Total No. of Questions : 8]

SEAT No. :

P2855

[Total No. of Pages : 3

[4958]-1041
T.E. (E & T.C.)
SYSTEM PROGRAMMING AND OPERATING SYSTEM
(2012 Course) (Semester - I) (304185) (End Semester)

Time : 2 ½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer 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 Analysis phase of compiler. **[7]**

b) Explain nested macros with example. Explain the difference between macro and a function. **[7]**

c) Explain in brief assembler directives with examples. **[6]**

OR

Q2) a) What is parsing. Explain the language processor development tools.**[7]**

b) Discuss the terminologies Translated origin, Link origin, Load origin, Relocation factor. **[7]**

c) Explain in brief compile & go loader. **[6]**

Q3) a) Find out the safe sequence for execution of 3 processes using Bankers algorithm Maximum Resources: R1 = 7, R2 = 7, R3 = 10 **[6]**

	Allocation Matrix				Maximum Requirement Matrix		
	R1	R2	R3		R1	R2	R3
P1	2	2	3	P1	3	6	8
P2	2	0	3	P2	4	3	3
P3	1	2	4	P3	3	4	4

P.T.O.

b) Explain inter process communication. Explain "Dining Philosophers Problem" and "Readers & Writers Problem". **[6]**

c) List the different categories of system calls and explain in brief any two of them. **[6]**

OR

Q4) a) Define deadlock. Explain the methods for deadlock prevention. **[6]**

b) Explain various states of a processes in process scheduling with neat diagram. **[6]**

c) Consider the following processes where Arrival and Burst time (in seconds) are as shown below **[6]**

Process	Burst Time	Arrival Time
P1	06	1
P2	04	4
P3	03	2
P4	06	5

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

Q5) a) Consider the following Page reference string : 9, 1, 3, 1, 3, 6, 4, 6, 8, 4, 8, 7, 1, 2. The number of page frames = 4, calculate the page faults and the hit ratio for First In First Out Page replacement algorithm. **[6]**

b) List the design issues for paging systems and explain any 2. **[6]**

c) Explain segmentation and its advantages. **[4]**

OR

Q6) a) List the page replacement algorithms. Explain LRU in detail. **[6]**

b) Consider memory partitions as 100K, 500K, 200K, 300K and 600K in order. How would each of the First fit, Best fit and Worst fit algorithms place the processes of 212K, 417K, 112K and 426K are to be allocated (in order)? Which algorithm makes the most efficient use of memory.**[6]**

c) What is internal fragmentation and external fragmentation? **[4]**

Q7) a) Explain file access methods and the file operations. **[6]**

b) Explain Linux Ext 2 file system with diagram. **[6]**

c) Explain I/O software layers. **[4]**

OR

Q8) a) Write short note on RAID disk and magnetic disk. **[6]**

b) Explain the directory system with diagram and directory operations. **[6]**

c) Explain the need of EXT 3 over EXT 2 file system of Linux. **[4]**