(II) 09/10/2025

NEP - Semester End Examination – October 2025

Program: SY.BSc. CS SEM III **Course:** Principles of Operating Systems

Program Code: UGCS02 **Course Code:** NUCS301

Duration: 1 Hour **Max. Marks:** 30

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.

Q. 1		**Attempt any TWO of the following.**	[10]	Course Outcome	Knowledge Level
	(a)	What is an Operating System? List the main functions of an Operating System.		CO1	L1
	(b)	Explain the different types of system calls and define what a system call is.		CO1	L2
	(c)	Explain the multithreading models in detail with examples of how they are applied in operating systems.		CO2	L3
	(d)	Explain race conditions in detail and analyze their causes, effects, and solutions with examples.		CO2	L4
Q. 2		**Attempt any TWO of the following.**	[10]	Course Outcome	Knowledge Level
	(a)	Define deadlock and explain with an example		CO2	L2
	(b)	Explain the concept of paging in detail and show how it is applied in memory management with an example.		CO4	L3
	(c)	Explain the concept of virtual memory and analyze its advantages and disadvantages.		CO3	L4
	(d)	Evaluate the steps of demand paging and justify its effectiveness in handling page faults.		CO4	L5
Q. 3		**Attempt any TWO of the following.**	[10]	Course Outcome	Knowledge Level
	(a)	What is software fault tolerance?		CO1	L1
	(b)	Explain priority-based scheduling with an example.		CO3	L2
	(c)	Explain file system access methods in detail with examples of how they are applied.		CO4	L3
	(d)	Explain the different types of directory structures in an Operating System and analyze their advantages and disadvantages.		CO5	L4

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