B.Tech. Degree V Semester Examination November 2017

IT 1502 OPERATING SYSTEMS

(2012 Scheme)

Time : 3 Hours   Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) What are race conditions? Which are the necessary conditions to avoid race conditions?

(b) What are semaphores? What are the operations associated with semaphores?

(c) What is Fragmentation of memory? Differentiate between internal and external fragmentation.

(d) Explain the concept of virtual memory.

(e) Briefly explain RAID.

(f) Write short notes on interrupt handlers.

(g) Define a deadlock. What are the conditions for a deadlock to occur?

(h) Explain two phase locking.
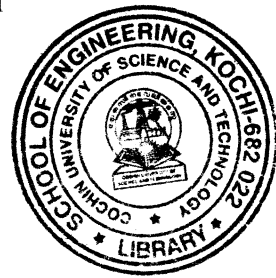
PART B

(4 × 15 = 60)

II. (a) Explain how you can solve the producer consumer problem using semaphores.   (10)

(b) Explain strict alternation in mutual exclusion with busy waiting.   (5)

OR

III.   All 5 processes arrive at time 0 in the order given with the length of the CPU burst   (15)
time given in milliseconds.

Process	Burst Time
P1	10
P2	29
P3	3
P4	7
P5	12

Consider the FCFS, SJF and round robin (quantum = 10 ms) scheduling algorithm for this set of processes. Which algorithm will give the minimum average waiting time?

IV. (a) Explain multiprogramming with fixed and variable partition with suitable examples.   (10)

(b) Briefly explain Translation Look aside Buffer.   (5)

OR

V. (a) Explain memory management with buddy system.   (5)

(b) Explain any two page replacement algorithms in detail.   (10)

VI. (a) Explain different methods included in file system implementation.   (10)

(b) Describe clocks and terminals.   (5)

OR

VII. (a) Briefly explain the operation of DMA transfer.   (5)

(b) What are the main disk arm scheduling algorithms? Explain any three with example.   (10)

VIII.   Explain bankers algorithm for single and multiple resource with suitable examples.   (15)

OR

IX.   Explain deadlock detection with multiple resources of each type.   (15)

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