7. (i) Elaborate how the Bakery algorithm can solve the critical section problem for multiple processes.

(ii) Explain the working of the Monitor with condition variables as high level synchronization construct.

Unit–IV

8. (i) What are Deadlocks ? Explain how Resource Allocation Graph (RAG) algorithm can be used for avoiding the system from deadlock.

(ii) Explain how rollback and starvation can be used for resource preemption to recover the system from deadlock.

9. (i) Suggest and explain the Disk scheduling algorithm that can overcome the slow speed shortcoming of FCFS scheduling.

(ii) Mention different parameters based on which different Disk Scheduling algorithms can be evaluated with appropriate examples.

Roll No. : .....

Total No. of Questions : **9**] [Total No. of Pages : **4**

67107

M.C.A. (Regular) 3rd Semester Current (CBCS Scheme) Examination, March–2021

(w.e.f. Dec. 2017-18)

OPERATING SYSTEMS

Paper-17MCA33C2

*Time : **Three** Hours]* *[Maximum Marks : **80***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :– Question No. **1** is compulsory. Attempt *four* more questions by selecting *one* question from each Unit. All questions carry equal marks.

1. (i) System calls are the integral part of any Operating Systems. Comment.

(ii) What are non-preemptive scheduling algorithms ? Give *two* examples.

(iii) Explain the working of relocation register in memory management.

(iv) What is the difference between swapper and pager ?

(v) Define the race around condition on reference to concurrent programming.

(vi) Discuss any *one* approach used for managing the free space in files, briefly.

(vii) Discuss the Circular Wait condition responsible for deadlock in the system.

(viii) Briefly explain the concept of Disk Scheduling.

Unit–I

2. (i) Why Operating Systems are called as Resource Manager and Virtual Machines ?

(ii) What is the state of a process ? Explain different states of a process during its execution with the help of diagram.

3. (i) Why schedulers are very important component of the system ? Also explain different types of schedulers. Briefly write down the working principle of Priority based scheduling.

(ii) What role does buffering play in successful implementation of Interprocess Communication (IPC) ? Mention different types of buffer with their respective functions.

Unit–II

4. (i) What do you mean by the Address Binding ? Enumerate different types of binding based on the time at which binding is performed.

(ii) Explain how protection is ensured by the segmentation technique used for memory management.

5. (i) Differentiate between demand paging and pure demand paging. Explain how to evaluate the performance of demand paging.

(ii) What is the dirty bit concept in Page replacement algorithm ? Write down its importance in improving the efficiency of replacement algorithms.

Unit–III

6. (i) How the layered file structure is different from virtual file system ? Explain with the help of diagram. Also mention the role of FCB in file management.

(ii) Explain the linked allocation method for allocating the space and also discuss the importance of File Allocation Table (FAT) in allocation procedure.