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Shree Damodar College of Commerce & Economics, Margao-Goa
FY BCA, Semester-II, Semester End Examination, June 2022
Operating Systems Concepts (CAC-106)

Duration: 2 Hours

Max Marks: 60

Instructions: 1) Figures to the right indicate Full Marks.
2) All Questions are compulsory.

Q1. A. Define the following terms in one or two sentences.

(5 X 1 = 05)

- a. Thrashing
- b. Synchronization
- c. Scheduler
- d. File and its attributes
- e. Context switch

Q1. B. State True or False for the following statements and justify your answers.

(5 X 1 = 05)

- a. The address generated by the CPU is known as the physical address.
- b. Preemptive scheduling is when the currently executing process voluntarily gives the CPU.
- c. Concurrent access to shared data may result in data inconsistency.
- d. Round robin algorithm is an deadlock avoidance algorithm.
- e. If no cycle exists in the resource allocation graph, then the system will not be in a safe state.

Q2. Answer the following

(10)

- A. Explain swapping with a neat diagram.
- B. Explain the different process states with a neat diagram.
- C. Explain any two services provided by operating system in detail.

(02)

(03)

(05)

Q3. Answer the following

(10)

- A. Explain the basic instruction cycle with a diagram.
- B. State the three solution for critical section problem.
- C. Calculate the average waiting time for the following set of processes using the priority scheduling algorithm. Assume priority1 to be the highest priority. State one advantage and disadvantage of this algorithm.

(02)

(03)

(05)

Processes	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

Q4. Answer the following

(10)

- A. List the basic elements of the computer system.
- B. State any two ways to reduce internal and external fragmentation.

(02)

(03)

C. Explain the two-level directory with a neat diagram. State one advantage and disadvantage of it. (05)

Q5. Answer the following (10)

A. State any two problems with serial processing system. (02)

B. Find the number of page faults using FIFO page replacement algorithm. The page reference string is 1, 3, 0, 3, 5, 6, 3 with three page frames. (03)

C. Define Segmentation. Explain the steps involved in handling the page fault with a neat diagram. (05)

Q6. Answer the following (10)

A. State the data structures used for the Banker's algorithm. (02)

B. Explain in brief any one of the multithreading model in process management. (03)

C. Perform SSTF disk scheduling algorithm for the following. A disk has 200 cylinders numbered from 0 to 199. The current position of the read/write head is at 50. The request queue includes track numbers 82, 170, 43, 140, 24, 16, 190 respectively. Find the total number of cylinders moved by the head. (05)
