**15CTU13**

**PSG COLLEGE OF ARTS & SCIENCE**
(AUTONOMOUS)

**BSc DEGREE EXAMINATION DECEMBER 2018**
(Third Semester)

Branch - **COMPUTER TECHNOLOGY**

**OPERATING SYSTEMS**

Time : Three Hours Maximum : 75 Marks

**SECTION-A (20 Marks)**

Answer **ALL** questions
**ALL** questions carry **EQUAL** marks (10 x 2 = 20)

1 What are the main purposes of an Operating System?
2 What is the main advantage of Multi Programming?
3 Explain the difference between logical address and physical address space.
4 What are the necessary conditions for the occurrence of a deadlock?
5 What are the advantages of having an inverted page table?
6 What are the major activities of an operating system in regard to Process Management?
7 What advantage is there in having different time quantum sizes on different levels of a multilevel queueing system?
8 Why are segmentation and paging sometimes combined into one scheme?
9 What is FAT?
10 What is the need for disk scheduling?

**SECTION - B (25 Marks)**

Answer **ALL** Questions
**ALL** Questions Carry **EQUAL** Marks ( 5 x 5 = 25)

11 a What is the purpose of system calls? Briefly explain the types of system calls provided by a typical operating system.

OR

b Explain how Co-operating processes communicate with each other via an IPC.

12 a Explain the important operating system design issues for the following:
a) Multiprocessor systems b) Clustered systems

OR

b Differentiate preemptive scheduling from non-preemptive scheduling.

13 a Explain the banker's algorithm for deadlock avoidance with an illustration.

OR

b Explain the following page table structures:
a) Hierarchical Page table b) Hashed Page table

14 a Explain the following file allocation methods:
(i) Linked allocation (ii) Indexed allocation

OR

b Explain the different disk scheduling algorithms with neat diagram.

15 a Consider the following page reference string:
2,3,4,5,3,2,6,7,3,4,1,7,1,4,3,2,3,4,7
Calculate the number of page faults would occur for the following page replacement algorithm with frame size of 3 and 5.
a) LRU b) Optimal

OR

b Briefly explain the disk management and swap-space management.

## SECTION - C (30 Marks)

Answer any **THREE** Questions
**ALL** Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 Briefly explain various managements of the operating systems and their responsibilities in detail.

17 What is deadlock detection and recovery? Describe the methods for recovering from deadlock.

18 What is critical section? Specify the requirements for a solution to the critical section problem.

19 Explain and compare FCFS, SSTF, C-SCAN and C-LOOK disk scheduling algorithms with an example.

20 (i) Explain linked file allocation method.
(ii)Explain the file system in Windows XP.

**Z-Z-Z** END