VIT
UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)

School of Information Technology and Engineering

MODEL QUESTION PAPER

Subject: Operating System-SWE305

Time: 3 Hours **Max. Marks: 100**

PART – A (8 X 5 = 40 Marks)
Answer ALL Questions

1. What is an operating system? Explain the basic functions of operating system?
2. List out the various process states and briefly explain with a five state diagram.
3. Write an algorithm for Producer and Consumer Processes, to all Producer process to place N-1 items into buffer.
4. Given memory partitions of 100K, 500 K, 200 K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory?
5. What do you mean by compaction? Give advantages and disadvantages
6. Describe various file allocation methods.
7. What are the five major categories of system calls?
8. What are the advantages of encrypting data stored in the computer system?

PART – B (6 X 10 = 60 Marks)

Answer any SIX Questions

9. Explain the main feature of the following types of OS outlining their limitations and strengths [2.5+2.5+2.5+2.5]

a) Distributed systems b) handled systems c) Real Time Systems d) Parallel systems

10. Illustrate about the different Deadlock Prevention Techniques.
11. Under what circumstances do page fault occur? Describe the actions taken by the operating system when a page fault occurs.
12. How access matrix is used in protection domain? Explain various Methods to implement access matrix.

13. Consider the following page-reference string:

1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5,6,7,1,3,4,5,6,.

How many page faults would occur for the following replacement algorithms, assuming 3 frames? Remember that all frames are initially empty, so your first unique pages will all cost one fault for each. And compute Hit ratio of each algorithm.

i) FIFO ii) Optimal [5+5]

14. Consider the following set of processes, with the length of the CPU-burst time and the arrival time given in milliseconds

Process	Arrival Time	Burst Time
P1	0	3
P2	2	6
P3	4	4
P4	6	5
P5	8	2

i) Draw a Gantt chart illustrating the execution of these processes using FCFS and preemptive SJF scheduling algorithm. [2+2]

ii) Calculate waiting time and turnaround time of each process? [2+2]

iii) Give advantages and disadvantages of each algorithm. [1+1]

15. Suppose that a disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 53, and the track is moving towards 0. The queue of pending requests, in FIFO order, is 98, 183, 37, 122, 14, 124, 65, and 67. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk scheduling algorithms?

i) FCFS ii) SSTF iii) SCAN iv) LOOK [2.5+2.5+2.5+2.5]

16. Write short notes on the following [2.5+2.5+2.5+2.5]

i) semaphores ii) Paging iii) Threads iv) SSL

*** ***All The Best *** ***