Sub Code : 0158 (1048)   **Exam Code :** 0002

Exam : B.A./B.Sc. (General) 2nd Semester

Subject : Computer Science

Paper : Paper-CS03:Theory- A, Operating System
        Concepts

Time : 3 Hours   *Maximum Marks : 30*

Note: Attempt **Five** questions in **all**, including
        Q-9 in **SECTION-E**, which is **compulsory**,
        taking **One** each from **SECTION- A** to
        SECTION-D.

SECTION - A

1. Describe the objectives and functions of
    Operating System. Also explain the different
    services provided by the operating system.
    Describe the structure of an Operating System.
                                                    6

2. Describe the different types of Operating
    Systems and their salient features with
    examples.   6

SECTION - B

3. What is a Process Control Block (PCB) ? What is it used for ? What sort of information might it store ? What is that information used for ? What operating might be performed on it ? Explain in detail. 6

4. Explain the advantages and disadvantages of Shortest-Job-First (SJF) scheduling. Explain why we say that the Multi-Level-Feedback-Queue (MLFQ) is an approximation to SJF. Why does MLFQ not have the disadvantages of SJF ? 6

SECTION - C

5. Define deadlock. State four conditions of deadlock and explain how each condition can be satisfied ? Give an example of a simple resource deadlock involving three processes and three resources. Draw the appropriate resource allocation graph. 6

6. What is the difference between deadlock prevention and deadlock avoidance ? Explain Banker's algorithm for Deadlock avoidance.

6

SECTION - D

7. One of the design decisions in OS memory management is the choice between swapping and paging. Define each of these terms and clarify their respective roles in OS memory management. 6

8. Suppose there are 16 virtual pages and 4 pages frames. Determine the number of page faults that will occur with the reference string 0 1 7 2 3 2 7 1 0 3 12 13 12 7 1, if the page frames are initially empty, using FIFO and LRU page replacement algorithms. 6

P.T.O.

SECTION - E
(Compulsory)

9. (a) Define multitasking.   6×1=6

   (b) What is Linux ?

   (c) What is virtual memory ?

   (d) What is preemptive CPU scheduling ?

   (e) What is logical address space ?

   (f) Define internal fragmentation.