III B.Tech. I Semester Regular Examinations Nov/Dec 2017
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 = 70 Marks)
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UNIT–I

1. a) What are the different types of languages in automata theory? Clearly give the rules for each of these languages and the relationship among these languages   7M

    b) Obtain a DFA to accept strings of *a's* and *b's* such that, each block of 5 consecutive symbols has at least two *a's*.   7M

OR

2. a) Define a Regular expression. Find regular expressions for the following languages over the alphabet {a, b}.
    i. All strings of odd length
    ii. All strings that end with either ab or bb
    iii. All strings that contain even number of a's   7M

    b) Show that the language L= {ww^R | w {a,b}* } is generated with context free grammar?   7M

UNIT–II

3. a) Explain the different phases of the compiler, showing the output of each phase using the example for the statement z = (a*20) + b – c   7M

    b) What is meant by input buffering? Explain the use of sentinels in recognizing tokens.   7M

OR

4. a) Show that the following grammar is LL(1)
    S → AaAb | BbBa , A → , B →   7M

    b) 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.   7M

UNIT–III

5. a) Construct the SLR parse table the following grammar
    E→E + T/T, T→T*F/F, F→(E)/a   7M

    b) Explain in brief about LR Parsers   7M

OR

6. a) Write about the type checking of overloaded functions and operators   7M

    b) Write the Syntax Directed Definitions to add the type of each identifier to its entry in the symbol table during semantic analysis   7M

UNIT–IV

7. a) Explain the process of organizing a symbol table for a block structured language 7M

   b) Construct Quadruples, Triples and Indirect Triples of the following expression: I = - J * (K + W). 7M

OR

8. a) What are self-organizing lists? How can this be used to organize a symbol table? Explain with an example. 7M

   b) Generate three address codes for the following code segment and write the corresponding triples.

   for (i=1; i<=10;i++) { a[i] = a[i+1] * 2; b[i] = a[i]; } 7M

UNIT–V

9. a) Explain in brief about Loop optimization techniques 7M

   b) Explain in detail about the basic blocks and flow graphs. Construct the flow graph for the following code fragment.

   I = m-1; j = n; v = a[n];
   while(1)
   {
   do
   {
   I = i+1;
   }while(a[i] < v);
   do
   {
   j = j -1;
   }while(a[j] > v);
   if (i>= j)
   break;
   x = a[i]; a[i] = a[j]; a[j] = x;
   }
   x = a[i]; a[i] = a[n]; a[n] = x; 7M

OR

10. a) Explain the DAG based local Optimization. Construct DAG for the following expression: A = B * – C + B * – C 9M

    b) Discuss in brief about register allocation and assignment 5M

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

Android Application Development

(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.   Draw the android software stack and explain each layer   14M

OR

2.   a)   explain the features of android   7M

     b)   explain how to create android virtual device (AVD)   7M

UNIT–II

3.   Draw activity life cycle architecture and describe the seven methods.   14M

OR

4.   Explain the two types of intent with example   14M

UNIT–III

5.   Create UI programmatically? with linearlayout, TextView, EditText and button.   14M

OR

6.   a)   Explain about Toast message ?   4M

     b)   From the "Toast.makeText(,,).show()" which is class, object and method?
          Define technically?   10M

UNIT–IV

7.   a)   What is shared preferences? Explain it with program for store and load a data?   7M

     b)   What is SQLite? Explain it with program for insert data.   7M

OR

8.   Write android program to store and load a file for SD card.   14M

UNIT–V

9.   What is GPS? Create a GPS program with LocationListern interface.   14M

OR

10. a)   Draw android service lifecycle and describe the 3 methods   10M

     b)   What is threading in android?   4M

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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

   i).Twisted pair cable.   ii). Co-Axial cable   iii). Fiber optic cable   6M

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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III B.Tech. I Semester Regular Examinations Nov/Dec 2017
Data Warehousing and Data Mining
(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. a) Describe the data mining functionalities and the kind of patterns can be mined? 7M

   b) Describe Challenges to Data Mining regarding Data Mining Methodology and User Interaction Issues. 7M

OR

2. Why to pre-process the data? What are the strategies for Data Transformation? What are the issues to consider during Data Integration? 14M

UNIT–II

3. a) Draw the architecture of Data Warehouse and tell the consequences how do the data stored in Data Warehouse. 10M

   b) Summarize *four* efficient methods for Data Cube Computation. 4M

OR

4. Identify the steps in finding frequent item sets using Apriori algorithm.

   A database has *five* transactions. Let *min_sup*=60% and *min_conf*=80%.

TID	items brought
T100	{M,O,N,K,E,Y}
T200	{D,O,N,K,E,Y}
T300	{M,A,K,E}
T400	{M,U,C,K,Y}
T500	{C,O,O,K,I,E}

   a) Find all frequent itemsets using FP Growth algorithm. 6M

   b) List all the strong association rules with support S and confidence C matching the following meta rule, where 'X' is a variable representing customers and $item_i$ denotes variables representing items (e.g., "A", "B"):

   For All x,   transaction, buys(X, item$_1$) ^ buys(X, item$_2$) => buys(X, item3) [S, C] 8M

UNIT–III

5. a) Why are decision tree classifiers so popular? How decision trees are used for classification? 8M

   b) What is pruning? What are the *two* common approaches to tree pruning? 6M

OR

6. Define classification? What is 'Back Propagation'? How classification is done using Back Propagation method. 14M

UNIT–IV

7. a) What is 'Cluster Analysis'? Apply K-Means and K-Medoid partitioning methods to cluster the data and discuss its merits and demerits. 10M

   b) Write short notes on outlier analysis. 4M

OR

8. a) Describe Agglomerative and Divisive hierarchical clustering methods in detail. 7M

   b) Explain DBSCAN, density based clustering algorithm to discover cluster with arbitrary shape. 7M

UNIT–V

9. What are different Data Mining Applications? Explain at least five major applications in detail with examples. 14M

OR

10. a) How is web usage mining different from web structure mining and web content mining? 7M

    b) Describe briefly Multimedia mining. 7M

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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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III B.Tech. I Semester Regular Examinations Nov/Dec 2017
Software Testing Methodologies
(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. a) Explain Purpose of testing   7M
    b) Briefly define how to model for testing   7M

OR

2. a) Explain various consequences of bugs   7M
    b) Explain taxonomy of bugs   7M

UNIT–II

3. a) Summarize Basics concepts of path testing   7M
    b) Compare path predicates and achievable paths   7M

OR

4.   What are various application of path testing   14M

UNIT–III

5. a) Define transaction flow testing techniques   8M
    b) What are various application of dataflow testing   6M

OR

6. a) Arrange Basics of dataflow testing   7M
    b) Explain strategies in dataflow testing   7M

UNIT–IV

7. a) Explain Path products   7M
    b) Explain path expression   7M

OR

8. a) What are regular expressions and define various types in it   9M
    b) How the flow anomaly detection   5M

UNIT–V

9. a) what are State graphs and state testing in software methodologies   8M
    b) Compare good and bad state graphs   6M

OR

10. a) Elaborate power of a matrix   4M
    b) Write node reduction algorithm with an example   10M

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