

(c) An operating system having rigid time requirements is known as

- (i) batch processing system
- (ii) multiprogramming system
- ~~(iii)~~ real-time system
- (iv) multitasking system

(d) — is a technique of improving the priority of process waiting in queue for CPU allocation.

- ~~(i)~~ Starvation
- ~~(ii)~~ Ageing
- (iii) Revocation
- (iv) Relocation

(e) Kernel mode of operation is also called

- (i) supervisor mode
- (ii) privileged mode
- (iii) Both
- (iv) None of the above

(f) Interval between the time of submission and completion of the job is called

- ~~(i)~~ waiting time
- (ii) turnaround time
- (iii) throughput
- (iv) response time

B.Tech. 5th Semester Exam., 2013

OPERATING SYSTEMS

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the correct option (any seven) : $2 \times 7 = 14$

(a) An operating system is a type of — software.

- (i) application
- ~~(ii)~~ system
- (iii) utility
- (iv) All of the above

(b) A process is

- ~~(i)~~ a program in high-level language kept on disk
- (ii) contents of main memory
- ~~(iii)~~ a program in execution
- (iv) a job in secondary memory

2. (a) Explain the duties of operating system.
 (b) How is a process different from a program? Explain the importance and need for process control block. 6+8
3. (a) Explain the use of resource allocation graph.
 (b) What is thread? Explain the benefits of using thread. 7+7
4. (a) What do you understand by deadlock? Discuss the methods to avoid deadlock.
 (b) What is thrashing? How can it be controlled? 8+6
5. (a) Explain the various address binding schemes.
 (b) Explain the segmentation technique with the help of a diagram. 7+7
6. (a) Explain the following terms :
 (i) Turnaround time
 (ii) Waiting time
 (iii) Response time
 (iv) Throughput

- (g) A software generated interrupt is called
 (i) trap
 (ii) software interrupt
 (iii) soft interrupt
 (iv) hard interrupt
- (h) In which of the following page replacement policies Belady's anomaly occurs?
 (i) FIFO
 (ii) LRU
 (iii) LFU
 (iv) NRU
- (i) ~~LRU~~ page replacement algorithm stands for
 (i) Last Recently Used algorithm
 (ii) Least Recently Used algorithm
 (iii) Latest Recently Used algorithm
 (iv) Lowest Recently Used algorithm
- (j) Memory management scheme having no external fragmentation is called
 (i) paging
 (ii) segmentation
 (iii) Both
 (iv) None of the above

- (b) Consider the following page replacement string :

0, 7, 1, 2, 0, 3, 7, 4, 2, 3,
0, 3, 2, 1, 0, 7, 1, 7, 0, 1

Find the number of page faults using the following algorithms for a memory of 4 frames :

- (i) FIFO algorithm
(ii) Optimal algorithm 4+10

7. (a) Explain the use of TLB in paging hardware and its benefits.
(b) Explain the role of different types of scheduler. 8+6
8. (a) What is Belady's anomaly? Explain the steps for page replacement.
(b) Explain the options for allocation of frames among various processes. 8+6
9. (a) Explain the working of LOOK and C-LOOK scheduling algorithms.
(b) Explain Dining-Philosophers problem. 8+6
