

Note : Write answers of both the sections in separate sheets.

S E C T I O N - I

- Q-1[a]:** What is Distributed System? Explain advantages and disadvantages of Distributed System over other Operating System. [4]
- [b]:** Compare Network Operating System, True Distributed system and Multiprocessor Time sharing system. [4]
- [c]:** List the design issues of a distributed system. Explain any one of them. [4]
- Q-2[a]:** Explain the importance of synchronization in a distributed system. [3]
- [b]:** Explain the processor pool model in detail. [5]
- [c]:** Discuss the file service interface in detail. [3]
- Q-3[a]:** Define: pipelining, data parallelism and speedup. Differentiate pipelining and parallelism. [4]
- [b]:** Explain criteria used for evaluating processor organizations. Explain any one network in detail. [4]
- [c]:** Write short note on odd even transposition sort. [4]

S E C T I O N - II

- Q-4[a]:** Write the principal entities, attributes and activities to be considered if you have to simulate the operation of super market. Draw a model for this. Whether supermarket is a closed system? How / Why? [5]
- [b]:** What is system simulation? How do simulation and analytic methods differ? [2]
- [c]:** What is continuous system simulation? Explain it with suitable example. [5]
- Q-5[a]:** Discuss Monte Carlo method. [4]
Explain how can you evaluate the definite integral using it.
- [b]:** Explain the types of system study in detail. [4]
- Q-6[a]:** Why validation of a model is required? Discuss the validation of first-time model. [4]
- [b]:** Write the classification of simulation languages giving at least one example of each [3]
- [c]:** Write note on : [any two] [8]
- (i)** Rejection method
 - (ii)** Distributed Lag model
 - (iii)** Types of model

Department of Computer Science
PS05CMCA02 (Quiz - 1)

- Q-1: Write the principal entities, attributes and activities of a post office. [3]
- Q-2: Define:
(i) Simulation
(ii) Open system
- Q-3: Write the differences between fixed-time step model and event-to-event model. [2]
- Q-4: What is continuous system simulation? Explain it with example. [3]

- (A) Continuous system simulation is a process of simulating a system which is in continuous state. It is also known as dynamic simulation. [p]
- (B) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (C) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [c]
- (D) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (E) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (F) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (G) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (H) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (I) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (J) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (K) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (L) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (M) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (N) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (O) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (P) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (Q) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (R) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (S) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (T) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (U) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (V) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (W) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (X) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (Y) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]
- (Z) In this type of simulation, the system is simulated by taking into account all the events occurring in the system. [p]

Department of Computer Science
Sardar Patel University
M.C.A. (Fifth Semester) Internal Test
MCA-503 Distributed Systems, Parallel Computing and Simulation
Wednesday, 21st September, 2011

Time : 2 Hrs.

Total Marks : 30

1.(A) Answer the following questions in brief (ANY THREE) : [6]

- (i) Write the advantages of distributed systems over personal computers.
- (ii) What are the advantages of using diskless workstations in a distributed system ?
- (iii) Write the salient characteristics of the processor pool model for organizing processors in a distributed system.
- (iv) Write the important features of the microkernel design of a distributed operating system.
- (v) Which techniques are useful to optimize the performance of a distributed system ? What is the meaning of fine-grained parallelism ?

[9]

(B) Explain (ANY TWO)

- (i) Graph-theoretic deterministic algorithm.
- (ii) Registry-based algorithm for finding and using workstations.
- (iii) Switched multicomputers.

2.(A) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a super market. [3]

(B) Differentiate :

- (i) Analog simulation and Digital simulation
- (ii) Closed system and Open system

3.(A) Define :

- (i) Simulation
- (ii) Stochastic activities

[2]

(B) Discuss the simulation of discrete system.

Write the advantages and disadvantages of fixed-time step model and event-to-event model.

[4]

(C) Discuss why physical generators of random numbers are not suitable for simulation experiments on computer. Name the methods used to generate non-uniformly distributed random numbers.

[2]

Time : 2 hrs.

Max. Marks : 30

Note : Write the answers to both the sections in separate answer sheets.

SECTION - I

Q-1[a]: Answer the following questions in brief (ANY THREE) : [6]

- (i) Write the advantages of distributed systems over centralized systems.
- (ii) List different kinds of transparencies in a distributed system. Explain any one of them.
- (iii) Write the advantages of microkernel design over monolithic kernel design.
- (iv) Define : Logical clock, physical clock.
- (v) What are the advantages of using diskless workstations in a distributed system ?

[b]: Explain (ANY TWO); [9]

- (i) Graph-theoretic deterministic algorithm.
- (ii) Upload/download model versus remote access model.
- (iii) Registry-based algorithm for finding and using workstations.

SECTION - II

Q-3[a]: Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a post office. [2]

3[b]: Differentiate : [4]

- (i) Fixed time step and event-to-event model
- (ii) Closed system and Open system

Q-4[a]: What is system simulation? How do simulation and analytic methods differ? [2]

[b]: What do you mean by continuous system simulation? Discuss it with suitable example. [4]

[c]: Write short note on any ONE : [3]

- (i) Types of model
- (ii) Rejection method

% % % % % % % % % %

SARDAR PATEL UNIVERSITY

M.C.A.(Fifth Semester) Examination

Dept of CSE, MCA, (M.Tech), Distributed Systems, Parallel Computing and Simulation

Wednesday, 19th November, 2014

100-1100 M. to 2:00 P.M.

Total Marks: 70

- Q. Answer the following questions in brief (ANY SEVEN) : [14]

- (i) List different kinds of transparencies in a distributed system. Explain any one of them.

(ii) Write the advantages of microkernel design over monolithic kernel design.

- (iii) What are the advantages of using distributed workstations in a distributed system?
- (iv) Write the heuristic used for processor allocation in a centralized algorithm. What is the meaning of a negative score in a usage-freedom entry?
- (v) Write the differences between Activity simulation and Discrete simulation.
- (vi) Write a short note on roulette method.
- (vii) Define endogenous activities and exogenous activities.
- (viii) Write the differences between system analysis and system design.
- (ix) Discuss the cobweb model in brief.

Q3.(A) Define a true distributed system. List its main characteristics. [6]

(B) Describe the advantages of distributed systems over independent PCs. [6]

OR

(B) List the key design issues for distributed systems. Explain any two of them. [6]

Q4.(A) Explain the registry-based algorithm for finding and using workstations. [6]

(B) Describe the graph-theoretic deterministic algorithm for processor allocation. [6]

OR

(B) List the criteria used for evaluating processor organizations. Evaluate a four-dimensional hypercube in view of these criteria. [6]

Q5.(A) (i) Define Simulation. Write the advantages of it. [6]

(ii) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a post office. [6]

(B) Discuss the simulation of discrete system taking suitable example. [6]

OR

(B) Discuss the types of model giving atleast one example of each. [6]

Q6.(A) Explain the numerical computation method for continuous models giving example. [6]

(B) Why validation of models is required? Discuss the procedure for validation of model in detail. [6]

OR

(B) Write a note on simulation languages. [6]

#

SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
20th November, 2015

Time: 11.00 A.M. to 2:00 P.M.

Total Marks: 70

1. Select most appropriate option for each of the following questions : 8

- (i) Which system runs on a collection of interconnected machines that do not have shared memory, yet looks to its users like a single computer?
 (A) computer network (B) parallel computer
 (C) distributed system (D) None of these.
- (ii) In which system, the intermachine message delay is large and the data rate is low?
 (A) loosely-coupled (B) tightly-coupled (C) MISD (D) None of these.
- (iii) The Omega network with 512 CPUs and 512 memory modules requires _____ stages.
 (A) 5120 (B) 256 (C) 9 (D) None of these.
- (iv) Which algorithm for processor allocation is concerned with giving each workstation owner a fair share of the computing power?
 (A) Centralized Algorithm (B) Graph-Theoretic Deterministic Algorithm
 (C) Hierarchical Algorithm (D) None of these.
- (v) Which of the following models can only show the values that system attributes take when the system is in balance?
 (A) Analytical model (B) Numerical model
 (C) Static model (D) Dynamic model
- (vi) Which of the following separate the system and system environment?
 (A) Entity (B) Activities (C) Attributes (D) Boundary
- (vii) A _____ is a collection of distinct objects which interact with each other.
 (A) System (B) Simulation (C) Model (D) System state
- (viii) A system for which there is no exogenous activity is said to be _____.
 (A) Open system (B) Closed system
 (C) Classified system (D) None of these

2. Answer the following questions in brief (ANY SEVEN) :

14

- (i) List different kinds of transparencies in a distributed system. Explain any one of them.
- (ii) Explain how do we partition a graph into multiple disjoint subgraphs while applying the graph-theoretic deterministic algorithm.
- (iii) What are the advantages of using diskless workstations in a distributed system?
- (iv) Write the advantages of microkernel design over monolithic kernel design.
- (v) Discuss why physical generators of random numbers are not suitable for simulation experiments on computer. Name the methods used to generate non-uniformly distributed random numbers.

- (vi) Write the differences between Numerical Integration and Continuous system simulation. 6
- (vii) List out different types of models. 6
- (viii) Write the differences between endogenous activities and exogenous activities. 6
- (ix) Write a short note on monte carlo method. 6
- 3.(A) Define a true distributed system. List its main characteristics. 6
- (B) Write a short note on the processor-pool model.. 6
- OR
- (B) Which techniques are useful in improving the performance of a distributed system ? List any four metrics used for measuring the performance of a distributed systems. Distinguish between fine-grained parallelism and coarse-grained parallelism. 6
- 4.(A) Explain the registry-based algorithm for finding and using workstations. 6
- (B) Describe the centralized algorithm for processor allocation. 6
- OR
- (B) List the criteria used for evaluating processor organizations. 6
Evaluate the shuffle-exchange network in view of these criteria.
- 5.(A) (i) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a college. 3
(ii) What do you mean by simulation? Write the advantages of it. 3
- (B) Discuss the simulation of discrete systems. 6
Write the advantages and disadvantages of fixed-time step model and event-to-event model.
- OR
- (B) Discuss types of system study. 6
- 6.(A) Write a note on distributed lag model. 6
- (B) Write the importance of validation of model. Explain the validation of model in detail. 6
- OR
- (B) (i) Explain the steps involved in the process of a simulation study. 3
(ii) Write the classification of simulation languages giving at least one example of each. 3

% % % % % % %

S
SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Internal Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
Wednesday, 24th September, 2014

Time : 2 Hrs.

Total Marks : 30

Note : Answers to the two sections must be written in separate answer-sheets.

S E C T I O N - I

Q-1[A]: Answer the following questions in brief (ANY THREE) : [6]

- (i) Define a true distributed system. List its important features.
- (ii) Write the advantages of distributed systems over independent personal computers.
- (iii) List different kinds of transparencies in a distributed system. Explain any one of them.
- (iv) Write the advantages of microkernel design over monolithic kernel design.
- (v) What are the advantages of using diskless workstations in a distributed system ?

[B] Explain (ANY TWO) : [9]

- (i) Registry-based algorithm for finding and using workstations.
- (ii) Comparative evaluation of three different ways of organizing N CPUs
- (iii) Bus-Based Multiprocessors.

S E C T I O N - II

Q-2[A]: Define: [3]

- (i) Simulation
- (ii) Discrete System Simulation
- (iii) Criticality Index

[B]: What is continuous system simulation? Explain it by taking suitable example. [5]

[C]: Differentiate: [4]

- (i) Analog simulation and Digital simulation
- (ii) Fixed time-step simulation and Event-to-event simulation

[D]: Name the methods used to generate the non-uniformly distributed random numbers. [1]

[E]: Write the advantages of simulation. [2]

% % % % % % %

SARDAR PATEL UNIVERSITY

M.C.A.(Fifth Semester) Retest Examination

PS05CMCA02 Distributed Systems, Parallel Computing and Simulation

Wednesday, 16th September, 2015

Time : 1:30 Hrs.

Total Marks :

Note : Answers to the two sections must be written in separate answer-sheets.

SECTION - I

Q-1[A]: Answer the following questions in brief (ANY THREE) :

- (i) Write the advantages of distributed systems over independent personal computers.
- (ii) Which potential bottlenecks should be avoided by a designer to ensure scalability of distributed systems ?
- (iii) Write the advantages of microkernel design over monolithic kernel design.
- (iv) Define a true distributed system. List its important features.
- (v) What are the advantages of using diskless workstations in a distributed system ?

[6]

[B] Explain (ANY TWO) :

- (i) Registry-based algorithm for locating and using workstations.
- (ii) The workstation model
- (iii) The processor pool model.

[9]

SECTION - II

Q-2[A]: What is Simulation? How do simulation and analytic methods differ? [2]

[B]: What do you mean by continuous system simulation? Discuss it with suitable example. [4]

[C]: Explain the difference between Fixed time step model and event-to-event model with example. [4]

Q-3[A]: Discuss Monte Carlo method.

Explain how can you evaluate the definite integral using it. [3]

[B]: Discuss why physical generators of random numbers are not suitable for simulation experiments on computer. Name the methods used to generate non-uniformly distributed random numbers. [2]

%%%%%%%%%

SARDAR PATEL UNIVERSITY Total
M.C.A.(Fifth Semester) Exam.
Date: 11.12.2018

Total No. of printed pages : 2

**MCA(Fifth Semester) Examination
Distributed Systems, Project**

Wednesday, 19th November 2014
M.

Wednesday, 19th May

W. 1112 November 2012

Q1.

Select most appropriate option for each of the following questions : Total Marks: 70

- (Ans)*
- (iii) What are the advantages of using diskless workstations in distributed system?
 - (iv) Will the heuristic used for processor allocation in a central algorithm. What is the meaning of a negative score in a negative entry?
 - (v) Write the differences between Analog simulation and digital simulation.
 - (vi) Write a short note on monte carlo method.
 - (vii) Define endogenous activities and exogenous activities.
 - (viii) Write the differences between system analysis and system design
 - (ix) Discuss the cobweb model in brief.

Q3.(A) Define a true distributed system. List its main characteristics.
(B) Describe the advantages of distributed systems over independent PCs. [6]

(B) List the key design issues for distributed systems. Explain any two of them. OR [6]

Q4.(A) Explain the registry-based algorithm for finding and using workstations.
(B) Describe the graph-theoretic deterministic algorithm for processor allocation. [6]

(B) List the criteria used for evaluating processor organizations. OR Evaluate a four-dimensional hypercube in view of these criteria. [6]

Q5.(A) (i) Define Simulation. Write the advantages of it.
(ii) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a post office. [3]

(B) Discuss the simulation of discrete system taking suitable example. OR [3]

Q6.(A) Explain the numerical computation method for continuous models giving example. [6]

(B) Why validation of models is required? Discuss the procedure for validation of model in detail. [6]

(B) Write a note on simulation languages. OR [6]

#####

[6]

SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Examination
PS95CMCA02 Distributed Systems, Parallel Computing and Simulation
20th November, 2015

Time: 11:00 A.M. to 2:00 P.M.

Total Marks: 70

1. Select most appropriate option for each of the following questions : 8

- (i) Which system runs on a collection of interconnected machines that do not have shared memory, yet looks to its users like a single computer?
 (A) computer network (B) parallel computer
 (C) distributed system (D) None of these.
- (ii) In which system, the intermachine message delay is large and the data rate is low?
 (A) loosely-coupled (B) tightly-coupled (C) MISD (D) None of these.
- (iii) The Omega network with 512 CPUs and 512 memory modules requires _____ stages.
 (A) 5120 (B) 256 (C) 9 (D) None of these.
- (iv) Which algorithm for processor allocation is concerned with giving each workstation owner a fair share of the computing power?
 (A) Centralized Algorithm (B) Graph-Theoretic Deterministic Algorithm
 (C) Hierarchical Algorithm (D) None of these.
- (v) Which of the following models can only show the values that system attributes take when the system is in balance?
 (A) Analytical model (B) Numerical model
 (C) Static model (D) Dynamic model
- (vi) Which of the following separate the system and system environment?
 (A) Entity (B) Activities (C) Attributes (D) Boundary
- (vii) A _____ is a collection of distinct objects which interact with each other.
 (A) System (B) Simulation (C) Model (D) System state
- (viii) A system for which there is no exogenous activity is said to be _____.
 (A) Open system (B) Closed system
 (C) Classified system (D) None of these

2. Answer the following questions in brief (ANY SEVEN) :

14

- (i) List different kinds of transparencies in a distributed system. Explain any one of them.
- (ii) Explain how do we partition a graph into multiple disjoint subgraphs while applying the graph-theoretic deterministic algorithm.
- (iii) What are the advantages of using diskless workstations in a distributed system?
- (iv) Write the advantages of microkernel design over monolithic kernel design.
- (v) Discuss why physical generators of random numbers are not suitable for simulation experiments on computer. Name the methods used to generate non-uniformly distributed random numbers.

- (vi) Write the differences between Numerical Integration and Continuous system simulation. 6
- (vii) List out different types of models. 6
- (viii) Write the differences between endogenous activities and exogenous activities. 6
- (ix) Write a short note on monte carlo method. 6
- 3.(A) Define a true distributed system. List its main characteristics. 6
- (B) Write a short note on the processor-pool model.. 6
- OR
- (B) Which techniques are useful in improving the performance of a distributed system ? List any four metrics used for measuring the performance of a distributed systems. Distinguish between fine-grained parallelism and coarse-grained parallelism. 6
- 4.(A) Explain the registry-based algorithm for finding and using workstations. 6
- (B) Describe the centralized algorithm for processor allocation. 6
- OR
- (B) List the criteria used for evaluating processor organizations. Evaluate the shuffle-exchange network in view of these criteria. 6
- 5.(A) (i) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a college. 3
- (ii) What do you mean by simulation? Write the advantages of it. 3
- (B) Discuss the simulation of discrete systems. Write the advantages and disadvantages of fixed-time step model and event-to-event model. 6
- (B) Discuss types of system study. 6
- 6.(A) Write a note on distributed lag model. 6
- (B) Write the importance of validation of model. Explain the validation of model in detail. 6
- (B) (i) Explain the steps involved in the process of a simulation study. 3
- (ii) Write the classification of simulation languages giving at least one example of each. 3
- %%%%%

MCA-V CH-10

SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Retest Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
8th September, 2016

Total Marks : 30

Time : 1:30 Hrs.

Note : Answers to the two sections must be written in separate answer-sheets.

SECTION - I

[6]

Q-1[A]: Do as directed (ANY THREE) :

- (i) Define a true distributed system. List its important features.
- (ii) What are the advantages of using diskless workstations in a distributed system ?
- (iii) What do you mean by a write-through snoopy cache?
- (iv) Write the advantages of microkernel design over monolithic kernel design.
- (v) Write the advantages of distributed systems over centralized systems.

[9]

[B] Explain (ANY TWO) :

- (i) Registry-based algorithm for locating and using workstations.
- (ii) The graph-theoretic deterministic algorithm.
- (iii) The processor pool model.

SECTION - II

[3]

Q-2[A]: Define :

- (i) Simulation
- (ii) Model
- (iii) Closed system

[B]: Discuss the simulation of continuous system taking suitable example. [3]

[C]: Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a computer science department. [3]

[4]

Q-3[A]: Differentiate between :

- (i) Static model and Dynamic model
- (ii) Analytic simulation and Digital simulation

[B]: Discuss why physical generators of random numbers are not suitable for simulation experiments on computer. Name the methods used to generate non-uniformly distributed random numbers. [2]

#####

Total No. of printed pages: 2
2016
SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
Time: 11.00 A.M. to 2:00 P.M. 17th November, 2016

Q1. Select most appropriate option for each of the following questions : **Total Marks: 70**

- (i) The Omega network with 256 CPUs and 256 memory modules requires _____ stages.
(A) 2028 (B) 1024 (C) 512 (D) None of these.
- (ii) In which system, the delay experienced when a message is sent from one computer to another is short, and the data rate is high?
(A) loosely-coupled (B) tightly-coupled (C) MISD (D) None of these.
- (iii) Which of the following systems has a single run queue?
(A) Network Operating System (B) Distributed Operating System
(C) Multiprocessor Operating System (D) None of these.
- (iv) Which algorithm for processor allocation is concerned with giving each workstation owner a fair share of the computing power ?
(A) Centralized Algorithm (B) Graph-Theoretic Deterministic Algorithm
(C) Hierarchical Algorithm (D) None of these.
- (v) Which of the following models follow the changes over time that results from the system activities?
(A) Analytical model (B) Numerical model
(C) Static model (D) Dynamic model
- (vi) Consider the following statements about a model:
S1 : Model is the body of information about a system gathered for the purpose of studying the system
S2 : There is no unique model for a system

Which of the following is true?
(A) Only S1 is true (B) Only S2 is true
(C) Both S1 and S2 are true (D) Both S1 and S2 are false
- (vii) In _____, the object is to produce a system that meets some specifications.
(A) System analysis (B) System design
(C) System postulation (D) None of these
- (viii) The activity in which the outcome can be described completely in terms of its input is known as _____.
(A) Endogenous activity (B) Exogenous activity
(C) Deterministic activity (D) Stochastic activity

Q2. Answer the following questions in brief (ANY SEVEN) : **14**

- (i) Write any three features of the microkernel design of a distributed system.
- (ii) What is fine-grained parallelism ?
- (iii) What are the advantages of using diskless workstations in a distributed system?

- 10/16
DS
- (iv) List different kinds of transparencies in a distributed system.
 Explain any one of them.
- (v) Explain the steps involved in the process of a simulation study.
- (vi) Write the differences between static model and dynamic model.
- (vii) Define the terms: Entity and Attribute.
- (viii) Give the differences between Analog simulation & Digital simulation.
- Q3.(A) Define a true distributed system. List its main characteristics. 6
- (B) Describe the advantages of distributed systems over centralized systems. 6
- OR
- (B) List the major design issues for distributed systems. Explain the factors affecting performance of a distributed system. 6
- Q4.(A) Explain the registry-based algorithm for finding and using workstations. 6
- (B) Describe the graph-theoretic deterministic algorithm for processor allocation. 6
- OR
- (B) List the criteria used for evaluating processor organizations. Evaluate a butterfly network in view of these criteria. 6
- Q5.(A) What do you mean by the term simulation? Write the advantages and disadvantages of it. 6
- (B) Discuss the simulation of discrete systems.
 Write differences between fixed-time step model and event-to-event model. 6
- OR
- Q6.(A) (i) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a super store. 6
- (ii) Write a note on Rejection method. 3
- (B) Explain the types of system studies. 3
- (B) (i) Explain Distributed lag model. 3
- (ii) Write the classification of simulation languages giving at least one example of each. 3

SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Internal Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
Saturday, 23rd September, 2017
Time : 1:30 Hrs.

Total Marks : 30

Note : Answers to the two sections must be written in separate answer-sheets.

S E C T I O N - I

Q-1[A]: Answer the following questions in brief (ANY THREE) :

- (i) Define a true distributed system. List its important features.
- (ii) Write the advantages of distributed systems over centralized systems.
- (iii) Write the advantages of using Omega switching networks over crossbar switches.
- (iv) Write the advantages of microkernel design over monolithic kernel design.
- (v) What are the advantages of using diskless workstations in a distributed system ?

[B] Explain (ANY TWO) :

- (i) The workstation model
- (ii) Registry-based algorithm for finding and using workstations.
- (iii) The processor pool model.

S E C T I O N - II

Q-2[A]: Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a post office. [3]

[B]: Define :

- (i) Simulation
- (ii) Deterministic activities

[C]: Differentiate :

- (i) Fixed time step and event-to-event model
- (ii) Closed system and Open system

Q-3[A]: What do you mean by continuous system simulation? Discuss it with suitable example. [4]

[B]: What is a model? Write the categories of models. [2]

%%%%%%%%%

M.C.A.(Fifth Semester) Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
8th November, 2017

Time: 10.00 A.M. to 1:00 P.M.

Total Marks: 70

1. Select most appropriate option for each of the following questions : 8

(i) Write-through snoopy cache in bus-based multiprocessors is used to solve the problem of

- (A) low data transmission speed (B) cache consistency
(C) bus traffic and cache consistency (D) None of these.

(ii) In which system, the intermachine message delay is low and the data rate is high?

- (A) loosely-coupled (B) tightly-coupled (C) SISD (D) None of these.

(iii) Which algorithm for processor allocation is concerned with minimizing total network traffic?

- (A) Up-Down Algorithm (B) Graph-Theoretic Deterministic Algorithm
(C) Hierarchical Algorithm (D) None of these.

(iv) Which of the following systems requires complex algorithms for good software placement?

- (A) Crossbar switch (B) Omega switching network
(C) NUMA machines (D) None of these.

(v) Which of the following models shows the values that system attributes take when the system is in balance?

- (A) Analytical model (B) Numerical model.
(C) Static model (D) Dynamic model

(vi) Which of the following is the principle used in modeling of a system?

- (A) Block-building (B) Accuracy.
(C) Aggregation (D) All of these.

(vii) The outcome of the activity can be described completely in terms of its input is said to be _____ activity.

- (A) deterministic (B) stochastic
(C) exogenous (D) endogenous

(viii) In a network diagram, an edge, which represents only a precedence relationship and not any job in the project is called a _____ activity.

- (A) Slack (B) Dummy
(C) Duplicate (D) Critical

2. Answer the following questions in brief (ANY SEVEN).
- List different kinds of transparencies in a distributed system. Explain any one of them.
 - Write the heuristic used in the up-down algorithm for processor allocation.
 - What are the advantages of using diskless workstations in a distributed system?
 - Write the advantages of microkernel design over monolithic kernel design.
 - Write the advantages of distributed systems over centralized systems.
 - What is simulation? Write the advantages of it.
 - Write the differences between physical model and mathematical model.
 - Define the Monte Carlo method. Write the applications of it.
 - Discuss the importance of computer in simulation.

3.(A) Define a true distributed system. List its main characteristics. 6

(B) Write a short note on workstation model.

OR

(B) List the major design issues for distributed systems. Explain how will you design a scalable system. 6

4.(A) Explain the registry-based algorithm for finding and using workstations. 6

(B) Describe the graph-theoretic deterministic algorithm for processor allocation. 6

OR

(B) Explain the significance of synchronization in distributed systems. 6
What do you understand by a logical clock and a physical clock?

5.(A) What is Continuous System Simulation? Discuss it with suitable example. 6

(B) Differentiate between:

- Fixed-time step model and Event-to-event model
- Static model and Dynamic model

(B) Discuss the types of system studies. 6

6.(A) (i) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a Computer Science department. 3
(ii) Discuss why physical generators of random numbers are not suitable for simulation experiments on computer. Name the methods used to generate non-uniformly distributed random numbers. 3

(B) Write the importance of validation of model. Explain the validation of model in detail. 6

(B) (i) Write a note on Distributed lag model. 3
(ii) Match the following:

List - I

List - II

(I)	Continuous system simulation language	(a)	GASP-IV
(II)	Discrete system simulation language	(b)	MIDAS 3
(III)	Combined system simulation language	(c)	GPSS

SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Retest Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
Wednesday, 19th September, 2018

Time : 1:30 Hrs.

Total Marks : 30

Note : Answers to the two sections must be written in separate answer-sheets.

S E C T I O N - I
(Please write answers to this section in a separate answer-sheet.)

- Q-1[A]:** Answer the following questions in brief (ANY THREE) : [6]
- (i) Write the advantages of distributed systems over centralized systems.
 - (ii) How many crosspoint switches are required by an Omega network with 256 CPUs and 256 memory modules ? How many switches would be required by a crossbar switch with N CPUs and N memory modules ?
 - (iii) What are the advantages of using diskless workstations in a distributed system ?
 - (iv) List the potential bottlenecks necessary to be avoided by a designer of a very large scale distributed system.
- [B]** Explain (ANY TWO) : [9]
- (i) Registry-based algorithm for finding and using idle workstations
 - (ii) The workstation model
 - (iii) Multiprocessor timesharing systems

S E C T I O N - II
(Please write answers to this section in a separate answer-sheet.)

- Q-2[A]:** Write the principal entities, attributes and activities to be considered if you have to simulate the operation of computer science department. [3]
- [B]:** What is system simulation? How do simulation and analytic methods differ? [2]
- [C]:** Differentiate : [4]
- (i) Fixed time step and event-to-event model
 - (ii) Closed system and Open system
- Q-3[A]:** What do you mean by continuous system simulation? Discuss it with suitable example. [3]
- [B]:** Write short note on any ONE : [3]
- (i) Types of model
 - (ii) Rejection method

[160/A37]

Mat No. _____

Total No. of pages : 2

(4)

SARDAR PATEL UNIVERSITY

M.C.A.(Fifth Semester) Examination

PS05CMCA02 Distributed Systems, Parallel Computing and Simulation

25th October, 2018, Thursday

Time : 2:00 pm to 5:00 pm

1. Select the most appropriate option for each of the following questions :

8

- (i) Which system runs on a collection of interconnected machines that do not have shared memory, yet looks to its users like a single computer ?
(A) computer network (B) parallel computer
(C) distributed system (D) None of these.
- (ii) Which of the following systems has a single run queue ?
(A) Network Operating System (B) Distributed Operating System
(C) Multiprocessor Operating System (D) None of these.
- (iii) Which potential bottlenecks should be avoided by a designer to ensure scalability of distributed systems ?
(A) centralized tables (B) centralized algorithms (C) Centralized components
(B) All of the above.
- (iv) An Omega network with 256 CPUs and 256 memory modules has _____ switches.
(A) 256 (B) 512 (C) 1024 (D) None of these
- (v) _____ is considered as a numerical computation technique used in conjunction with dynamic mathematical models.
(A) System (B) System simulation
(C) Dynamic computation (D) None of these
- (vi) Which of the following models follow the changes over time that results from the system activities?
(A) Analytical model (B) Numerical model
(C) Static model (D) Dynamic model
- (vii) In system modeling, the task of deriving a model of a system may be divided into two subtasks as
(A) Establishing the model structure and supplying the data
(B) Supplying the model structure and establishing the data
(C) Construction of model and execute the model
(D) None of these
- (viii) A system which does not have exogenous activity is said to be _____.
(A) Open system (B) Closed system
(C) Classified system (D) None of these

2. Answer the following questions in brief (ANY SEVEN) :

14

- (i) What are the advantages of using diskless workstations in a distributed system ?
- (ii) Write the advantages of microkernel design over monolithic kernel design.
- (iii) Write the advantages of distributed systems over centralized systems.
- (iv) What is a parallel computer ? List the criteria used for evaluating processor organizations.

(P.T.O.)

(1)

- (v) Define the terms : logical clock and physical clock in view of distributed systems.
- (vi) What is simulation? How computer is helpful in simulation?
- (vii) Write the differences between static model and dynamic model.
- (viii) Write the factors that one has to consider while selecting an appropriate integration formula.
- (ix) Discuss in brief, fuzzy simulation.

3 (A) What is a distributed system ? Describe the main characteristics of a true distributed system. 6
 (B) Explain the registry-based algorithm for finding and using idle workstations. 6

(B) Explain the workstation model for distributed systems. OR 6

4 (A) List the major design issues for distributed systems. Explain the factors affecting performance of a distributed system. 6

(B) Describe the graph-theoretic deterministic algorithm for processor allocation. OR 6

(B) Explain the up-down algorithm for processor allocation in a distributed system. OR 6

5 (A) What is Discrete System Simulation? Discuss it with suitable example. 6

(B) Differentiate between:
 (i) Open system and Closed system
 (ii) Fixed-time step model and Event-to-event model 6

(B) (i) What is the importance of random number in simulation? Discuss any one method of generating a random number. OR 3

(ii) List out different types of system studies. Explain any one of them. 3

6 (A) (i) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a Post office 3
 (ii) Explain Rejection method. 3

(B) What do you mean by validation of model? Discuss the validation of model in detail. 3

(B) (i) Write a note on Distributed lag model. OR 3
 (ii) Match the following:

List - I

List - II

(I) Continuous system simulation (a) CLASS

(II) Discrete system simulation (b) SIMULA

(III) Combined system simulation (c) MIMIC

—X—

(2)

SARDAR PATEL UNIVERSITY
M.C.A.(Fifth Semester) Examination
PS05CMCA02 Distributed Systems, Parallel Computing and Simulation
12th April, 2018

Time: 11.00 A.M. to 2:00 P.M.

Total Marks: 70

- Q1.** Select most appropriate option for each of the following questions : 8
- (i) Which of the following multiprocessor organizations requires N^2 cross-point switches for N CPUs and N memory modules ?
 (A) Crossbar switch (B) Omega networks (C) NUMA machines
 (D) None of these.
 - (ii) Which system runs on a collection of interconnected machines that do not have shared memory, yet looks to its users like a single computer ?
 (A) computer network (B) parallel computer
 (C) distributed system (D) None of these.
 - (iii) Which of the following systems has a single run queue ?
 (A) Network Operating System (B) Distributed Operating System
 (C) Multiprocessor Operating System (D) None of these.
 - (iv) Which algorithm for processor allocation is concerned with giving each workstation owner a fair share of the computing power ?
 (A) Centralized Algorithm (B) Graph-Theoretic Deterministic Algorithm
 (C) Hierarchical Algorithm (D) None of these.
 - (v) Any process that causes changes in the system is said to be _____.
 (A) Entity (B) Attribute (C) Activity (D) State of the system
 - (vi) A system for which there is no exogenous activity is said to be _____.
 (A) Open system (B) Closed system
 (C) Classified system (D) None of these
 - (vii) Which of the following models follow the changes over time that results from the system activities?
 (A) Analytical model (B) Static model
 (C) Numerical model (D) Dynamic model
 - (viii) A _____ is a collection of distinct objects which interact with each other.
 (A) System (B) Model
 (C) Simulation (D) System State

- Q2.** Answer the following questions in brief (ANY SEVEN) : 14

- (i) What are the advantages of using diskless workstations in a distributed system?
- (ii) List different kinds of transparencies in a distributed system. Explain any one of them.
- (iii) What are the advantages of using diskless workstations in a distributed system?

- (iv) Which performance metrics can be used to measure the performance of a distributed system?
- (v) What is system simulation? How do simulation and analytic methods differ?
- (vi) Write the steps involved in the process of a simulation study.
- (vii) Why physical generators of random numbers are not suitable for simulation experiments on computer?
- (viii) List out advantages of simulation.
- (ix) Differentiate between open system and closed system.

Q3.(A) What is a distributed system? Describe the main characteristics of a distributed system. 6

(B) Write a short note on switched multiprocessors. 6

OR

Q4.(A) List the major design issues for distributed systems. Explain one of them. 6

(B) Explain the registry-based algorithm for finding and using workstations. 6

(B) Describe the graph-theoretic deterministic algorithm for processor allocation. 6

(B) List the criteria used for evaluating processor organizations. 6

OR

Evaluate a 2-D mesh network in view of these criteria. 6

Q5.(A) Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a post office. Is it an open or a closed system? Justify your answer? 6

(B) Discuss the simulation of discrete system. 6

Write the advantages and disadvantages of fixed-time step model and event-to-event model. 6

(B) What is a model? Discuss the types of model in detail. 6

OR

Q6.(A) Why validation of a model is required? Discuss the validation of model in detail. 6

(B) Discuss types of system studies. 6

(B) (i) Write a brief note on Rejection method 6

(ii) Write the classification of simulation languages giving at least one example of each. 6

3/A58

SEAT No.

SARDAR PATEL UNIVERSITY

M.C.A.(Fifth Semester) Examination

PS05CMCA02 Distributed Systems, Parallel Computing and Simulation

9th April, 2019, Tuesday

Total No. of printed pages : 2

: 10.00 A.M. to 1:00 P.M.

Total Marks: 70

Select most appropriate option for each of the following questions : 8

- (i) Which system runs on a collection of interconnected machines that do not have shared memory, yet looks to its users like a single computer ?

(A) computer network (B) parallel computer
 (C) distributed system (D) None of these.

- (ii) Which of the following systems requires N^2 crosspoint switches if there are N CPUs and N memory modules ?

(A) Crossbar switch (B) Omega switching network
 (C) NUMA machines (D) None of these.

- (iii) Which algorithm for processor allocation is concerned with giving each workstation owner a fair share of the computing power ?

(A) Hierarchical Algorithm (B) Graph-Theoretic Deterministic Algorithm
 (C) Up-Down Algorithm (D) None of these.

- (iv) Which of the following systems has a single run queue ?

(A) Network Operating System (B) Distributed Operating System
 (C) Multiprocessor Operating System (D) None of these.

- (v) _____ is considered as a numerical computation technique used in conjunction with dynamic mathematical models.

(A) System (B) System Simulation
 (C) Dynamic computation (D) None of these

- (vi) System analysis, system design and system postulation are the example of

(A) Types of system (B) Types of system study
 (C) Types of entities (D) Types of activities

- (vii) Which of the following models can only show the values that system attributes take when the system is in balance?

(A) Analytical model (B) Static model
 (C) Numerical model (D) Dynamic model

- (viii) Consider the following statements about a model:

S1 : Model is the body of information about a system gathered for the purpose of studying the system

S2 : There is no unique model for a system

Which of the following is true?

(A) Only S1 is true (B) Only S2 is true
 (C) Both S1 and S2 are true (D) Both S1 and S2 are false

(1)

(P.T.O.)

(Page 1 of 2)

2. Answer the following questions in brief (ANY SEVEN) :

- (i) List the major design issues for distributed systems.
- (ii) Define : logical clock and clock skew.
- (iii) Write the advantages of distributed systems over independent PCs.
- (iv) Write the advantages of microkernel design over monolithic kernel design.
- (v) What are the advantages of using diskless workstations in a distributed system?
- (vi) Define: Simulation and Entity.
- (vii) Discuss the applications of simulation.
- (viii) Write the differences between analog simulation and digital simulation.
- (ix) Why physical generators of random numbers are not suitable for simulation experiments on computer?

- | | | |
|-------|--|--------|
| 3.(A) | Define a true distributed system. Describe the main features of a distributed system. | 6 |
| (B) | List and describe different kinds of transparencies in a distributed system. | 6 |
| | OR | |
| (B) | Write a short note on the workstation model. | 6 |
| 4.(A) | Explain the registry-based algorithm for finding and using workstations. | 6 |
| (B) | Describe the processor pool model. | 6 |
| (B) | OR | |
| | Explain the graph-theoretic deterministic model. | 6 |
| 5.(A) | Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a super market. Is it an open or a closed system? Justify your answer? | 6 |
| (B) | Explain the simulation of continuous system taking suitable example. | 6 |
| | OR | |
| (B) | Differentiate: | |
| | (i) Open system and Closed system | 6 |
| | (ii) Fixed-time step model and Event-to-event model. | |
| 6.(A) | What do you mean by validation of model? Explain the validation of first-time model in detail. | 6 |
| (B) | Discuss Distributed lag model with appropriate example. | 6 |
| | OR | |
| (B) | (i) Explain the steps involved in the process of a simulation study.
(ii) Write the classification of simulation languages giving at least one example of each. | 3
3 |

— X —
 (2)

(Page 2 of 2)

1. Select most appropriate option for each of the following questions : 8

(i) Which system runs on a collection of interconnected machines that do not have shared memory, yet looks to its users like a single computer ?

- (A) computer network (B) parallel computer
 (C) distributed system (D) None of these.

(ii) Which of the following systems requires N^2 crosspoint switches if there are N CPUs and N memory modules ?

- (A) Crossbar switch (B) Omega switching network
 (C) NUMA machines (D) None of these.

(iii) Which algorithm for processor allocation is concerned with giving each workstation owner a fair share of the computing power ?

- (A) Hierarchical Algorithm (B) Graph-Theoretic Deterministic Algorithm
 (C) Up-Down Algorithm (D) None of these.

(iv) Which of the following systems has a single run queue ?

- (A) Network Operating System (B) Distributed Operating System
 (C) Multiprocessor Operating System (D) None of these.

(v) _____ is considered as a numerical computation technique used in conjunction with dynamic mathematical models.

- (A) System (B) System Simulation
 (C) Dynamic computation (D) None of these

(vi) System analysis, system design and system postulation are the example of _____.

- (A) Types of system (B) Types of system study
 (C) Types of entities (D) Types of activities

(vii) Which of the following models can only show the values that system attributes take when the system is in balance?

- (A) Analytical model (B) Static model
 (C) Numerical model (D) Dynamic model

(viii) Consider the following statements about a model:

S1 : Model is the body of information about a system gathered for the purpose of studying the system

S2 : There is no unique model for a system

Which of the following is true?

- (A) Only S1 is true (B) Only S2 is true
 (C) Both S1 and S2 are true (D) Both S1 and S2 are false

①

(P16)

(Page 1 of 2)

- 2.** Answer the following questions in brief (ANY SEVEN) :
- List the major design issues for distributed systems.
 - Define : logical clock and clock skew.
 - Write the advantages of distributed systems over independent PCs.
 - Write the advantages of microkernel design over monolithic kernel design.
 - What are the advantages of using diskless workstations in a distributed system?
 - Define: Simulation and Entity.
 - Discuss the applications of simulation.
 - Write the differences between analog simulation and digital simulation.
 - Why physical generators of random numbers are not suitable for simulation experiments on computer?
- 3.(A)** Define a true distributed system. Describe the main features of a distributed system. **6**
- (B)** List and describe different kinds of transparencies in a distributed system. **6**
- OR**
- (B)** Write a short note on the workstation model. **6**
- 4.(A)** Explain the registry-based algorithm for finding and using workstations. **6**
- (B)** Describe the processor pool model. **6**
- OR**
- (B)** Explain the graph-theoretic deterministic model. **6**
- 5.(A)** Write the principal entities, attributes and activities to be considered if you have to simulate the operation of a super market. Is it an open or a closed system? Justify your answer? **6**
- (B)** Explain the simulation of continuous system taking suitable example. **6**
- OR**
- (B)** Differentiate:
 - Open system and Closed system
 - Fixed-time step model and Event-to-event model.
- 6.(A)** What do you mean by validation of model? Explain the validation of first-time model in detail. **6**
- (B)** Discuss Distributed lag model with appropriate example. **6**
- OR**
- (B)**
 - Explain the steps involved in the process of a simulation study.
 - Write the classification of simulation languages giving at least one example of each.**3**
- X —
- (2)