

USN

--	--	--	--	--	--	--	--	--	--

10CS/IS81

Eighth Semester B.E. Degree Examination, Jan./Feb. 2021
Software Architecture

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 how the software architectures affect the factors of influence. Explain ABC. (08 Marks)
b. Explain the technical importance of software architectures. Further elaborate on the fact that architecture is the vehicle for stakeholder communication. (07 Marks)
c. What is an allocation structure as applied to software architecture? Explain the three allocation structures in practice. (05 Marks)
- 2 a. Define the following with an example:
(i) Controlled variable (ii) Set point (iii) Open loop system
(iv) Feedback control system (v) Feed forward control system (10 Marks)
b. State the problem of Key Word In Context (KWIC). Propose implicit invocation and pipes and filters style to implement a solution for the same. (10 Marks)
- 3 a. Define a quality attribute scenario. List the parts of such a scenario. Differentiate between availability and modifiability scenarios. (08 Marks)
b. Explain how faults are detected and prevented. (08 Marks)
c. Write short notes on Design Time Tactics. (04 Marks)
- 4 a. With a neat diagram, explain the CRC cards for the pipes of filters architecture pattern. List the components of a pipe and filters architectural pattern. (08 Marks)
b. Explain the forces that influence the solutions to problems based on blackboard pattern. (07 Marks)
c. Write a short note on HEARSAY-II system. (05 Marks)

PART – B

- 5 a. What is the need of proxies and bridge components in a broker system? Explain. (06 Marks)
b. With a suitable diagram, explain the possible dynamic behaviour of MVC pattern. (09 Marks)
c. What are limitations of PAC pattern? (05 Marks)
- 6 a. List and explain the participating components of microkernel system. (10 Marks)
b. What are the uses of reflection pattern? (10 Marks)
- 7 a. List and explain the benefits of Master slave design pattern. (06 Marks)
b. List and explain the steps to implement a whole-part structure. (08 Marks)
c. With a neat diagram, explain the typical dynamic scenario of proxy structure. (06 Marks)
- 8 a. List the steps of ADD. (04 Marks)
b. Write a note on creating a skeletal system. (06 Marks)
c. What are the uses of architectural documentation? Bring out the concept of view as applied to architectural documentation. (10 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42-8=50, will be treated as malpractice.

USN

--	--	--	--	--	--	--	--	--	--

10CS82

Eighth Semester B.E. Degree Examination, Jan./Feb. 2021

System Modeling and Simulation

Time: 3 hrs.

Max. Marks:100

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

1.
 - a. List any five circumstances, when simulation is appropriate tool and when it is not an appropriate tool. (10 Marks)
 - b. Briefly explain areas of application of simulation. (05 Marks)
 - c. Mention different types of simulation models with examples. (05 Marks)
2.
 - a. Describe queueing system with respect to arrival and service mechanism, system capacity and queue discipline. (06 Marks)
 - b. Write the flow diagram for service just completed and unit entering system flow diagram. (06 Marks)
 - c. The newsstand buys the papers for 33 cents each and sells them for 50 cents each. Newspapers not sold at the end of the day are sold as scrap for 5 cents each. Newspapers can be purchased in bundles of 10. Thus, the newsstand can buy 50, 60 and so on. There are three types of news days: "good", "fair" and "poor, they have the probabilities 0.35, 0.45 and 0.20 respectively. The distribution of newspapers demanded on each of these days is given in Table.1. Simulate this system for 6 days and recording profit from sales each day for purchase of 70 news papers.

Demand Probability Distribution			
Demand	Good	Fair	Poor
40	0.03	0.10	0.44
50	0.05	0.18	0.22
60	0.15	0.40	0.16
70	0.20	0.20	0.12
80	0.35	0.08	0.06
90	0.15	0.04	0.00
100	0.07	0.00	0.00

Table.1 : Distribution of News papers demanded per day

Random digits for type of news day: 58, 17, 21, 45, 43, 36

Random digits for demand: 93, 63, 31, 19, 91, 75

(08 Marks)

3.
 - a. Explain event Scheduling Algorithm. (08 Marks)
 - b. Consider a single server queueing system with arrival and service details as:

Inter arrival time	1	1	6	3	7	5	2	4	1	...
Service times	4	2	5	4	1	5	4	1	4	...

 Prepare a table using event scheduling algorithm. Stop simulation when clock reaches 6 mins. Find total busy time and maximum queue length. (12 Marks)
4.
 - a. Explain the following continuous distribution:
 - (i) Uniform distribution
 - (ii) Exponential distribution
 (10 Marks)
 - b. Explain the characteristics of queueing system. (10 Marks)

PART – B

- 5 a. Write the properties of random numbers and the number of important consideration for generating random numbers. (10 Marks)
b. Explain linear congruential method and combined linear congruential method for generating random number. (10 Marks)
- 6 a. Explain the steps in the development of useful input model. (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 $O_i = 12, 10, 19, 17, 10, 8, 7, 5, 5, 3, 3, 1, [x_{0.05,5}^2 = 11.1]$. (10 Marks)
- 7 a. Explain output analysis for terminating simulation. (10 Marks)
b. Write short notes on:
(i) Point estimation
(ii) Confidence-Interval Estimation (10 Marks)
- 8 a. With a neat diagram, explain model building, verification and validation. (10 Marks)
b. Explain the iterative process of calibrating a model. (10 Marks)

--	--	--	--	--	--	--	--	--	--

Eighth Semester B.E. Degree Examination, Jan./Feb.2021
Information and Network Security

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. What is policy? With a block diagram, explain relationship among policies, standards, guidelines, procedures and practices. (10 Marks)
- b. Describe an EISP and its components. (10 Marks)
- 2 a. Briefly explain the best practices for firewall use. (10 Marks)
- b. Write a short note on : (i) RADIUS (ii) TACACS. (10 Marks)
- 3 a. What is IDPS? Explain IDPS terminology. (10 Marks)
- b. Explain the features of HIDS. List merits and demerits of the same. (10 Marks)
- 4 a. Define the following terms:
 - (i) Algorithm
 - (ii) Key
 - (iii) Plain text
 - (iv) Stegnography.
 - (v) Work factor. (10 Marks)
- b. Explain Vernam Cipher method with an example. (10 Marks)

PART – B

- 5 a. What is security attack? Discuss various categories of active attacks. (10 Marks)
- b. Describe briefly X.800 security service. (10 Marks)
- 6 a. Explain different components of PGP message. (10 Marks)
- b. Explain different MIME content types. (10 Marks)
- 7 a. With a neat diagram, explain IP security architecture. (10 Marks)
- b. Discuss briefly ESP packet format. (10 Marks)
- 8 a. Explain the parameters that define session state and connection state in SSL. (10 Marks)
- b. What are the services provided by SSL record protocol? (10 Marks)

* * * * *

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Eighth Semester B.E. Degree Examination, Jan./Feb.2021
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. Explain the major issues in Adhoc Networks while designing MAC protocol. (08 Marks)
- b. Explain any four applications of Adhoc wireless network. (06 Marks)
- c. Explain the major issues in Adhoc Wireless Internet. (06 Marks)
- 2 a. Explain MARCH protocol for Adhoc Wireless Network. (10 Marks)
- b. Explain with example the working of five phase reservation protocol. (10 Marks)
- 3 a. Explain distributed priority scheduling mechanism with neat diagram in adhoc wireless network. (10 Marks)
- b. Explain directional busy tone based MAC protocol. Write the advantages. (10 Marks)
- 4 a. Explain the classification of Routing protocols. (08 Marks)
- b. Explain cluster-head Gateway switch Routing protocol in Adhoc networks. (08 Marks)
- c. What are the ideal characteristics of Routing protocol for Adhoc networks? (04 Marks)

PART – B

- 5 a. Explain zone-based hierarchical link state routing protocol with neat diagram. (10 Marks)
- b. Explain the power aware routing metrics in adhoc networks. (10 Marks)
- 6 a. Explain the issues and design goals of transport layer protocol for adhoc wireless networks. (10 Marks)
- b. Discuss the operation of feedback based TCP with a suitable example. (10 Marks)
- 7 a. Explain different attacks pertaining to network layer. (10 Marks)
- b. Explain symmetric key algorithm. (05 Marks)
- c. Explain security-aware adhoc routing protocol. (05 Marks)
- 8 a. Give layer wise classification of existing QoS solution. (08 Marks)
- b. Write notes on:
 - (i) Real time traffic support in Adhoc Network.
 - (ii) Cluster TDMA. (12 Marks)

* * * * *

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.