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Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Software Architectures

Time: 3 hrs.   Max. Marks:100

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

PART – A

1. a. 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. **(10 Marks)**
   b. Write short notes on:
      i) Architectural patterns
      ii) Reference model
      iii) Reference architectures. **(06 Marks)**
   c. Why is software architecture important? **(04 Marks)**

2. a. Discuss the invariants, advantages and disadvantages of pipes and filter architecture style. **(10 Marks)**
   b. Explain the brief about KWIC (Keyword in context) with shared data solution. **(10 Marks)**

3. a. What is quality attribute scenario? List the parts of such a scenario. Distinguish between availability scenario and modifiability scenario. **(10 Marks)**
   b. What do you mean by tactics? Explain the availability tactics with a neat diagram. **(10 Marks)**

4. a. Discuss the guidelines involved in the implementation of pipes and filter architecture. **(10 Marks)**
   b. Discuss in brief the pattern. From mud-to structure. **(10 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 the microkernel system? **(10 Marks)**
   b. Explain the dynamic scenarios of reflection with neat diagram. **(10 Marks)**

7. Write short notes on:
   a. Design pattern
   b. Master-slave pattern
   c. Whole-part pattern
   d. Proxy pattern. **(20 Marks)**

8. a. Explain with neat diagram evolutionary delivery life cycle model. **(08 Marks)**
   b. White a note on creating a skeletal system. **(06 Marks)**
   c. What are the uses of architectural documentation? **(06 Marks)**

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Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
System Modeling and Simulation

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a.   With a neat flow diagram, explain the steps in simulation study.   **(10 Marks)**

     b.   A small grocery store has one checkout counter. Customer arrives at this checkout counter at random from 1 to 8 minutes apart. Each possible value of interarrival time has the same probabilities of occurrences. The service times vary from 1 to 6 minutes with the probabilities shown below :

Service time	1	2	3	4	5	6
Probability	0.10	0.20	0.30	0.25	0.10	0.05

        Simulate the arrival and service of 6 customers and estimate :
        i)   Average waiting time
        ii)   Average service time
        iii)   Probability of idle server.
        Note : Random digits for interarrival time : 913, 727, 015, 948 and 309
        Random digits for service time : 84, 10, 74, 53, 17 and 76.   **(10 Marks)**

2   a.   Write and explain event scheduling /time advance algorithm with an example.   **(10 Marks)**

     b.   What is world view? Briefly explain different world views.   **(10 Marks)**

3   a.   Explain the following continuous distributions :
        i) Exponential distribution   ii) Normal distribution.   **(10 Marks)**

     b.   Given the following distribution : Normal (10, 4), uniform(4, 16) triangular(4, 10, 16). Find the probability that $6 < x < 8$ for each of the distribution note :
        $\phi(-1) = 01587$; $\phi = (2) = 0.0228$.   **(06 Marks)**

     c.   Forty percent of the assembled ink-jet printers are rejected at the inspection station.
        i)   Find the probability that the first accepted ink-jet printer is the third one inspected.
        ii)   Determine the probability that the third printer inspected if the second acceptable printer.   **(04 Marks)**

4   a.   Explain in detail the characteristics of queuing system.   **(10 Marks)**

     b.   State and explain the Kendal's notation of queuing system.   **(05 Marks)**

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

PART – B

5   a.   Discuss the properties that an ideal random number generation routine should satisfy.   **(05 Marks)**

     b.   Generate five numbers of a random sequence using multiplicative congrential method with $x_0 = 2$, $a = 13$ and $m = 64$.   **(05 Marks)**

     c.   Give the steps to derive an expression for generating random variates that if uniformly distributed on the interval [a, b] using inverse transformation technique. Generate exponential random variates with mean 1 for the following random numbers 0.1306, 0.0422, 0.6597, 0.7965, 0.7696.   **(10 Marks)**

6 a. Explain the steps in the development of a useful model of input data.   **(12 Marks)**

    b. Recorder pertaining to the monthly number of job related injuries at an underground coalmine were being studied by federal agency. The values for the past 100 months were as following :

Injuries per month	0	1	2	3	4	5	6
Frequency of occurrence	35	40	13	6	4	1	1

    Apply the chi-square test to these data to left the hypothesis that the underlying distribution is Poisson. Use the level of significance $\chi^2_{\alpha, k-s-1} = 5.99$ **(08 Marks)**

7 a. Why is optimization via simulation difficult? What compromises are normally made during that process?   **(10 Marks)**

    b. Explain the following :
      i) Point estimation
      ii) Confidence interval estimation.   **(10 Marks)**

8 a. With a neat diagram, explain model building, verification and validation.   **(08 Marks)**

    b. Explain the three step approach for validation process as formulated by Nayler and finger?   **(12 Marks)**

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Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Information Network Security

Time: 3 hrs.   Max. Marks:100

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

PART – A

1	a.	Define policy and explain specific security policy.	(10 Marks)
	b.	Explain the characteristics of viable security policies.	(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.	What is IDPS? Explain the advantages and disadvantages of NIDPS.	(10 Marks)
	b.	Explain the following terms in detail:	

        i)   Honey pots
        ii)   Honey Nets
        iii)   Padded cell system.   (10 Marks)

4	a.	Explain Vernam Cipher with suitable example.	(10 Marks)
	b.	List and explain the attacks on a cryptosystem.	(10 Marks)

PART – B

5	a.	Explain the different authentication procedures in X.509 certificate.	(10 Marks)
	b.	Explain briefly OSI security architecture.	(10 Marks)
6	a.	Explain the procedure along with diagram to implement confidentiality in PGP.	(10 Marks)
	b.	Explain the different MIME content types.	(10 Marks)
7	a.	Explain the IP security architecture in detail.	(10 Marks)
	b.	Describe how authentication header is implemented in transport and tunnel modes with a neat diagram.	(10 Marks)
8	a.	Explain the handshake protocol action in SSL.	(10 Marks)
	b.	Explain the different alert codes of TLS protocols.	(10 Marks)

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Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019

Adhoc Networks

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Explain briefly applications of adhoc networks.   **(10 Marks)**
   b. List any five differences between cellular network and adhoc network.   **(05 Marks)**
   c. Explain briefly any five major challenges that routing protocol faces.   **(05 Marks)**

2 a. List and briefly explain design goals of MAC protocol for adhoc wireless network.**(10 Marks)**
   b. Explain briefly floor acquisition multiple access protocol and MACA with piggy backed reservation.   **(10 Marks)**

3 a. Explain briefly distributed Laxity based priority scheduling scheme.   **(10 Marks)**
   b. Explain briefly MAC protocol using directional antennas.   **(10 Marks)**

4 a. Explain briefly Destination Sequenced Distance Vector routing protocol (DSDV).   **(12 Marks)**
   b. List and explain categories based on which routing protocol are classified.   **(08 Marks)**

PART – B

5 a. Explain briefly power aware routing metrics.   **(10 Marks)**
   b. Explain zone based hierarchical link state routing protocol.   **(10 Marks)**

6 a. Explain briefly why TCP does not perform well in adhoc wireless networks.   **(10 Marks)**
   b. Give comparison of TCP solution for Adhoc wireless network with respect to various TCP protocols.   **(10 Marks)**

7 a. List and explain network layer attacks.   **(10 Marks)**
   b. Explain briefly symmetric and asymmetric key cryptography in adhoc networks.   **(10 Marks)**

8 a. Explain briefly issues and challenges in providing QoS in adhoc networks.   **(10 Marks)**
   b. Explain briefly classification of QoS solution in adhoc networks.   **(10 Marks)**

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