USN | | | | | | | | | | |

10CS82

Eighth Semester B.E. Degree Examination, Dec.2015/Jan.2016
System Modeling and Simulation

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Define simulation. Explain when simulation is an appropriate tool and not an appropriate tool. **(12 Marks)**

b. Name the entities, attributes, activities, events and state variables for the system shown below:
i) Library ii) Bank iii) Airport iv) Grocery store. **(08 Marks)**

2 a. Explain event scheduling/ time advance algorithm. **(10 Marks)**

b. Six dump trucks are used to haul coal from entrance of a small mine to the rail road. Each truck is loaded by one of the two loaders. After loading truck immediately moves to the scale to be weighed as soon as possible. Both loaders and scale have FCFS for trucks. Travel time from loader to scale is negligible. After being weighed, a truck begins a travel time and then returns to loader queue. Simulate for clock = 20. Find average loader utilization and average scale utilization. The activity times are given in the following table:

Loading Time	10	5	5	10	15	10	10
Weighing Time	12	12	12	16	12	16	
Traveling time	60	100	40	40	80		

(10 Marks)

3 a. Find mean and variance of the die tossing experiment. Assume the die is loaded so that the probability that given face land up in proportional to the number of spots showing. **(10 Marks)**

b. The time to failure of a light bulb is Weibull distributed with V = 1.8×10^3 hours. β = 1/2 and $\alpha = 1/3 \times 10^3$ hours.
(i) What fraction of bulbs are expected to last longer than mean lifetime?
(ii) What is the median lifetime of a light bulb? **(10 Marks)**

4 a. Explain the characteristics of queueing system. **(10 Marks)**

b. List the steady state parameters of M | M | 1 queue. **(05 Marks)**

c. Explain terms used in queueing notation of the form A | B | C | N | K. **(05 Marks)**

PART – B

5 a. Explain generation of pseudo random numbers with examples. Mention the important considerations in selecting a method for generating random numbers. **(10 Marks)**

b. Use Chi square test with $\alpha = 0.05$ to test whether data shown below is uniformly distributed or not. Assume critical value $\chi^2_{0.05,9} = 16.9$

0.34	0.90	0.25	0.89	0.87	0.44	0.12	0.21	0.46	0.67
0.83	0.76	0.79	0.64	0.70	0.81	0.94	0.74	0.22	0.74
0.96	0.99	0.77	0.67	0.56	0.41	0.52	0.73	0.99	0.02
0.47	0.30	0.17	0.82	0.56	0.05	0.45	0.31	0.78	0.05
0.79	0.71	0.23	0.19	0.82	0.93	0.65	0.37	0.39	0.42
0.99	0.17	0.99	0.46	0.05	0.66	0.10	0.42	0.18	0.49
0.37	0.51	0.54	0.01	0.81	0.28	0.69	0.34	0.75	0.49
0.72	0.43	0.56	0.97	0.30	0.94	0.96	0.58	0.73	0.05
0.06	0.39	0.84	0.24	0.40	0.64	0.40	0.19	0.79	0.62
0.18	0.26	0.97	0.88	0.64	0.47	0.60	0.11	0.29	0.78

(10 Marks)

6 a. Explain the steps involved in the development of a useful model of input data. **(10 Marks)**
b. Explain the different ways of selecting input models when data is not available. **(10 Marks)**

7 a. Explain the calibration and validation of models. **(10 Marks)**
b. Explain the suggestions given for use in verification process. **(10 Marks)**

8 Write short notes on :
a. World views
b. Network of Queues
c. Optimization via Simulation
d. List Processing **(20 Marks)**

* * * * *

USN | | | | | | | | | | |

10CS/IS834

Eighth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Network Management System

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain analogy of telephone network. **(10 Marks)**
b. Explain the comparison of SNA, OSI and internet model. **(10 Marks)**

2 a. Explain network management standards. **(10 Marks)**
b. Explain two-tier and 3 – tier network management organization model. **(10 Marks)**

3 a. Explain system overview of SNMP. **(10 Marks)**
b. Explain history of SNMP management. **(10 Marks)**

4 a. Explain UDP group with neat block diagram. **(10 Marks)**
b. Explain internet II MIB group. **(10 Marks)**

PART – B

5 a. Explain textual conventions. **(10 Marks)**
b. Explain relationship between control and data tables. **(10 Marks)**

6 a. Explain layered architecture of LAN emulation. **(10 Marks)**
b. Explain with neat block diagram, virtual path and virtual circuit. **(10 Marks)**

7 a. Explain HFC plant with block diagram of cable access network. **(10 Marks)**
b. Explain ADSL architecture with neat block diagram. **(10 Marks)**

8 a. Write short notes on fault management. **(10 Marks)**
b. Explain CRITTER architecture. **(10 Marks)**

* * * * *

USN | | | | | | | | | | |

10CS/IS835

Eighth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Information and Network Security

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain issue specific security policy and discuss various elements of ISSP in detail. **(10 Marks)**

b. Explain disaster recovery planning in continuity strategies. **(10 Marks)**

2 a. What is firewall? Explain different firewalls based on architectural implementation. **(10 Marks)**

b. What is VPN? Explain different implementations of VPNs. **(10 Marks)**

3 a. Discuss various strengths and limitations of IDS. **(06 Marks)**

b. Explain signature based IDS and application based IDS. **(06 Marks)**

c. Briefly explain different control strategies of IDS. **(08 Marks)**

4 a. Explain different types of transposition ciphers with examples. **(10 Marks)**

b. Explain public key infrastructure in detail. **(10 Marks)**

PART – B

5 a. Discuss the various aspects of security and explain different types of security attacks. **(10 Marks)**

b. With a neat diagram, explain the model of network security and network access security. **(10 Marks)**

6 a. With the help of a schematic diagram, explain Kerberos version 4 authentication. **(08 Marks)**

b. Difference between Kerberos V4 and Kerberos V5. **(04 Marks)**

c. With a neat sketch, explain how PGP message is generated. **(08 Marks)**

7 a. Explain the general procedures for S/MME message preparation. **(10 Marks)**

b. Describe how ESP is implemented in transport and tunnel modes with a neat diagram. **(10 Marks)**

8 a. Briefly explain the basic combinations of security association with diagrams. **(10 Marks)**

b. Explain SSL architecture. **(10 Marks)**

* * * * *

(4)

USN | | | | | | | | | | |

10CS/IS841

Eighth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Ad-hoc Wireless Networks

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain any four applications of Adhoc wireless networks. **(08 Marks)**

b. Briefly explain why we cannot use existing traditional transport layer protocol in Adhoc wireless network. **(06 Marks)**

c. Explain any three energy management categories in Adhoc wireless networks. **(06 Marks)**

2 a. Explain HOP reservation multiple Access Protocol [HRMA] with neat frame structure. **(10 Marks)**

b. Briefly explain issues in designing MAC protocol for adhoc wireless networks? **(10 Marks)**

3 a. Explain distributed laxity-based priority scheduling scheme with neat diagram. **(08 Marks)**

b. Explain directional busy tone-based MAC protocol. Write the advantages. **(08 Marks)**

c. How the best possible channel is selected for communication in multichannel MAC protocol. **(04 Marks)**

4 a. Explain cluster-head gateway switch routing protocol with neat diagram. Discuss the advantages and disadvantages. **(10 Marks)**

b. Explain flow-oriented routing protocol with neat diagram. **(10 Marks)**

PART – B

5 a. Explain zone-based hierarchical link state routing protocol with neat diagram. **(10 Marks)**

b. Discuss the important routing matrics to be considered in power aware routing protocol. **(10 Marks)**

6 a. Discuss briefly the major reasons for TCP not perform well in Adhoc wireless network. **(10 Marks)**

b. Explain Adhoc – TCP with neat state transition diagram. Discuss advantages and disadvantages. **(10 Marks)**

7 a. Explain different attacks pertaining to the network layer? **(10 Marks)**

b. Explain symmetric key algorithm. **(05 Marks)**

c. Explain the solution for the Blackhole problem. **(05 Marks)**

8 Write short notes on :

a. Location prediction in PLBQR

b. Ticket-Based QoS Routing Protocol

c. DBASE

d. Design choices for providing QoS support. **(20 Marks)**

* * * * *

USN | | | | | | | | | | |

10CS842

Eighth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Software Testing

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. What are the two fundamental approaches used to identify test cases? Explain each of them. **(06 Marks)**

b. Discuss the traditional and structural implementation of triangle problem. **(08 Marks)**

c. What is random testing? Write the test cases for the next date function. **(06 Marks)**

2 a. Write the equivalence class test case for the commission problem. **(06 Marks)**

b. Enlist the guidelines and observations of equivalence class testing. **(07 Marks)**

c. Construct the decision tree for next date function for third try and write the test cases for the same. **(07 Marks)**

3 a. Discuss the DD – path for trainable program and write a table for the types of DD – paths with graph. **(06 Marks)**

b. Explain McCabe's basis path method with an illustrative example. **(08 Marks)**

c. With a suitable example, discuss slice – based testing. **(06 Marks)**

4 a. With regard to levels of testing, describe the decomposition tree for the SATM system. **(06 Marks)**

b. What is call – graph – based integration? Explain the two approaches employed in this strategy explicitly indicating the pros and cons of each. **(06 Marks)**

c. With an illustrative example like SATM system discuss the accomplishment of path – based integration. **(08 Marks)**

PART – B

5 a. Explain the basic concepts for requirements specification that support the tester's process of thread identification. **(07 Marks)**

b. Describe the following approaches used in functional strategies for thread testing :
i) Event – based thread testing
ii) Part – based thread testing
iii) Data – based thread testing. **(07 Marks)**

c. Discuss how the interaction testing is accomplished in client/server systems. **(06 Marks)**

6 a. With an aid of a neat functional schematic, explain the different verification trade–off dimensions (degrees of freedom). **(06 Marks)**

b. Discuss in brief, the six principles that characterize various approaches and techniques for analyzing and testing software projects. **(06 Marks)**

c. Enlist the dependability properties of a software product and further illustrate the relation among these dependability properties, with a suitable diagram. **(08 Marks)**

7 a. With an example program, explain the steps to be followed in mutation analysis. **(07 Marks)**

b. Write short notes on the followings :

i) Mutation analysis Vs structural testing

ii) Hardware fault –based testing. **(06 Marks)**

c. Discuss the significance of test oracles that are used as pass/fail criterion to program execution. **(07 Marks)**

8 a. Briefly describe the various factors considered in the selection of test and analysis strategies. **(06 Marks)**

b. What is root cause analysis (RCA)? Explain the significant steps to be considered in RCA. **(08 Marks)**

c. With regard to test design specification documents, indicate the standard organization of an analysis and test plan of a software product. **(06 Marks)**

* * * * *