

V
(20516)

Roll No.

BCA-IV Sem.

18017

B. C. A. Examination, May 2016

Operating System

(BCA-402)

(New)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt questions from all Sections as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all the *five* questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words. $3 \times 5 = 15$

1. Name two differences between logical and physical addresses.

2. What is preemptive and non-preemptive scheduling? Explain.
3. Which are the four conditions that causes the occurrence of a deadlock? Explain.
4. What are the functions of device management?
5. Explain the concept of system, protection and security.

Section-B

(Short Answer Questions)

Attempt any *two* questions out of the following three questions. Each question carries $7\frac{1}{2}$ marks. Short answer is required not exceeding 200 words. $7\frac{1}{2} \times 2 = 15$

6. Describe the following allocation algorithms in the context of contiguous allocation :
 - (i) First fit
 - (ii) Best fit
 - (iii) Worst fit.

- 7. What is deadlock ? Discuss the method for handling deadlocks.
- 8. What is disk scheduling ? Define various types of disk scheduling.

Section-C

(Detailed Answer Questions)

Attempt any *three* questions out of the following five questions. Each question carries 15 marks. Answer is required in detail. 15×3=45

- 9. (a) What is an operating system ? Discuss the role of an operating system.
- (b) What is memory segmentation ? How is it different from paging ?
- 10. (a) Explain Semaphore.
- (b) Explain with examples of your own, the following any two process scheduling algorithm :
 - (i) First Come First Serve
 - (ii) Shortest Job First
 - (iii) Priority Scheduling
 - (iv) Round Robin.

- 11. (a) Define Resource Allocation Graph. Give that, there is only one instance of each resource type, describe the resource allocation graph algorithm for deadlock avoidance using a suitable example.
- (b) Discuss the procedure for avoiding a deadlock situation. Also describe the procedure to achieve safe state.
- 12. (a) Explain the different techniques to improve disk reliability.
- (b) Explain the different activities performed by disk management.
- 13. (a) Consider the following page reference string :
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 2, 1, 2, 3, 6
How many page fault would occur for the following replacement algorithms, assuming four frames ?
 - (i) LRU replacement
 - (ii) FIFO replacement
 - (iii) Optimal replacement.
- (b) Describe the following with suitable example :
 - (i) Directory structure
 - (ii) Free space management.