Code No: 1P3112 **R11**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET

(AUTONOMOUS)

M.Tech. I Semester Regular Examinations, April/May 2012

ADVANCED DATA STRUCTURES AND ALGORITHMS

(Computer Science and Engineering)

(For students admitted in 2011-12)

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks

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1. a) What are constructors? What rules should we follow while defining constructor? Explain the different types of constructors.
   b) Explain with suitable example programs, how we can pass the parameters to a function.

2. a) Explain, how to overload a binary operator with a suitable example program.
   b) Give brief description about the virtual functions.

3. a) What is time complexity? Explain the various asymptotic notations in detail.
   b) Write a program to implement the queue operation using linked lists. (Note : Write the program by using templates.)

4. a) Explain with suitable example, the insertion and deletion operations on dictionaries.
   b) Give brief description about the priority queues.

5. What is an AVL Tree? Explain the various rotations of an AVL Tree with suitable example.

6. a) Discuss in detail about the AND/OR Graphs.
   b) Write the control abstraction for divide and conquer techniques.

7. a) Discuss in detail about the minimum cost spanning trees.
   b) Give brief description about the travelling sales person problem by using dynamic programming.

8. Write short notes on the following.
   a) Sum of subsets
   b) Graph coloring
   c) General method of back tracking.

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Code No: 1P3114 **R11**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)
M.Tech. I Semester Regular Examinations, April/May 2012
ADVANCED COMPUTER NETWORKS
(Computer Science and Engineering)
(For students admitted in 2011-12)

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks

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1. a) Explain the 5 layer TCP/IP model?
   b) List two advantages and disadvantages of having international standards for network protocols?

2. a) Describe the multiple access protocol?
   b) Data is to be transmitted from London to New York. The data was CRC coded at London using the devisor10101. The data 1100100101011 was received at New York. How would you find whether the received data is exact one sent from London?

3. What is Routing? Explain Non Least-cost path algorithm with an example.

4. a) Explain briefly about protocol architecture of IEEE 802.11?
   b) What are the different types of encapsulations techniques in mobile IP?

5. a) Why is UDP needed? Why can't user program directly access IP?
   b) Explain File Transfer Protocols?

6. a) What is VPNS? Explain?
   b) Define the following
      i) MPLS. ii)VOIP. iii) DMMN.

7. a) Explain the wireless mesh networks with diagrammatical representation?
   b) Describe the optical Routers?

8. Write a short notes on
   a) Routing in Ad-Hoc networks.
   b) Wireless sensors.
   c) DNS.

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Code No: 1P3113 **R11**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET

(AUTONOMOUS)

M.Tech. I Semester Regular Examinations, April/May 2012

ADVANCED DATABASES

(Computer Science and Engineering)

(For students admitted in 2011-12)

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks

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1. a) Discuss about transparent management in distributed databases.
   b) Write about the concepts of relational data languages.

2. a) Explain client server reference architecture?
   b) Explain the design issues of distributed DBMS.

3. a) Give the objectives of query processing.
   b) Explain characterization of query processors?

4. Explain about distributed query optimization algorithms with examples.

5. a) What are the types of transactions?
   b) What is deadlock? Explain about deadlock avoidance schemes.

6. a) What are failures and fault tolerances in distributed system?
   b) Compare the local and distributed reliability protocols?

7. a) Distinguish between horizontal and vertical partitioning?
   b) What are issues of distributed object storage?

8. a) What is object identity? Explain?
   b) Briefly describe about object oriented DBMS?

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Code No: 1P3115 **R11**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET

(AUTONOMOUS)

M.Tech. I Semester Regular Examinations, April/May 2012

ADVANCED SOFTWARE ENGINEERING

(Computer Science and Engineering)

(For students admitted in 2011-12)

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks

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1. a) Explain in detail about various software application domains.
   b) Explain in detail about specialized process models.

2. a) What are the major goals of Personal Software Process? Describe about the major framework activities involved in Personal Software Process.
   b) Discuss in detail about scrum method of agile software development.

3. Why are critical system specifications essential? Describe the various components of software reliability and safety specification.

4. What is meant by the term "Pattern". Describe in detail about various design patterns with suitable examples.

5. What are the major principles involved in test case design and test automation.

6. With suitable example, explain about the service oriented software engineering approach?

7. a) Differentiate between quality assurance and quality control. Describe in detail about various software quality assurance activities.
   b) Discuss in detail about CMMI process improvement framework.

8. Explain about the trends in process, method and tools which can influence software engineering in the future.

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Code No: 1P3116 **R11**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET

(AUTONOMOUS)

M.Tech. I Semester Regular Examinations, April/May 2012

ADVANCED COMPUTER ARCHITECTURE

(Computer Science and Engineering)

(For students admitted in 2011-12)

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks

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1. a) Explain about distributed memory multi computers. [6M]
   b) Write about the level of parallelism in programs. [6M]

2. a) Explain about Gustafson's Law for Scaled problems. [6M]
   b) Write about Hierarchical Memory Technology. [6M]

3. a) Explain about the mechanism for Instruction Pipelining. [6M]
   b) Write about Asynchronous and Synchronous models in Linear Pipeline Processors. [6M]

4. Write in detail about Message Passing Mechanism. [12M]

5. a) With a neat diagram explain the architecture of the connection machine-2. [6M]
   b) Write about Vector Loops and Chaining. [6M]

6. a) Explain about Multiple context Processor. [6M]
   b) Explain about the Tera Multiprocessor System. [6M]

7. a) What are basic design issues in instruction level parallelism? [6M]
   b) Write about thread level parallelism. [6M]

8. Explain different forms of parallelism with case studies. [12M]

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Code No: 1P3111 **R11**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET

(AUTONOMOUS)

M.Tech. I Semester Regular Examinations, April/May 2012

FOUNDATIONS OF COMPUTING

(Computer Science and Engineering)

(For students admitted in 2011-12)

Time: 3 hours **Max Marks: 60**

Answer any FIVE of the following
All questions carry equal marks

* * * * *

1. a) Show the following implications without constructing the truth tables.
   i) $(P \rightarrow Q) \Rightarrow P \rightarrow (P \wedge Q)$ 3M
   ii) $((P \rightarrow Q) \rightarrow Q) \Rightarrow P \vee Q$ 3M
   b) Show that $((P \vee Q) \wedge \neg (\neg P \wedge (\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is a tautology 6M
2. a) What are the properties of Relations? Give an example of a relation which is symmetric but neither reflexive nor anti-symmetric nor transitive. 6M
   b) State and prove Pigeonhole Principle. 6M
3. a) Write Prim's algorithm for constructing Minimum Cost Spanning Tree of a weighted graph. 6M
   b) Define Isomorphism of graphs. What are the steps followed in discovering the Isomorphism. 6M
4. a) Design NFAs for the following languages.
   i) L= { w / | w | mod 3 = 0, w is a string with a's and b's } 3M
   ii) Set of all strings on the alphabets $\sum = \{0,1\}$ that either begins or ends or both with the substring 01. 3M
   b) Convert NFAs of 4 (a) into equivalent DFAs 6M
5. a) Define Pumping Lemma. 3M
   b) State whether $L=\{a^n b^n / n > 0\}$ is regular or not (Use pumping Lemma) 6M
   c) Explain the closure properties of Regular Sets. 3M
6. a) Define Context Free Grammar and Context Free Language. 2M
   b) Construct CFG for the language having strings with a's followed by b's where number of b's is twice the number of a's. 5M
   c) Check whether the following grammar is ambiguous or not. 5M
   E→E+E / E – E / E * E / id
7. a) With a neat diagram show the working of Pushdown Automata and define the language accepted by PDA. 6M
   b) Design a Pushdown Automata which accepts equal number of a's and b's over $\sum=\{a,b\}$ 6M
8. a) What is Universal Turing Machine? 4M
   b) Design a Turing machine to accept strings of the language defined as $\{a^n b^n / n \geq 1\}$ 8M