Total No. of Questions : 8]

SEAT No. :

P2960

[Total No. of Pages : 3

[5669]-550
T.E. (E&TC)
SPOS (System Programming & Operating System)
(2015 Pattern)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 or Q.2 & Q.3 or Q.4 & Q.5 or Q.6 & Q.7 or Q8.***
2) ***Figures to right indicate full marks***

Q1) a) Explain phases of compiler with suitable example. **[7]**

b) What is MACRO? What is significance of using MACRO over 'function' in typical cases. Hence explain the processing of MACRO call by MACRO Processor. **[7]**

c) Consider following processes where arrival time & burst time is as shown compute avg waiting time & turnaround time using SJF algo. **[6]**

Process	Burst Time	Arrival Time
P_1	10	01
P_2	06	01
P_3	05	01

Q2) a) What is need of code optimization? Explain one code optimization method with suitable example. **[7]**

b) Define following w.r.t. significance of operation. **[6]**

i) Loader

ii) Linker

iii) Compiler

iv) Assembler

c) What is significance of an operating system enlist different types of OS w.r.t. it's functionalities. **[7]**

P.T.O.

Q3) a) What is need of concurrency control mechanism & write a note on: **[6]**

i) Producer consumer problem.

ii) Dinning philosopher problem

b) Explain process state transition diagram. **[4]**

c) An o.s. contains 3 resources the number of instance of each resource type are 7,7,10 the current resource allocation state is as shown. **[6]**

	Current allocation.			Max. Need		
	R_1	R_2	R_3	R_1	R_2	R_3
P_1	2	2	3	3	6	8
P_2	2	0	3	4	3	3
P_3	1	2	4	3	4	4

i) Is current allocation safe?

ii) Can request made by P_1 (1 1 0) be granted?

Q4) a) What is deadlock in o.s explain in brief methods for dead lock preventation. **[6]**

b) Find out safe sequence for execution of following processes using bankers algo. **[6]**

Max resource $R_1 = 4$ $R_2 = 4$

	allocation matrix		Max. required matrix		
	R_1	R_2		R_1	R_2
P_1	1	0	P_1	1	1
P_2	1	1	P_2	2	3
P_3	1	2	P_3	2	2

c) Give difference between process & thread on 4 points. **[4]**

Q5) a) Consider following string for page frames. **[6]**

2 3 2 1 5 2 4 5 3 2 5 2

Number of frames = 3 calculate page fault and hit ratio using FiFO page replacement algo.

b) Explain difference between contiguous memory allocation and non contiguous memory allocation. **[4]**

c) What is paging? Explain concept of paging with TLB. **[6]**

Q6) a) Paging system consists of physical memory 2^{24} bytes. pages of logical address space is 256 page size of 2^{10} bytes, How many bits are in logical address. **[4]**

b) Give difference between paging & segmentation. **[6]**

c) Consider following string of page reference page frame size 4, calculate page fault. 0123012301234567 using LRU. **[6]**

Q7) a) Explain types of I/O buffering. **[8]**

b) Explain mechanism of direct mem access with block diagram. **[6]**

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

Q8) a) Write a note on RAID disc. **[6]**

b) Explain Linux file system. **[6]**

c) Explain file attributes. **[6]**

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