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10IS81

Eighth Semester B.E. Degree Examination, June/July 2015
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, with the help of neat block diagram of ABC (Architecture Business Cycle). Explain in detail the different activities which are involved in creating a software architecture? **(12 Marks)**

b. Write short notes on:
i) Architectural patterns
ii) Reference model
iii) Reference architectures. **(08 Marks)**

2 a. Explain in detail about pipes and filters architectural style with types (invariants), advantages and disadvantages. **(10 Marks)**

b. Explain in brief about KWIC (Keyword in Context) problem with abstract data types and implicit invocation styles to implement solutions. **(10 Marks)**

3 a. What are the qualities of system? Explain modifiability general scenario? **(10 Marks)**

b. What do you mean by tactics? Explain the availability tactics with a neat diagram. **(10 Marks)**

4 a. Briefly explain pipes and filters architectural pattern benefits. **(08 Marks)**

b. Define Blackboard architectural pattern. Briefly explain the steps used to implement the blackboard pattern. **(08 Marks)**

c. Write a note on HEARSAY-II system. **(04 Marks)**

PART – B

5 a. Define Broker architectural pattern. Explain types of participating components which comprises it. **(10 Marks)**

b. Explain with neat diagram, the dynamic scenarios of model view controller (MVC)? **(10 Marks)**

6 a. What are the steps involved in implementing microkernel system? **(12 Marks)**

b. What are the benefits and liabilities of reflection architectural patterns? **(08 Marks)**

7 a. Discuss 5 steps in implementing Master-Slave pattern. **(10 Marks)**

b. Discuss briefly implementation of whole-part-structure. **(08 Marks)**

c. Mention benefits of proxy design pattern. **(02 Marks)**

8 a. Explain with neat diagram evolutionary delivery life cycle model. **(08 Marks)**

b. What are the suggested standard organization points for interface documentation? **(12 Marks)**

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10CS82

Eighth Semester B.E. Degree Examination, June/July 2015
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. List any five circumstances, when the simulation is the appropriate tool and when it is not. **(10 Marks)**

b. Explain the steps in a simulation study, with the flow chart. **(10 Marks)**

2 a. Explain the following:
i) System ii) Event list iii) Entity iv) Event. **(04 Marks)**

b. Write the flow chart with respect to single channel queue:
i) Execution of the arrival event
ii) Execution of the departure event. **(06 Marks)**

c. One company uses 6 trucks of haul manganese ore from kolar to its industry. There are two loaders, to load each truck. After loading, a truck moves to the weighing scale to be weighed. The queue discipline is FIFO. When it is weighed, a truck travels to the industry and returns to the loader queue. The distribution of loading time, weighing time and travel time are as follows:

Loading time:	10	5	5	10	15	10	10
Weigh time:	12	12	12	16	12	16	
Travel time:	60	100	40	40	80		

Depict the simulation table and estimate the loader and scale utilization. Assume 5 trucks are at the loaders and one is at the scale, at time '0'. Stopping time $T_E = 76$ min. **(10 Marks)**

3 a. Explain discrete random variable and continuous random variable with example. **(08 Marks)**

b. Explain the following discrete distribution:
i) Binomial distribution ii) Poisson distribution. **(06 Marks)**

c. Explain the following continuous distribution:
i) Uniform distribution ii) Exponential distribution. **(06 Marks)**

4 a. Explain queue behavior and queue discipline and list queuing notation for parallel server systems. **(12 Marks)**

b. What is network of queue? Mention the general assumption for a stable system with infinite calling population. **(08 Marks)**

PART – B

5 a. Explain combined linear congruential generator. **(06 Marks)**

b. Explain inverse-transform technique of producing random variates for
i) Exponential distribution ii) Weibull distribution. **(08 Marks)**

c. Generate three Poisson variates with mean $\alpha = 0.2$.
[Random number : 0.4357, 0.4146, 0.8353, 0.9952, 0.8004]. **(06 Marks)**

6 a. The sequence of numbers 0.44, 0.81, 0.14, 0.05, 0.93 has been generated. Use the Kolmogonov-Smirnov test with $\alpha = 0.05$ to determine if the hypothesis that the numbers are uniformly distributed in the interval [0, 1] can be rejected. Compare F(x) and $S_N(x)$ on a graph. [N = 5, $D_{0.05} = 0.565$]. **(10 Marks)**

b. Explain chi-square goodness of fit test. Apply it to Poisson assumption with $\alpha = 3.64$. Data size = 100 and observed frequency O_i = 12, 10, 19, 17, 10, 8, 7, 5, 5, 3, 3, 1] $\left[\chi^2_{0.05,5} = 11.1\right]$. **(10 Marks)**

7 a. What are pseudo random numbers? What are the problems that occur while generating pseudo random number? **(06 Marks)**

b. Enlist the steps involved in development of a useful model of input data and number of ways to select input models without data. **(08 Marks)**

c. List any 6 suggested estimators for distributions often used in simulation. **(06 Marks)**

8 a. Explain with a neat diagram, model building, verification and validation. **(10 Marks)**

b. Explain the iterative process of calibrating a model. **(10 Marks)**

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10CS/IS834

Eighth Semester B.E. Degree Examination, June/July 2015

Network Management Systems

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Define Network Management? Explain Network management goals and functions as defined by ISO. **(10 Marks)**
b. Explain IBM system network architecture model. **(06 Marks)**
c. What are the limitations of current network management system? **(04 Marks)**

2 a. Explain the different perspectives of managed objects with examples. **(10 Marks)**
b. What is basic encoding rule (BER)? Explain. Using BER encode the data in TLV format defined as OBJECT IDENTIFIER (UNIVERSAL 6) of a value {43 6 1}. **(05 Marks)**
c. Discuss the salient features of various network management standards. **(05 Marks)**

3 a. With a neat diagram, explain SNMP network management architecture. **(10 Marks)**
b. What are the different defined data types in SNMP? Briefly explain their usage. **(06 Marks)**
c. Explain SNMP proxy server organization model. **(04 Marks)**

4 a. Discuss any three MIB – Groups in detail. **(10 Marks)**
b. Define and explain SNMP access policies in SNMP management. **(10 Marks)**

PART – B

5 a. With a neat sketch, explain the RMON1 groups and functions. **(10 Marks)**
b. Explain clearly the RMON token ring groups and its Tables. **(10 Marks)**

6 a. Explain the virtual path – virtual circuit with an example. **(08 Marks)**
b. Describe M_4 interface. **(06 Marks)**
c. Discuss the generic troubles in ATM network elements. **(06 Marks)**

7 a. Describe ADSL encoding and ADSL channeling schemes. **(10 Marks)**
b. Explain the rule based reasoning and model based reasoning correlation techniques used to isolate and localize faults in network. **(10 Marks)**

8 Write short notes on
a. Fault management
b. Policy management
c. Security management
d. Performance management. **(20 Marks)**

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10CS/IS835

Eighth Semester B.E. Degree Examination, June/July 2015

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 characteristics of viable security policies. **(10 Marks)**
b. Discuss the components of sample issue specific policy. **(10 Marks)**

2 a. Explain the dual homed host firewall. **(10 Marks)**
b. Define firewall and explain all the firewall rules. **(10 Marks)**

3 a. Explain the different types of IDP systems. **(10 Marks)**
b. Discuss measuring effectiveness of IDPs. **(10 Marks)**

4 a. With an example, explain vernam cipher technique for encrypting the plaintext. **(10 Marks)**
b. Explain the different attacks on crypto system. **(10 Marks)**

PART – B

5 a. Discuss the different active attacks. **(10 Marks)**
b. Explain the environmental shortcomings of Kerberos V_4. **(05 Marks)**
c. With a diagram, explain the X·509 certificate format. **(05 Marks)**

6 a. Using figure, explain how authentication is performed in PGP. **(10 Marks)**
b. Explain the S|MIME functionality. **(05 Marks)**
c. Explain the MIME content types. **(05 Marks)**

7 a. With a diagram, explain basic combination of security associations. **(10 Marks)**
b. Explain the ISAKMP message exchange types. **(10 Marks)**

8 a. Explain the handshake protocol action in SSL **(10 Marks)**
b. Explain the key features of SET. **(05 Marks)**
c. With a figure, discuss the dual signature construction. **(05 Marks)**

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Eighth Semester B.E. Degree Examination, June/July 2015
AD-HOC Networks

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. List and explain different applications of Ad-hoc wireless network. **(05 Marks)**
b. Explain the issues that makes wireless sensor network a distinct category of ad-hoc wireless networks. **(05 Marks)**
c. Discuss the major issues, one need to consider while designing a MAC protocol for Adhoc wireless network. **(10 Marks)**

2 a. What are the design goals to be met while designing a MAC protocol for Adhoc networks? **(06 Marks)**
b. Explain the classification of MAC protocols. **(04 Marks)**
c. Explain with example, a working principle of Five-Phase-Reservation Protocol (FPRP). **(10 Marks)**

3 a. Mention the factors to be considered while making scheduling decisions. **(04 Marks)**
b. Explain the operation of Distributed Priority Scheduling (DPS) protocol. **(08 Marks)**
c. Explain the working principle of multi-channel MAC (MMAC) protocol. **(08 Marks)**

4 a. What are the characteristics of an ideal routing protocol for adhoc wireless network? **(04 Marks)**
b. Explain the classification of routing protocols. **(08 Marks)**
c. Explain the working principle of wireless routing protocol. **(08 Marks)**

PART – B

5 a. Explain zone based hierarchical link state routing protocol with example. **(10 Marks)**
b. Explain the operation of Fisheye State Routing Protocol (FSRP). **(10 Marks)**

6 a. Explain the issues in designing transport layer protocols for adhoc wireless networks. **(10 Marks)**
b. With a neat diagram, explain the operation of adhoc-TCP (ATCP) protocol. **(10 Marks)**

7 a. Discuss the requirements and challenges in security provisioning for adhoc wireless networks. **(10 Marks)**
b. What is key management? Explain symmetric key algorithm with example. **(10 Marks)**

8 a. Explain the issues in providing QoS in adhoc wireless network. **(10 Marks)**
b. Discuss the working principle of Ticket-based QoS routing protocol. **(10 Marks)**

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10CS842

Eighth Semester B.E. Degree Examination, June/July 2015
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. With neat diagram, explain the SATM system. **(10 Marks)**
b. Briefly explain about functional testing and structural testing. **(10 Marks)**

2 a. Explain about decision tables, construct decision table of triangle problem, it accepts three integer a, b and c as three sides inputs equilateral, scalene, isocelis or not a triangle and satisfy the following conditions $a < b + c$, $b < a + c$ and $c < a + b$? **(10 Marks)**
b. With example, explain boundary value analysis and mention its limitations. **(04 Marks)**
c. Differentiate between weak robust equivalence class testing and strong robust equivalence class testing. **(06 Marks)**

3 a. Explain about du-path test coverage matrices with data flow diagram. **(05 Marks)**
b. Explain about test coverage matrices. **(10 Marks)**
c. Explain McCabe's basis path method. **(05 Marks)**

4 a. With neat diagram, explain the traditional view of testing levels of waterfall life cycle and rapid prototyping life cycle. **(10 Marks)**
b. Explain TOP – DOWN integration and bottom – up integration with suitable example. **(10 Marks)**

PART – B

5 a. Explain about client /server testing. **(10 Marks)**
b. Explain about functional strategies for thread testing. **(10 Marks)**

6 a. With neat diagram, explain the validation and verification activities check work product against actual user requirements. **(10 Marks)**
b. Explain the following :
i) Sensitivity
ii) Redundancy
iii) Visibility
iv) Restriction
v) Partition. **(10 Marks)**

7 a. Describe the test oracles with a neat diagram. **(10 Marks)**
b. Explain the fault based adequacy criteria. **(10 Marks)**

8 Write a note on :
a. Quality goal
b. Test and analysis strategies and plan
c. Risk management
d. Monitoring the process. **(20 Marks)**

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