Fourth Semester B.C.A Degree Examinations

May / June 2026

(NEP Scheme)

NBD0230 : Operating System Concepts

Time: 2 hrs. *Max.Marks:60*

Instructions to the candidates

1. ***The students should legibly write Section number along with question numbers within the margin only.***
2. ***The answers without Section number and question numbers will not be valued.***
3. ***Draw neat and labelled diagrams wherever necessary.***
4. ***Answer Section – I Multiple Choice questions should be answered in the first page of the main answer book and same questions shall not be answered repeatedly.***
5. ***Any identifications like marking, ticking, dots etc., in the options of MCQ (SECTION - I) on the question paper is strictly prohibited. Do not write anything (except Reg No.) on the question paper.***

SECTION - I

I. *Select the most appropriate answer from the options provided.* **10X1=10**

1. In operating systems which of the following is / are CPU scheduling algorithms ?
   a) priority
   b) round robin
   c) shortest job first
   d) all of the above
2. An operating system is _____
   a) An interface that regulates hardware and software program
   b) Hardware device
   c) A program that operates the hardware devices
   d) All of the above
3. In Real time operating system _____
   a) All processes have the same priority
   b) A task must be serviced by its deadline period
   c) Process scheduling can be done only once
   d) Kernel is not required

Contd...2

4. What is the ready state of a process ?
   a) When process is scheduled to run after some execution
   b) When process is unable to run until some task has been completed
   c) Process scheduling can be done only once
   d) Kernel is not required
5. If the quantum time of Round Robin algorithm is very large, then it is equivalent to
   a) Shortest job first
   b) Priority scheduling
   c) First come first serve
   d) None of the above
6. CPU performance is measured through _____
   a) Flaps
   b) MHz.
   c) Throughput
   d) None of the above
7. Which one of the following is the deadlock avoidance algorithm ?
   a) Banker's
   b) Round Robin
   c) Priority
   d) None of the above
8. Expand MMU.
   a) Memory management universal
   b) Memory management unit
   c) Mouse management unit
   d) None of the mentioned
9. CPU fetched the instruction from memory according to the value of
   a) Program counter
   b) Status register
   c) Instruction register
   d) Program status word

Contd...3

10. Moving process from main memory to disk in computer terminology is called

a) Scheduling

b) Caching

c) Swapping

d) Spooling



SECTION- II

II. ***Answer any FIVE of the following.*** ***5X 3= 15 Marks***

II-1) Define a process write the process state with a neat diagram.

II-2) Explain process control block with diagram.

II-3) Explain distributed systems

II-4) Briefly explain RAG in deadlocks.

II-5) Write a note on virtual memory.

II-6) What are the causes of thrashing and how to avoid thrashing ?

II-7) Explain multi – level feedback queue scheduling algorithm.

II-8) Explain the file operations and different types of filter.

SECTION- III

III. ***Answer any THREE questions from the following.*** ***3X 5= 15 Marks***

III-1) Explain different types of operating system

III-2) Explain in detail the following CPU scheduling algorithm :

a) FCFS b) SJF

III-3) Define the term deadlock. Explain various necessary conditions for a deadlock to occur.

III-4) Explain optimal page replacement algorithm with an example.

III-5) Mention file attributes and explain file directory structure.

SECTION- IV

IV. ***Answer the following:*** ***2X 10= 20 Marks***

IV-1) a) Explain the operation on creation and termination of process.

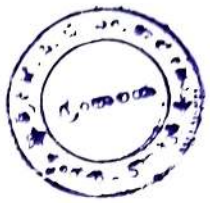
b) Explain the batch processing system and multiprogramming systems. (5+5)

OR

Contd...4

a) Consider the following processes with burst time, Calculate average waiting time and average turn around time with gantt chart using shortest job first.

Process	Arrival time	Burst time
P0	0	2
P1	1	3
P2	2	5
P3	3	4
P4	4	6



(5)

b) Explain different CPU scheduling criteria's. (5)

IV-2) Consider the following snapshot of the system and answer the following questions using Banker's algorithm

a) Find the need of the allocation
b) Find the safe state sequences

Process	Allocation				Max				Available			
	A	*B*	*C*	*D*	*A*	*B*	*C*	*D*	A	B	C	D
P1	0	0	1	2	0	0	1	2	1	5	2	0
P2	1	0	0	0	1	7	5	0				
P3	1	3	5	4	2	3	5	6				
P4	0	6	3	2	0	6	5	2				
P5	0	0	1	4	0	5	5	6				

(10)

OR

a) Explain paging and structures of page tables.

b) Explain contiguous memory allocation. (5+5)

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