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10IS81

Eighth Semester B.E. Degree Examination, June/July 2017
Software Architectures

Time: 3 hrs.

Max. Marks:100

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

PART – A

1   a.   Define software architecture. Explain the importance of software architecture in brief.
         (07 Marks)
    b.   Explain the various activities that are involved in developing software based on architecture.
         (07 Marks)
    c.   Define architectural patterns, reference models and reference architectures. Briefly explain relationships between them. **(06 Marks)**

2   a.   Enlist different architecture styles. Discuss in brief pipes and filters and implicit invocation architectural styles. **(07 Marks)**
    b.   Explain the various design changes that need to be considered in the KWIC case study.
         (05 Marks)
    c.   Identify the various inputs and outputs of cruise-control system and explain the control architecture for cruise control. **(08 Marks)**

3   a.   Explain quality attribute scenarios. **(04 Marks)**
    b.   What is availability? Explain the general scenario for availability. **(08 Marks)**
    c.   Classify security tactics. What are the different tactics for resisting attacks? **(08 Marks)**

4   a.   Explain the structure of pipes and filters patterns with CRC cards. **(08 Marks)**
    b.   What are the benefits of layered patterns? **(04 Marks)**
    c.   Enumerate the implementation steps of blackboard architectural pattern. **(08 Marks)**

PART – B

5   a.   Identify the components involved in broker architecture. Explain the responsibilities of each component. **(08 Marks)**
    b.   Explain the dynamic behavior of MVC pattern with one scenario. **(08 Marks)**
    c.   List the benefits of PAC pattern. **(04 Marks)**

6   a.   Explain the structural part of microkernel architectural pattern. **(08 Marks)**
    b.   List the forces associated with the problem of reflection system. **(06 Marks)**
    c.   Explain the benefits of reflection patterns. **(06 Marks)**

7   a.   Give the structure of whole part design pattern with CRC. **(07 Marks)**
    b.   What are the application areas of master slave pattern? **(06 Marks)**
    c.   List the known uses and liabilities of proxy pattern. **(07 Marks)**

8   a.   List the 3 steps of choosing views for a project. **(05 Marks)**
    b.   Write a note on ADD and its steps. **(10 Marks)**
    c.   List the steps in documenting a view for architecture. **(05 Marks)**

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Eighth Semester B.E. Degree Examination, June/July 2017
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. What is simulation? List and explain the steps in simulation study. **(10 Marks)**
　　b. Define the following :
　　　(i) System　　(ii) Entity　　(iii) Activity　　(iv) Endogenous event　(v) Exogenous event
　　　(vi) State. Identify them for any one system. **(10 Marks)**

2　a. Explain event scheduling / time advance algorithm using this algorithm generate the system
　　　snapshot for the following.
　　　Consider a single server queuing system with interarrival and service time details as shown
　　　below:

IAT	3	2	6	2	4	5
ST	2	5	5	8	4	5

　　　Stop simulation when simulation clock reaches 20. **(14 Marks)**
　　b. Write short notes on :
　　　(i) List processing　　　(ii) Simulation in GPSS. **(06 Marks)**

3　a. Explain the following discrete distributions:
　　　(i) Binomial distribution　　(ii) Poisson distribution **(08 Marks)**
　　b. Explain the following continuous distributions:
　　　(i) Uniform distribution　　(ii) Exponential distribution
　　　(iii) Triangular distribution　　(iv) Normal distribution **(12 Marks)**

4　a. List and explain characteristics of queuing system. Briefly explain queuing notations.
(14 Marks)
　　b. Explain the steady-state behavior of $M\,|\,G\,|\,1$ queue. **(06 Marks)**

PART – B

5　a. What are pseudo random numbers? What are the problems that occur while generating
　　　pseudo random numbers? Also list the important considerations during generation of
　　　random numbers. **(10 Marks)**
　　b. Briefly explain different techniques for generating random number. **(05 Marks)**
　　c. Consider the following sequence of five numbers: 0.44, 0.81, 0.14, 0.05, 0.93
　　　are generated. Use the Kolmogorov-Smirnov test with $\alpha = 0.05$ to test the uniformity
　　　property of random number generated. **(05 Marks)**

6　a. Mention the different steps in the development of a useful model of input data. **(04 Marks)**
　　b. List and briefly explain the different ways to obtain information about process even if data
　　　are not available. **(06 Marks)**
　　c. Explain in detail goodness-of-fit tests in details. **(10 Marks)**

7   a.   Discuss output analysis for steady state simulation in detail.   **(10 Marks)**
    b.   Discuss output analysis for terminating simulation in detail.   **(10 Marks)**

8   a.   With a neat diagram, explain the concept of model building, verification and validation.
                                                                                          (10 Marks)
    b.   Describe the three step approach formulated by Naylor and Finger in the validation process.
                                                                                          (10 Marks)

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10CS/IS834

Eighth Semester B.E. Degree Examination, June/July 2017
Network Management Systems

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Explain the telephone network model, with neat diagram.   **(05 Marks)**
   b. What is Network Management? With neat diagram, explain network management functional groupings.   **(10 Marks)**
   c. Explain the OSI protocol layers and services.   **(05 Marks)**

2 a. List and explain network management standards.   **(06 Marks)**
   b. Explain Organization model, Two – Tier network management organization model, Three – Tier network management organization model , Network management organization model with MOM.   **(10 Marks)**
   c. What are the five submodels of functional model and draw diagram for network management functional model.   **(04 Marks)**

3 a. Explain clearly the function of two – tier and three – tier SNMP organization model.
                                                                                                (10 Marks)
   b. Write short notes on :
      i)   Internet organizations and standards   ii)   The SNMP model.   **(10 Marks)**

4 a. Explain the structure of Management Information in Information model.   **(10 Marks)**
   b. Explain the administrative model in SNMP communication model.   **(10 Marks)**

PART – B

5 a. Explain RMON1 groups and functions.   **(05 Marks)**
   b. What is Remote Monitoring? With neat diagram, explain network configuration with RMONS.   **(05 Marks)**
   c. With neat diagram, explain ATM Remote Monitoring.   **(10 Marks)**

6 a. With a neat block diagram, explain protocol architecture of an ATM ELAN, with an Ethernet.   **(10 Marks)**
   b. Explain the following : i) Virtual LAN   ii) M_2 Interface.   **(10 Marks)**

7 a. Explain broad band LAN architecture.   **(06 Marks)**
   b. Explain ADSL Architecture.   **(06 Marks)**
   c. Explain the protocol layer architecture in HFC system.   **(08 Marks)**

8 a. Explain Fault Management techniques.   **(06 Marks)**
   b. Explain the different types of client/server authentication systems.   **(08 Marks)**
   c. Explain Policy – based Management Architecture.   **(06 Marks)**

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USN [| | | | | | | | |]   **10CS/IS835**

Eighth Semester B.E. Degree Examination, June/July 2017
Information and Network Security

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain the term policy, standard and practice with respect to information security with a neat diagram. **(08 Marks)**
   b. Describe in details the major steps in contingency planning with a diagram. **(12 Marks)**

2 a. What is a firewall? Discuss the categorization methods of firewall. **(12 Marks)**
   b. What is Virtual Private Networks (VPN)? Explain two modes of a VPN. **(08 Marks)**

3 a. Bring out the different types of intrusion detection system (IDSs), with their advantages and disadvantages. **(10 Marks)**
   b. Define:
      i) False negative
      ii) False positive
      iii) Site policy
      iv) Alarm filtering. **(04 Marks)**
   c. Explain Honey pots, Honey nets and padded cell systems. **(06 Marks)**

4 a. Encipher the text message "VISVESVARAYA TECH VERSITY" with one-time pad text "JNANA SANGAMA KARNATAKA ST" using Vernam cipher technique. **(10 Marks)**
   b. Explain the different attack on cryprosystem. **(10 Marks)**

PART – B

5 a. Discuss the different security attack. **(10 Marks)**
   b. Explain in detail the X.509 certificates format with a diagram. **(10 Marks)**

6 a. Discuss the services of pretty good privacy (PGP). **(10 Marks)**
   b. Explain the Multipurpose Internet Mail Extension (MIME) content type. **(05 Marks)**
   c. Briefly explain the S/MIME functionality. **(05 Marks)**

7 a. With a diagram, explain the authentication header of IPSec packet. **(10 Marks)**
   b. Discuss the transport and tunnel modes of operation in Encapsulating Security Payload (ESP). **(10 Marks)**

8 a. Explain the four phase of handshake protocol action in Secure Socket Layer (SSL). **(10 Marks)**
   b. Discuss the key features and components of Secure Electronic Transaction (SET). **(10 Marks)**

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10CS/IS841

Eighth Semester B.E. Degree Examination, June/July 2017

Adhoc Networks

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Bring out the differences between cellular networks and adhoc networks. **(08 Marks)**
   b. Explain adhoc wireless internet with a neat schematic diagram. **(06 Marks)**
   c. List and explain different applications of adhoc wireless network. **(06 Marks)**

2 a. Discuss the issues in designing a MAC protocol for adhoc wireless network. **(10 Marks)**
   b. Explain the five phase reservation protocol in detail. **(10 Marks)**

3 a. Mention the factors to be considered while making scheduling decisions. **(04 Marks)**
   b. Explain the distributed laxity based priority scheduling scheme with feedback mechanism.
   (08 Marks)
   c. Give the brief explanation of working of a MAC protocol using directional antennas.
   (08 Marks)

4 a. List the characteristics of an ideal routing protocol for an adhoc wireless network. **(08 Marks)**
   b. Explain Cluster head gateway switch routing protocol with neat diagram. **(06 Marks)**
   c. Explain associativity based routing (ABR) protocol with neat diagram. **(06 Marks)**

PART – B

5 a. Explain zone routing protocol with neat diagram. Discuss the advantages and disadvantages.
   (10 Marks)
   b. Discuss the power-aware routing metrics for adhoc network. **(10 Marks)**

6 a. Explain any five major reasons for throughput degradation of TCP when used in adhoc
   wireless network. **(10 Marks)**
   b. With a neat diagram, explain the operations of adhoc-TCP (ATCP) protocol. **(10 Marks)**

7 a. What are the issues and challenges faced in designing a security protocol for adhoc wireless
   network? **(06 Marks)**
   b. Define active and passive attacks. **(04 Marks)**
   c. Explain two major kinds of cryptographic algorithms. **(10 Marks)**

8 a. Discuss some of the design choices for providing QoS support in adhoc networks. **(06 Marks)**
   b. Describe briefly the ticket based QoS routing protocol used in adhoc wireless network.
   (06 Marks)
   c. Explain QoS enabled adhoc on-demand distance vector routing protocol. **(08 Marks)**

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10CS842

Eighth Semester B.E. Degree Examination, June/July 2017
Software Testing

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1   a.   Explain the perspective testing definitions of the following:
          i) Errors   ii) Fault   iii) Failure
          iv) Incident   v) Test   vi) Test case
          and draw the flow diagram of a testing life cycle.   **(10 Marks)**
     b.   Explain in details about functional testing and structural testing.   **(10 Marks)**

2   a.   Explain about equivalence class testing with respect to:
          i) Weak normal   ii) Strong normal
          iii) Weak robust   iv) Strong robust   **(04 Marks)**
     b.   With examples, explain boundary value analysis with respect to:
          i) Generalizing boundary value
          ii) Limitations of boundary value   **(08 Marks)**
     c.   Explain test cases for the triangle problem with respect to decision table based testing with
          examples.   **(08 Marks)**

3   a.   Explain in details about McCabe's basis path method using graph theory.   **(10 Marks)**
     b.   Explain about slice based testing in a data flow testing.   **(10 Marks)**

4   a.   Draw the display screens of both Simple Automatic Teller Machine (SATM) terminal and
          built with fifteen screens for the SATM system.   **(10 Marks)**
     b.   Explain about decomposition based integration with respect to integration testing. **(10 Marks)**

PART – B

5   a.   Explain about three basic concept are derived from functional strategies for thread testing in
          a system testing.   **(10 Marks)**
     b.   Explain about client/server testing with respect to interaction testing.   **(10 Marks)**

6   a.   Draw the block diagram of relation of verification and validation activities with respect to
          artifacts produced in a software development project.   **(10 Marks)**
     b.   Illustrate the relation among dependability properties in a test analysis within a software
          process.   **(10 Marks)**

7   a.   Explain about assumptions in fault-based testing and mutation analysis terminology.
                                                                                       (10 Marks)
     b.   Explain in details about: i) Scaffolding,   ii) Test oracles.   **(10 Marks)**

8   Write short notes on the following:
     a.   Quality and process
     b.   The quality team
     c.   Organizing documents
     d.   Test design specification documents.   **(20 Marks)**

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