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FACULTY OF ENGINERING AND TECHNOLOGY

TE(CSE/IT)Examination - DEC - 2014

OPERATING SYSTEM (Revised)

[Time: THREE *Hours*] **[Max. Marks: 80]**

"Please check whether you have got the right question paper."

I) Question no.1 and Q. no. 6 are compulsory.

II) Attempt any two questions from Q no.2 to Q no5 and from Q no7 to 10 of each section

III) Figure to the right indicate full marks.

SECTION A

Q 1 Attempt any five from the following (10)

a) Define system through put and CPU utilization. Are these two related to one another? Justify your answer

b) Define race condition and critical section.

c) Between FCFS and RR which one indicates more context switch?

d) What are the requirements of hard real time and soft real time system?

e) What are states of thread?

f) What are important criteria for choosing file organization?

g) Why do we say that operating system is a resource manager?

h) What are draw backs of monolithic structure

Q2 a) Explain microkernel structure of O.S (05)

b) Explain the essential properties of (10)

i) distributed system

ii) batch system

Q3 a) What are the states of process? Illustrate and describe process state transition (07)

b) Explain use of semaphore in solving producer consumer problem. (08)

Q4 a) What are the methods of free space management of disk? (08)

b) Compare and contrast contiguous and indexed file allocation method (07)

Q5 a) Discuss brief the file system architecture and file management function. (07)

b) Consider following process with CPU burst time in (ms) draw Gantt chart and calculate average waiting time for SJF and resend robin (quantum=3) Assume all process arrived at starting in order p_o, p_1, p_2, p_3, p_4 (08)

Procen	Burst time
P_o	10
P_1	1
P_2	5
P_3	6
P_4	4

SECTION-**B**

Q6 Attempt any five questions from the following (10)

a) If there are 32 segments, each of size 1k bytes, what will be length of logical address?

b) Define safe and unsafe condition state

c) What are the memory management requirements?

d) What are the drawbacks of FC FS and SCAN disk scheduling algorithm

e) Which are the necessary condition for deadlock occurrence?

f) What is spooling?

g) Differentiate between logical and physical address.

h) List the layers of 1/0 software.

Q7 a) Describe memory management with bit map and buddy system (07)

b) In the paging scheme what core page, frame, page table are TLB (08)

Q8 a) Explain the architecture of window 7 (07)

b) Write short note on device drivers (08)

Q9 a) Consider a system with 5 processes and 4 resource typesR_1, R_2, R_3, R_4 with (6, 4, 4, 2) units respectively. maximum claim on resources and current allocation given below. Is this state safe? Explain. (08)

Process	R_1	R_2	R_3	R_4
P_1	3	2	1	1
P_2	1	2	0	2
P_3	1	1	2	0
P_4	3	2	1	0
P_5	2	1	0	1

Process	R1	R2	R3	R4
P1	2	0	1	1
P2	1	1	0	0
P3	1	1	0	0
P4	1	0	1	0
P5	0	1	0	1

b) Explain inverted page table structure. How it differs from other structure. (07)

Q10 a) Explain deadlock prevention in detail (08)

b) What are the Goals of I/O software (07)