(Please write your Exam Roll No.) Exam Roll No. 05714202011

END TERM EXAMINATION

FIFTH SEMESTER [BCA] DECEMBER 2013

Paper Code: BCA301 **Subject: Operating Systems (2011 onwards)**

Time : 3 Hours **Maximum Marks :75**

Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each section.

Q1. (a) Explain mutual exclusion? (2.5 x 10=25)

(b) What are hard real time systems?

(c) What are the use of job queues, ready queues and device queues?

(d) What is a thread?

(e) Define context switch

(f) What is a resource-allocation graph?

(g) Define dynamic linking.

(h) Define seek time and latency time.

(i) Define buffering.

(j) What is the use of boot block?

SECTION –A

Q2.(a) Explain the concept of working set model with an example. (4.5)

(b) What is fragmentation? Distinguish between its types. (4)

(c) What is system calls. Give different examples of system calls . (4)

Q.3 (a) What is meant by Degree of Multiprogramming? And when it is said to be Stable? (3.5)

(b) Explain and differentiate between the following with suitable example. (9)

i) FIFO Page replacement algorithm

ii) LRU Page replacement algorithm

SECTION –B

Q4.a) What is a race condition? Explain how does a critical section avoid this condition. What are the properties which a data item should possess to implement a critical Section (6.5)

b) What is a semaphore? Explain busy waiting semaphores. (6)

Q.5 a) CPU burst time indicates the time, the process needs the CPU. The following are

P.T.O.

the set of processes with their respective CPU burst time (in milliseconds).

Processes	CPU-burst time
P1	10
P2	5
P3	5

Calculate the average waiting time if the process arrived in the following order:

(i) P1, P2 & P3

(ii) P2, P3 & P1 (8)

b) Draw the state diagram of a process from its creation to termination, including all transitions, and briefly elaborate every state and every transition (4.5)

SECTION –C

Q6 a)A system contains 10 units of resource class Ru. The resource requirements of three user processes P1, P2 and P3 are as follows

	P1	P2	P3
Maximum requirements	8	7	5
Current allocation	3	1	3
Balance requirements	5	6	2
New request made	1	0	0

Using Banker's algorithm, determine if the projected allocation state is safe and whether the request of P1 will be granted or not. (8)

b) Discuss the necessary condition for a dead lock occurrence (4.5)

Q7 a) Consider the situation in which the disk read/write head is currently located at track 45 (of tracks 0-255) and moving in the positive direction. Assume that the following track requests have been made in this order: 40, 67, 11, 240, 87.

What is the order in which C-SCAN would service these requests and what is the total seek distance? (8)

b) Explain in brief about Swap space management (4.5)

SECTION –D

Q.8 a) List and explain the various File allocation methods in an operating system (9)

b) Explain about FILE ALLOCATION TABLE. (3.5)

Q9 a) What are the information associated with an open file? (3)

b) What are the structures used in file-system implementation? (4)

c).Write notes about the protection strategies provided for files. (5.5)

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