Total Printed Page : 7 **Roll No. _____**

BCA-10

Operating System

Bachelor of Computer Application (BCA-11/16/17)

3rd Semester, Examination, 2019

Time : 3 Hours Max. Marks : 80

Note : This paper is of Eighty (80) marks divided into three (03) sections A,B and C. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section –A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only. (2x19=38)

1. (a) Explain operating system and list out the function and component of operating system. (6)

   (b) What are the disadvantages of disability Interrupt? (6)

   (c) What are the different types of scheduling needed in different envoirements? (7)

2. Define with the help of examples FIFO and LRU, optical page replacement algorithms with example reference string. Mention the merits and demerits of each of each of the above algorithms.

3. (a) Discuss about disk scheduling and any of its two algorithms with suitable example. (10)

   (b) How I/O management is done by the operating system? Explain. (9)

4. (a) Explain how paging supports virtual memory. With neat diagram explain how logical address is translated intophysical address. (9)

   (b) What is memory partitioning ? Describe a memory partioning technique (10)

Section – B

(short-Answer- Type Questions)

Note : Section 'B' contains eight (08) short –answer type questions of Eight (08) marks each. Learners are required to answer four (04) questions only. (4x8=32)

1. Differentiate among the following types of OS by defining their essential properties.
   a) Time Sharing System
   b) Parallel System
   c) Distributed System
   d) Real time System

2. What are various criteria for a good process sheduling algorithm ? Explain any two preemptive schedulling algorithms in brief.
3. Explain the following techniques to improve file system performance.
   a) Block read ahead and
   b) Reducing disk arm motion

4. Explain following allocation algorithm.
   a) First fit
   b) Best fit
   c) Worst fit
5. Explain various methods for recovery from deadlock.
6. Consider following processes with length of CPU burst time in milliseconds process Burst time

   P1 5

   P2 10

   P3 2

   P4 1

   All process arrived in order p1,p2,p3,p4 all time zero

   a) Draw Gantt charts illustrating execution of these processes for SJF and round robin (quantum=1)

b) Calculate waiting time for each process for each scheduling algorithm

c) Calculate average waiting time for each scheduling algorithm

7. Define user mode and kernel mode. Why two moded are required?

8. Answer the following:-

(a) Explain the working of batch processing.

(b) What is a distributed operating system?

Section –C

(Objective-type-questions)

Note : Section 'C' contains ten (10) objective - Type questions of one (01) mark each. All the questions of this section are compulsory. (10x1=10)

1. Multithreaded programs are:

a) Lesser prone to deadlocks

b) More prone to deadlocks

c) Not al all prone to deadlocks

d) None of the mentioned

2. For sharable resources, mutual exclusion :
   a) Is required
   b) Is not required
   c) May be or may not be required
   d) None of the mentioned

3. Which one of the following is the address generated by CPU?
   a) Physical address
   b) Absolute address
   c) Logical address
   d) None of the metioned
4. The page table contains
   a) Base address of each page in physical memory
   b) Page offset
   c) Page size
   d) None of the mentioned

5. What is compaction?
   a) A technique for overcoming internal fragmentation
   b) A paging technique
   c) A technique for overcoming external fragmentation
   d) A technique for overcoming fatal error

6. The protection bit is 0/1 based on :
   a) Write only
   b) Read only
   c) Read-write
   d) None of the mentioned

7. If a page number is not found in the TLB, then it is known as a :
   a) TLB miss
   b) Buffer miss
   c) TLB hit
   d) All of the mentioned

8. Mutual exclusion can be provided by the
   a) Mutex locks
   b) Binary semaphores
   c) Both mutex locks and binary semaphores
   d) None of the mentioned
9. The entry of all the PCBs of the current processes is in :
   a) Process Register
   b) Program Counter
   c) Process Table
   d) Process Unit

10. In priority scheduling algorithm
    a) CPU is allocated to the process with highest priority
    b) CPU is allocated to the process cummat be seduced.
    c) Equal priority processes cannot be scheduled
    d) None of the mentioned

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