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Total number of printed pages – 3

B. Tech
PCCS 4304

Sixth Semester Regular Examination – 2015

OPERATING SYSTEM

BRANCH (S) : EC, ETC

QUESTION CODE : J 356

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks.*



1. Answer the following questions :

2×10

- (a) What is mutex ?
- (b) What is thrashing ?
- (c) What is RAID Architecture ?
- (d) What is the Translation Lookaside Buffer (TLB) ?
- (e) What is meant by Context Switching ?
- (f) What is busy waiting ?
- (g) What is a deadlock ?
- (h) What is time-stamping ?
- (i) When is a system in safe state ?
- (j) What are benefits of Multiprogramming ?

P.T.O.

2.5x4

2. Define the following :

- (a) Process
- (b) Process Control Block
- (c) Multi programming
- (d) Time sharing.

3. (a) What are interrupts ? How are they handled by the operating system ? 5
(b) Explain deadlock detection algorithm for single instance of each resource type. 5

4. 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 ? 10

5. (a) An operating system contains 3 resource classes. The number of resource units in these classes is 7, 7 and 10. The current resource allocation state is shown below : 5

Processes	Allocated resources			maximum requirements		
	R1	R2	R3	R1	R2	R3
P1	2	2	3	3	6	8
P2	2	0	3	4	3	3
P3	1	2	4	3	4	4

- (i) Is the current allocation state safe ?
- (ii) Can the request made by process P1 (1, 1, 0) be granted ?

(b) What are semaphores ? How do they implement mutual exclusion ? 5

6. Explain the differences between : 5x2

- (a) Internal and external fragmentation.
- (b) Paging and segmentation.

7. (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, 50, 240, 87. What is the order in which optimized C-SCAN and C-LOOK would service these requests and what is the total seeks distance? 5
- (b) Explain the different directory structures available. 5
8. Write short notes on the following : 5×2
- (a) FIFO Page replacement algorithm
- (b) LRU Page replacement algorithm.

