

Roll No.

[2]

BCA-402(N)

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B. C. A. (Fourth Semester) EXAMINATION, May, 2018

(New Course)

Paper Second

OPERATING SYSTEM

Time : Three Hours] [Maximum Marks : 75

Note : Attempt questions from all Sections as directed.

Inst. : The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section—A

(Short Answer Type Questions)

Note : All questions are compulsory. Each question carries 3 marks.

1. (A) Define operating system. Describe briefly the kind of services provided by an operating system.
- (B) What are the main functions of memory management ?
- (C) Name the various file access methods with explanation.
- (D) What is Spooling ? Draw a diagram and explain.

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- (E) Discuss shared devices and virtual devices for device management.
- (F) Write the advantages and disadvantages of demand paging.
- (G) Write the comparison between paging and segmentation.
- (H) Differentiate the logical and physical address with an example.
- (I) What is the role of critical section in process synchronization ?

Section—B

(Long Answer Type Questions)

Note : Attempt any two questions. Each question carries 12 marks. http://csjmuonline.com

2. Consider the following set of jobs with their arrival time, execution time (in minutes) :

Job	Arrival Time	Execution Time
A	0	5
B	1	15
C	3	12
D	7	25
E	10	5

Calculate the average waiting time for FCFS, SJF preemptive, SJF non-preemptive.

3. (a) Write the name of disk scheduling algorithms. Write the method and explain the working of any three methods.

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- (b) Draw and explain various levels of directory structures.
- 4. (a) What is the fragmentation problem ? Describe internal and external fragmentation.
- (b) Explain the terms mutual exclusion, hold and wait, preemption and circular wait in deadlocks with examples.

Section--C

(Long Answer Type Questions)

Note : Attempt any two questions. Each question carries 12 marks.

- 5. Consider the following current resource allocation state :

Process	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P ₁	2	2	3	3	6	8	7	7	10
P ₂	2	0	3	4	3	3			
P ₃	1	2	4	3	4	3			

Answer the following questions using Banker's algorithm :

- (i) What is the content of the Need Matrix ?
- (ii) Is the system in safe state ?

- 6. (a) Draw and explain Process Control Block (PCB).
- (b) Write the name of various page replacement algorithms. Explain any two methods.
- 7. (a) Define and explain the concept of virtual memory. Write the advantages of using virtual memory.
- (b) Write a short note on Resource Allocation graph.