BCA 3rd Semester (Hons.) Examination, 2021
BACHELOR OF COMPUTER APPLICATION

Course ID: 33311 **Course Code: BCA-CC-05**

Course Title: Operating System

Time: 2 Hours **Full Marks: 50**

The figures in the right hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

Group – A

1. Answer all the questions: **1 X 10 = 10**

i) CPU scheduling is the basis of _____ operating system:
   a) Batch operating system
   b) Real time operating system
   c) Multiprogramming
   d) Mono Programming
   e) None of these

ii) The main objective of multiprogramming:
   a) Increase the CPU utilization
   b) Increase the memory
   c) speedup the execution
   d) all of the above
   e) None of the above

iii) The term "aging" refers to:
   a) Keeping the tracks of time a page has been in the memory for the purpose of LRU replacement.
   b) Boosting up the priority of a process in multilevel queue without feedback
   c) Gradually increasing the priority of jobs that wait in the system for a long term to remedy indefinite blocking.
   d) Letting jobs resides in memory for a certain amount of time so that the number of pages required can be estimated accurately.
   e) None of these.

iv) A disk-scheduling algorithm in operating system cause the disk arm to move back and forth across the disk surface in order o service all request in the path. This is:
   a) FCFS
   b) Shortest seek time first
   c) Scan
   d) C-Scane
   e) None of these

v) Race around condition occurs when:

a) Two processor unknowingly wait for resources that are held by each other
b) Two processes wait for the same resources
c) All resources are shared
d) Two process are sharing the same shared resources.
e) None of the above.

vi) Banker's algorithm for resource allocation deal with:

a) Deadlock prevention
b) Deadlock avoidance
c) Deadlock recovery
d) Mutual Exclusion
e) None of these

vii) Thrashing:

a) Reduce page IO
b) Decrease the degree of multiprogramming
c) Implies excessive page IO
d) Improve the system performance
e) None of these

viii) A task is:

a) The smallest discrete steps in a job
b) A piece of work
c) Part of IO
d) A collection of jobs
e) None of these

ix) Which of the following page replacement policies Belady's anomaly occurs:

a) FIFO
b) LRU
c) Optimal
d) LFU
e) None of these

x) A high paging rate:

a) May cause high IO rate
b) Keeps the system well running
c) Is a symptom of too much processor activity
d) Always create a slow system
e) None of these

Group – B

2.Answer any FIVE from the following: **2 X 5 = 10**

i. What is kernel?
ii. Describe the objective of multiprogramming.
iii. What is a thread?
iv. State the main difference between logical from physical address space.
v. What is fragmentation?
vi. When does thrashing occur?
vii. What do you mean by ageing?
viii. What is semaphore?

Group – C

3. Answer any FOUR questions: **5 X 4 = 20**

a) Write a short note on different attributes of a file.

b) Discuss direct memory access in brief.

c) State the difference between multiprogramming and multiprocessing. What is the difference between user level threads and kernel supported thread? **3 + 2 = 5**

d) Explain process control block with block diagram.

e) Discuss first fit and best fit memory allocation techniques.

f) Explain different types of operators used in shell script.

Group – D

4. Answer any ONE question: **1 X 10 = 10**

I. a. Suppose that the following process arrives for execute at the time indicated:

Process	Arrival Time	Burst Time	Priority
P_0	0	5	2
P_1	2	6	4
P_2	3	8	1
P_3	3	4	5
P_4	4	3	3

Draw the Gantt chart and calculate the average waiting time for
i. FCFS scheduling algorithm
ii. Priority scheduling algorithm
iii. SRTF scheduling algorithm
iv. RR scheduling algorithm (Time slice=3ns)

b. How does C-SCAN method vary from the SCAN method? **8 + 2 = 10**

II. a. Explain Dinning Philosopher problem.
b. What is the necessary condition for deadlock?
c. What is virtual memory? **4 + 4 + 2 = 10**
