Total No. of Questions : 8]

SEAT No. :

P2379

[Total No. of Pages :3

[4758] - 536
T.E. (E& TC)
SYSTEM PROGRAMMING AND OPERATING SYSTEM
(2012 Course) (Semester - I) (End-Sem.) (304185)

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 indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Show parsing steps of <id>+<id>*<id> according to the following grammar: **[7]**

E :: = TE"

E" :: = + E | ε (epsilon)

T :: = VT"

T" :: = *T| ε (epsilon)

V :: = <id>

b) Explain design of direct linking loader. Also explain the required data structures. **[7]**

c) Explain analysis phase of a compiler. **[6]**

OR

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

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

c) Explain nested macros with example. Also explain expansion time variables with example. **[6]**

P.T.O.

Q3) a) Explain various states of a process with diagram. **[6]**

b) List the categories of system calls and explain process system call with an example. **[6]**

c) Find out the safe sequence for execution of 3 processes using Bankers algorithm **[6]**

Maximum Resources: $R_1 = 4$, $R_2 = 4$

Allocation Matrix

	R_1	R_2
P_1	1	0
P_2	1	1
P_3	1	2

Maximum Requirement Matrix

	R_1	R_2
P_1	1	1
P_2	2	3
P_3	2	2

OR

Q4) a) Explain different models of threads. **[6]**

b) Explain dining philosopher's problem and Readers-Writers problem with example. **[6]**

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

Process	Burst Time
P_1	05
P_2	04
P_3	07
P_4	06

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

Q5) a) List the design issues for paging systems and explain any 2. **[6]**

b) Consider the following Page reference string: 8,1,3,5,3,1,4,8,5,7,1,2.

The number of page frames = 3, calculate the page faults and the hit ratio for First In First Out Page replacement algorithm. **[6]**

c) Explain the types of fragmentation and ways to reduce them. **[4]**

OR

Q6) a) Write the difference between paging and segmentation. **[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) Explain need of demand paging with advantages. **[4]**

Q7) a) Explain file attributes 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 CD and DVD. **[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]**

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