

Total No. of Questions :8]

SEAT No. :

[Total No. of Pages :3

P1728

[5058] - 361

T.E. (E & TC)

SYSTEM PROGRAMMING AND OPERATING SYSTEM

(End Sem.) (2012 Course) (Semester - VI) (304185)

Time : 2½ Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 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) Explain the steps in program development. [7]
- b) Explain different assembly language statements with examples. [7]
- c) Explain with example use of Terminals and non-Terminal in representing language grammar. [6]

OR

- Q2)** a) What is the need for code optimization? Explain various code optimization techniques. [7]
- b) List different loading schemes and explain any one in details. [7]
- c) Explain lexical analysis and syntactical analysis with example. [6]
- Q3)** a) List different types of operating systems with examples. Explain in brief any 2 functions of operating system. [6]
- b) Explain various states of a process with diagram. [6]

P.T.O.

- c) Consider the following processes where Arrival and Burst time are as shown below [6]

Process	Burst Time	Arrival Time
P1	06	0
P2	04	1
P3	07	3
P4	02	5

Calculate the Average Waiting Time and Average Turn-around Time if the processes are scheduled using FCFS.

OR

- Q4)** a) Draw and Explain Many to One, One to One and Many to Many multithreading models. [6]
- b) Draw and explain process control block. [6]
- c) Find out the safe sequence for execution of 4 processes using Bankers algorithm. Maximum Resources: R1 = 5, R2 = 5. [6]

Allocation Matrix			Maximum Requirement Matrix		
	R1	R2		R1	R2
P1	1	0	P1	1	1
P2	1	1	P2	2	3
P3	1	2	P3	2	2
P4	1	1	P4	3	2

- Q5)** a) List the page replacement algorithms. Explain LRU with example. [6]
- b) Explain the techniques of managing memory using First fit, best fit and worst fit with suitable example. [6]
- c) Define segmentation and its advantages. [4]

OR

- Q6)** a) Explain the design issues for paging. [6]
b) Consider the following Page reference string: 1, 2, 3, 4, 2, 3, 4, 5, 6, 7, 3, 2, 4. The number of page frames = 4, calculate the page faults and the hit ratio for First In First Out Page replacement algorithm. [6]
c) Explain demand paging with advantages. [4]

- Q7)** a) Explain Input/Output software layers. [6]
b) Explain Linux Ext 2 I-node with diagram. [6]
c) List the different file operations. Explain access rights in file sharing. [4]

OR

- Q8)** a) Write short note on RAID disk and optical disk (CD and DVD). [6]
b) Explain memory mapped I/O and direct memory access. [6]
c) Explain different directory structures and directory operations. [4]

