B.E. (Computer Science Engineering) Fourth Semester (C.B.S.)

Operating System

P. Pages : 2 **NRJ/KW/17/4435**

Time : Three Hours * 0 2 0 3 * Max. Marks : 80

Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain how multiprogramming OS is differ from batch OS? **6**

b) Explain different types of kernel. **7**

OR

2. a) Enlist and explain different events in OS? **6**

b) Differentiate between Application software & system software? **4**

c) Write short note on time sharing OS? **3**

3. a) Explain different types of files created in OS? **4**

b) Explain different file access methods? **6**

c) Write short note on contiguous allocation? **3**

OR

4. a) Explain various directory structures in operating system? **8**

b) Explain different attributes of file? **5**

5. a) Write a short note on scheduling Queue? **5**

b) Consider the following set of processes. **9**

Process	Burst time	Arrival time
p_0	3	0
p_1	5	1
p_2	2	2
p_3	5	3
p_4	5	4

Calculate waiting & turn around time for each algorithm.

i) FCFS ii) SJF

iii) RR (Slice = 2).

OR

6. a) Explain in detail interprocess communication? **8**

b) Write short note on following. **6**

i) Context switching. ii) Process creation
iii) Process termination

7. a) What is address binding? Explain various types of binding. **8**

b) Write short notes on : **6**

i) Thrashing ii) Garbage collection.

OR

8. a) What is memory fragmentation? Differentiate between Internal & External Fragmentation? **5**

b) Explain paging. How it is implemented. What hardware is required? **9**

9. a) Explain semaphore solution for Reader-Writer problem? **7**

b) Differentiate between following. **6**

1) Semaphore & Monitor. 2) Critical section & critical Region.

OR

10. a) Give the solution to Dinning philosopher problem using monitor? **8**

b) What are the various solution to critical section problem? **5**

11. a) What are different characteristic of deadlock? **6**

b) Write short note on Resource allocation graph? **7**

OR

12. a) Consider a system with process P_0 through P_4 and three instance type A, B and C Resource type A has 10 instance, B has 5 instance and C has 7 instance and suppose at the time t_1 follow snap shot is. **7**

Process	Allocation ABC	Max ABC	Available ABC
p_0	010	753	332
p_1	200	322	
p_2	302	902	
p_3	211	222	
p_4	002	433	

1) What is content of NEED matrix.
2) Whether system is in safe state.
3) Would the following request granted p_1 (1, 1, 0).

b) How to Handle deadlock? **3**

c) How can you prevent deadlock by preventing circular wait condition? **3**

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