Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, June 2021

Course:	**Operating System**	**Semester:**	**II**
Program:	**B. Tech CSE(All Branches)**	**Time**	**03 hrs.**
Course Code:	**CSEG 1013**	**Max. Marks:**	**100**

SECTION A

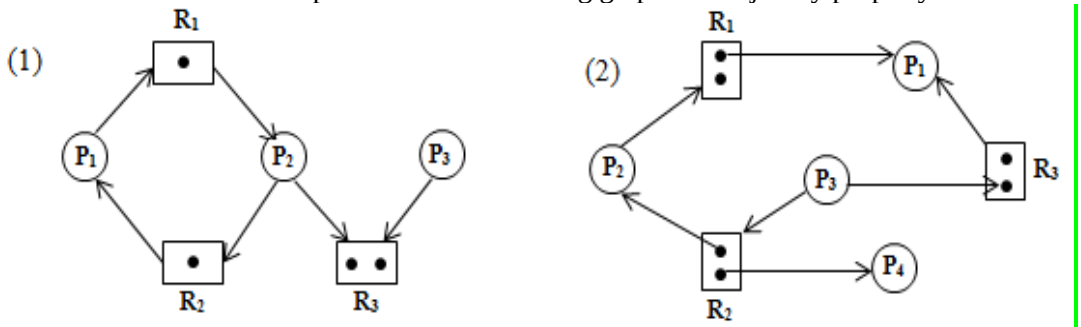
1. **Each Question will carry 5 Marks**
2. **Instruction: Complete the statement / Select the correct answer(s)**

S. No.	Question	CO
1	In Aircraft Controlling system type of operating system used is a)Sharing Operating System b)Dedicated Operating System c)Real Time Operating System d)Standalone Operating System	CO1
2	Starvation and Ageing are the terminologies are not appropriate for which scheduling algorithm a)Shortest Job First b)Shortest Remaining Time First c)Priority Scheduling d)First Come First Serve	CO2
3	Mutual Exclusion, Progress and Bounded waiting are the solution for a)Deadlock b)Critical Section c)Starvation d)Ageing	CO3
4	Paging suffers from----------and segmentation suffers from ---------- a)Fixed size; Variable Size b) Internal Fragmentation; External Fragmentation c)External Fragmentation; Internal Fragmentation d)None of Above	CO4
5	Reading for a block in random order like read block 14 then block 59 and then write block 70 is possible in a)Sequential Access b)Index Method c)Direct Access d)Relative Access e)Both c and d	CO5
6	SCAN and Look algorithm serves until respectively a)Last Cylinder; Last Request b)Last Request; Last Cylinder c)Last Request; Last Request d)Last Cylinder; Last Cylinder	CO6

SECTION B

1. **Each Question will carry 10 marks**
2. **Instruction: Write short/brief notes**

7	Consider a logical address space of 8 pages with 1024 bytes per page mapped onto a physical address of 32 frames? i. How many bits are required for logical /virtual address?	CO4

	ii. How many bits are required for physical address?	
8	a) Suppose that the disk rotates at 7200 rpm.What is the average rotational latency of this disk drive? b) Discuss any two File Allocation Techniques.	CO4, CO5
9	a) Draw neat diagram of process life cycle. b) For each of the following transition between processes states, indicate whether the transition is possible. If it is possible, give an example of one thing that would cause it. a) Run → Ready b) Run → Blocked c) Blocked → Run d) Run → Terminated e) Blocked →Terminate	CO2
10	Available tracks are 39, 18, 90,160,150,184,38,55,58 and initial head position is at 100, Compute with proper graphical representation average seek time require for shortest seek time first algorithm.	CO6
11	Show whether deadlock is present in the following graph or not justify properly. 	CO3

SECTION C

1. **Each Question carries 20 Marks.**
2. **Instruction: Write long answer.**

12 a) Consider the following snapshot of a system — CO4, CO6

Process	Allocation			Max		
	A	B	C	A	B	C
P0	0	1	0	7	5	3
P1	2	0	0	3	2	2
P2	3	0	2	9	0	2
P3	2	1	1	2	2	2
P4	0	0	2	4	3	3

Let the available number of resources be given by available vector as (3, 3, 2). Use Banker's algorithm and answer:

a) Find the contents of the matrix 'Need'.
b) Is the system in a safe-state?
c) If a request from process P4 for (3, 3, 2) arrives, can it be granted immediately?

OR

a)

Used	Hole	Used	Hole	Used	Hole	Used	Hole	Used	Hole	Used	Hole
10K	10K	20K	30K	10K	5K	30K	20K	10K	15K	20K	20K

If additional requests for 20K, 10K, and 5K (in that order) are received, then what will be the starting address at which each of the additional requests are allocated using:

a) First-fit policy
b) Best-fit policy
c) Worst-fit policy