Program:	S.Y.B.Sc CS	**Semester:**	III	**Program Code:**	UGCS02
Course:	Principles of Operating Systems			**Course Code:**	NUCS301
Duration:	1 Hour	**Examination Pattern:**	NEP- Autonomous - External	**Max. Marks:**	30

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.
4. CO (Course Outcome), KL (Knowledge Level).

Examination:

REGULAR

Q. 1		**Attempt any TWO of the following.**	[10]	CO's	KL's
	(a)	Define an Operating system. And Explain the major functions of an Operating System		CO1	L2
	(b)	Explain System Calls and their types.		CO1	L2
	(c)	Draw the Gantt Chart and calculate Completion Time, Waiting Time, and Turnaround Time using FCFS. Process | Arrival Time | Burst Time P1 | 2 | 7 P2 | 0 | 4 P3 | 3 | 3 P4 | 1 | 5		CO4	L3
	(d)	Explain the process concept and process states with a suitable state-transition diagram.		CO2	L2
Q. 2		**Attempt any TWO of the following.**	[10]	CO's	KL's
	(a)	Define deadlock. Explain the four necessary conditions for deadlock to occur with suitable examples.		CO2	L1
	(b)	Explain logical address space, physical address space, and Memory Management Unit (MMU). Draw a suitable diagram showing address translation.		CO3	L2
	(c)	Explain the different methods used by an operating system for deadlock prevention.		CO2	L2
	(d)	Define memory management and list its core tasks and key techniques used by an operating system.		CO2	L1
Q. 3		**Attempt any TWO of the following.**	[10]	CO's	KL's
	(a)	Explain the evolution/generations of Operating Systems. How did operating systems evolve from early batch systems to modern interactive and distributed systems?		CO1	L2
	(b)	Explain paging and segmentation.		CO3	L1
	(c)	What is a file? Explain any one file access method.		CO5	L5
	(d)	Differentiate between a process and a thread.		CO2	L4

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