Daffodil International University
Faculty of Science & Information Technology
Department of Computer Science and Engineering
Mid Semester Examination, Spring-2024
Course Code: CSE323   Course Title: Operating Systems
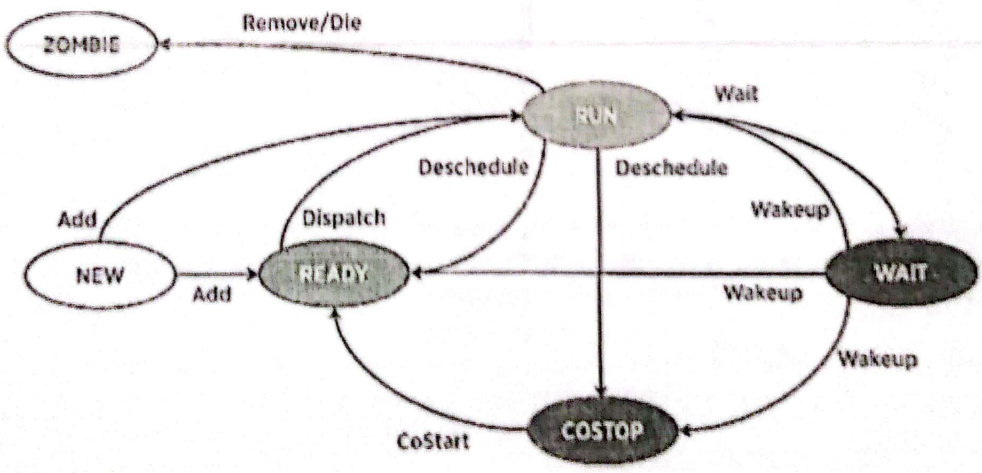#### Level: 3   Term: 2

Exam Duration: 1.5 Hours   Marks: 25

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	List the elements comprising a computer system. Find out the most crucial component among them. Show the consequences for other components if this essential component is neglected during the integration process.	[2.5]	CO1
	b)	Show the difference between Layered Architecture and Modular Architecture of OS Structure.	[2.5]	
2.	a)		[4]	CO2

Fig: 1

Assume there is a process named P1. Explain the life-cycle of the process and **illustrate** the transition from one state to another state according to Fig. 1.

Interpret the term Zombie process here.

	b)	Is it possible to demonstrate an interrupt driven operating system without context switching? Give a proper **explanation** with a case supporting your reason.	[3]

| 3. | a) | Construct the **Gantt Chart** and **identify** the average waiting time and average response time for the following processes in round robin where **TQ** = 2.5. | [6] | CO3 |

PN.	AT	BT
P0	16	24
P1	11	11
P2	6	3
P3	3	2
P4	29	5
P5	3	7
P6	7	15
P7	1	1

b) Priority Scheduling is a method of scheduling processes that is based on priority. Consider the following set of processes with the length of the CPU burst time given in millisecond. In this given scenario you will assume lowest integer value will not have the highest preference and highest integer value will not have the lowest preference. **[7]**

PN	Priority	Arrival Time	Burst Time
P1	2	6	1
P2	7	1	9
P3	9	1	3
P4	6	3	6
P5	5	4	5
P6	12	5	16
P7	10	15	8
P8	7	14	4
P9	3	59	1

a. Construct the Gantt Chart for the above table using the Priority Preemptive algorithm and **identify** the Average Turn Around Time, Average Waiting Time, Average Response Time and Throughput.

b. Identify the problem in priority scheduling? Would you relate it with your solution according this above problem statement given in the table?