

6. Construct SLR parsing table for the following grammar  
 $E \rightarrow E + T, T \rightarrow TF / F, F \rightarrow F * / a / b$  14M

**UNIT-IV**

7. a) Explain the intermediate forms of source programs 7M
- b) What are the contents of a symbol table? Explain in detail. 7M

**OR**

8. a) Compare various forms of three-address code 7M
- b) What is dangling reference in storage allocation? Explain with an example. 7M

**UNIT-V**

9. a) Explain different principal sources of optimization technique with suitable examples 7M
- b) Write short notes on peephole optimization techniques 7M

**OR**

10. a) Explain the use of algebraic transformations with an example 7M
- b) Describe various register allocation optimization techniques with an example 7M

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Hall Ticket Number :

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**R-15**

**Code: 5G152**

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

**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 = 70 Marks )

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**UNIT-I**

1. a) Illustrate the functionality of various layers present in OSI model with a neat sketch 10M  
b) List any two reasons for layered protocols and what is one possible disadvantage for layered protocols? 4M

**OR**

2. a) Distinguish between Connection-oriented and Connectionless services. Give few examples to each category of service. 8M  
b) Briefly Explain the following 6M  
i). Twisted pair cable. ii). Co-Axial cable iii). Fiber optic cable

**UNIT-II**

3. How do you compute the number of redundant bits 'r' needed for a data unit of 'm-bits', in Hamming code. A 12-bit Hamming code whose hexadecimal value is 0XE4F arrives at a Receiver. What was the original value in hexadecimal? Assume that not more than 1 bit is in error. 14M

**OR**

4. a) Discuss about the Wireless LAN MAC protocols. 7M  
b) The Data Link Layer can control communication between a fast sender and slow receiver. Justify. 7M

**UNIT-III**

5. a) Elaborate on limitations of Shortest path and Hierarchical routing algorithms 7M  
b) Define Packet Scheduling and how it is implemented to achieve QoS. 7M

**OR**

6. a) What is the role of Choke packets in notifying the Congestion information? 7M  
b) Identify the role of Address Resolution Protocol( ARP) w. r. to IP addresses. List the advantages of ARP. 7M

**UNIT-IV**

7. a) Explain the three way handshake protocol to establish the transport level connection 7M  
b) Explain the role of UDP header and checksum in UDP protocol. 7M

**OR**

8. a) Explain the Delay-tolerant protocol stack with a neat sketch. 7M  
b) Compare and contrast UDP and TCP. 7M

**UNIT-V**

9. a) Why Name Servers are required and explain the process of Name Resolution. 7M  
b) What the role of a proxy cache that is used between Web browsers and Web servers 7M
- OR**
10. a) Explain the process of Video on Demand (VoD) in the context of streaming Video. 7M  
b) How Parity Packet can be used to repair loss of data packets. 7M

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Hall Ticket Number :

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**R-15**

**Code: 5G356**

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

**Microprocessors and Interfacing**

( Common to CSE & I T )

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) Draw the pin diagram of 8086 in minimum mode and maximum mode of operation. 7M
- b) Difference between procedure and macros with an example. 7M

**OR**

2. a) Explain register organization of 8086 microprocessor. 7M
- b) Draw memory read timing diagram of 8086 processor. 7M

**UNIT-II**

3. a) Draw the structure of SRAM and DRAM cell and Explain 7M
- b) Draw the block diagram of 8255 PPI chip and Explain. 7M

**OR**

4. a) Write a program to rotate the stepper motor in clock-wise and anti-clock-wise direction. 7M
- b) Explain any one type of D/A Converter with a neat diagram. 7M

**UNIT-III**

5. a) Discuss the importance of cascading of interrupt controller. 8M
- b) Explain the 8259 PIC architecture and interfacing. 6M

**OR**

6. a) Explain the architecture of 8257 and interfacing with 8086. 7M
- b) What is DMA? What is a need for DMA? 7M

**UNIT-IV**

7. a) Name serial communication standards and draw TTL to RS232 and RS232 to TTL conversion. 7M
- b) Explain 8251 USART architecture. 7M

**OR**

8. a) Explain different modes of operation of 8253/54. 7M
- b) Differentiate between Asynchronous and Synchronous data transfer schemes. 7M

**UNIT-V**

9. a) What are the difference between logical address, linear address and physical address? 8M
- b) Explain the salient features of 80386. 6M

**OR**

10. a) Explain descriptor tables of 80286 and 80386 processor 7M
- b) What do you mean by paging? What are its advantage and disadvantage? 7M

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Hall Ticket Number :

R-15

Code: 5G153

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

Operating Systems  
( Computer Science and Engineering )

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) Define Operating System? Describe its functions in detail. Identify the problems in design and implementation of OS. 7M
- b) What is System call? Illustrate the working of a system call. 7M

OR

2. a) What is scheduling criteria? 4M
- b) Discuss merits and demerits of following CPU scheduling algorithms i) FCFS ii) SJF iii) Round Robin iv) Priority. v) Multilevel Feed Back Queue 10M

UNIT-II

3. a) What is thread? Illustrate various thread models 7M
- b) Explore scheduling issues involving user-level and kernel-level threads? 7M

OR

4. a) Examine the producer-consumer problem using semaphore. 7M
- b) Implement a monitor using semaphore. 7M

UNIT-III

5. Write safety and resource request algorithms. Consider the following snapshot of a system:

	Allocation	Max	Available
	ABCD	ABCD	ABCD
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Answer the following questions using the banker's algorithm:

- i. What is the content of the matrix *Need*?
- ii. Is the system in a safe state? 14M

OR

6. a) Differentiate between internal and external fragmentation 4M
- b) Illustrate FIFO, Optimal and LRU page replacement algorithms with example. 10M

UNIT-IV

7. a) Explain various file allocation methods. 7M
- b) Develop a technique for managing the free space. 7M

OR

8. a) Draw the Disk Structure and write about Performance parameters 7M
- b) Explain about various disk scheduling algorithms. 7M

UNIT-V

9. a) Mention the various services provided by kernel I/O subsystem. 7M
- b) Write short notes on application I/O interface 7M

OR

10. a) What are the main characteristics of capability lists and access lists? 7M
- b) Explain cryptography in access control techniques. 7M

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Hall Ticket Number :									
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<b>R-15</b>
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**Code: 5G154**

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

**Software Engineering**

( Computer Science and Engineering )

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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<b>UNIT-I</b>
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1. a) What is software process? Also enumerate the activities common to all software processes. 7M
- b) Define software engineering. List the characteristics of software. 7M

**OR**

2. a) Explain the phases of the unified process and how it supports incremental and iterative development. 7M
- b) Explain the Personal and Team Process model in brief. 7M

<b>UNIT-II</b>
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3. a) Explain the requirement elicitation and requirement elaboration tasks in brief. 7M
- b) Consider the automation of a warehouse which includes :
  - i. Accepting and processing orders
  - ii. Shipping orders
  - iii. Accounting
  - iv. Inventory mgmt.

Develop an use case diagram for the system. 7M

**OR**

4. a) Explain the Negotiation requirement and Validation requirements in brief. 7M
- b) Discuss Class-Based Modeling and Data Modeling in brief. 7M

<b>UNIT-III</b>
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5. a) Explain any four Webapp design principles. 7M
- b) With examples explain data design elements and architectural design elements. 7M

**OR**

6. a) What is meant by cohesion and coupling criteria's that address the function independence? List all types of cohesion. 7M
- b) Discuss Component-Level Design in brief. 7M

<b>UNIT-IV</b>
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7. a) Differentiate between
  - i. Black box & White box testing
  - ii. Integration testing & System testing7M
- b) Explain in detail basis path testing with following details-
  - i) Flow Graph notation ii) Cyclomatic complexity7M

**OR**

8. a) What is the objective of software testing? Explain the testing principles. 5M
- b) What is basis path testing? What is cyclomatic complexity? How is it determined for a flow graph? Illustrate with an example. 9M

<b>UNIT-V</b>
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9. a) Explain the principles of Risk management in detail. 7M
- b) Explain the role of people, product and process in project management. 7M

**OR**

10. a) What is the concept of software Reliability? Explain different measures of software reliability. 7M
- b) What is software Quality? What are the mechanism to address Quality software? 7M

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Code: 5G155

III B.Tech. I Semester Regular Examinations Nov/Dec 2017

**Web Technologies**

( Computer Science and Engineering )

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. Create HTML code to display a table as shown below.

Time Table					
Hours	Mon	Tue	Wed	Thu	Fri
	Science	Maths	Science	Maths	Arts
	Social	History	Eng ish	Social	Sports
	Lunch				
	Science	Maths	Science	Maths	Project
	Social	History	Eng ish	Social	

14M

**OR**

2. a) Apply Internal CSS rule for two interlinked web pages page1.html and page2.html that makes the text red, place a background color in page1.html. Give all h1 and h2 elements a padding of 0.5 ems, a dashed border style and a margin of 0.5 ems in page2.html. 8M
- b) List out Java Script Objects? Explain any three Objects 6M

**UNIT-II**

3. a) Distinguish between SAX AND DOM? 8M
- b) Explain XML Schema Architecture? 6M

**OR**

4. a) Describe Document Type Definition? 6M
- b) Importance of Dynamic HTML and Advantages of DHTML 8M

**UNIT-III**

5. a) Develop a JDBC program to retrieve data from the Data Base using the steps involve in the JDBC Program 8M
- b) Difference between Statement and Prepared Statement? 6M

**OR**

6. a) Discuss javax.sql.\* Package with suitable example? 6M
- b) Elaborate the Scrollable and Updatable Result Set 8M

**UNIT-IV**

7. a) Describe the lifecycle of servlet 6M
- b) List out various types of Session Tracking Techniques? Develop a servlet program using HTTP Session? 8M

**OR**

8. a) Distinguish between doGet () and doPost () methods in Servlets? 6M
- b) Illustrate the connection establishment of Database into servlets with suitable example 8M

**UNIT-V**

9. a) Elaborate the process involved in JSP page translation and processing phases 8M
- b) Differentiate between JSP and Servlet. 6M

**OR**

10. List out the important elements used in Constructing JSP Page use at least one element with suitable program 14M

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