

Total No. of Questions : 10]

SEAT No. :

P2413

[4758] - 581

[Total No. of Pages :3

T.E. (Computer)

**PRINCIPLES OF CONCURRENT AND DISTRIBUTED
PROGRAMMING**

(2012 Course) (Semester - II) (End - Semester)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9, or Q.10.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

Q1) a) Write and explain a typical program structure used in lex and yacc for lexical analysis and parsing. **[5]**

b) What is Data Flow Computer? Draw and explain data flow graph for the following instruction. **[5]**

$$A = J * C + D / F$$

OR

Q2) a) With reference to concurrent Java, explain the following methods used for multithreading **[5]**

- i) sleep ()
- ii) suspend ()
- iii) wait ()
- iv) notify ()
- v) notify All ()

b) Write an algorithm for parallel quicksort. Explain with suitable example. **[5]**

Q3) a) Write folk theorem 1.1 and 1.2 show the speedup of n processor parallel system is limited as $S \leq n/\log 2^n$. **[5]**

b) Write a program in LISP to find the n^{th} fibonacci number. **[5]**

OR

P.T.O.

Q4) Write short note on (any two):

[10]

- a) Concurrent yacc.
- b) Parallelism with GPU.
- c) Systolic Architectures.

Q5) a) What is DCE? Explain the various components of DCE showing the interdependencies of DCE components. **[5]**

b) Explain the difference between Network operating system and Distributed operating system. **[5]**

c) Explain the important concepts that a distributed operating system design might use to improve reliability of the system. What are the main problems in matching a system highly reliable. **[7]**

OR

Q6) a) Explain Work station - Server model with diagram. Enlist Advantages and disadvantages of it. **[5]**

b) List major issues in designing distributed Operating System. Explain any two issues in detail. **[5]**

c) Suppose a component of a distributed system suddenly crashes. How will this event inconvenience the users when. **[7]**

i) The system uses the processor pod model and the crashed component is a processor in the model.

ii) The system uses the processor-pool model and the crashed component is a user terminal.

iii) The system uses the workstation-server model and the crashed component is a server machine.

Q7) a) What is virtualization? Explain the advantages of using it. **[5]**

b) Differentiate between virtual machine and physical machine. **[4]**

c) Draw a diagram showing Xen architecture and explain the various components of it. **[7]**

OR

- Q8)** a) Differentiate between para virtualization and full virtualization. [5]
b) List and explain methods for platform virtualization. [4]
c) Draw a diagram showing asymmetric XEN system stating the differences between symmetric and asymmetric virtual platform. [7]

- Q9)** a) Write a program in CUDA for vector addition. [5]
b) What is Warp? Explain branching and GPU utilization with respect to warp size in CUDA. [5]
c) Explain the task execution model in CUDA with diagram. Also explain threading on GPUs. [7]

OR

- Q10)** a) Explain the mobile computing principles. [5]
b) Describe alternative thread block layouts. Explain how to calculate X and Y thread indexes. [5]
c) Explain thread scheduling in GPU with hardware view. Draw a suitable diagram for scheduling cycles. [7]

