

Total No. of Questions : 10]

SEAT No. :

P1342

[Total No. of Pages : 3

[4858] - 1086

T.E. (Computer) (Semester - II)

**Principles of Concurrent and Distributed Programming  
(2012 Pattern)**

*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) Define Computation Model. Explain specialized Computation Models in detail. [5]

b) Explain Flynn's architectural classification scheme with diagrams. [5]

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 quick sort. Explain with suitable example. [5]

*P.T.O.*

**Q3) a)** A program has 50% of the code that refers to the main memory (RAM), out of which 95% refers to the Cache. The speed of RAM is 100ns and that of Cache is 10 ns. Find the overall speed up of the processor. [5]

b) Consider there are three threads P, Q and R. Explain and list the possible dependencies that exist among the threads with respect to counting task dependencies. [5]

OR

**Q4) Write short note on (any two):** [10]

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

**Q5) a)** Why are distributed operating systems more difficult to design than operating systems for centralized time sharing systems? [5]

b) Explain DCE cell configuration and list uses of DCE. [5]

c) Why are distributed computing systems gaining popularity? Which DCS model is popularly used now a days? Justify your answer. [7]

OR

**Q6) a)** Explain workstation - 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 - pool 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) Explain Dom O and Dom U communication in XEN. [5]  
b) Explain various approaches for para-virtualization with suitable diagram. [4]  
c) Explain the installation and configuration steps of XEN. [7]

OR

- Q8)** a) Differentiate between para 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 matrix multiplication. [5]  
b) Explain various service models used in cloud computing. [5]  
c) Explain problem decomposition using multi GPU with an example. [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]



