

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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**B.A./B.Sc. (General) 2nd Semester
(2053)**

COMPUTER SCIENCE

Paper : CS03 : Theory-A, Operating System Concepts

Time Allowed : Three Hours] [Maximum Marks : 30

Note :— Attempt **FIVE** questions in all, including Q. No. IX (Unit-V) which is compulsory and selecting **one** question each from Unit I-IV.

UNIT—I

- I. Differentiate the following types of the operating systems :
- (a) Loosely-coupled systems and tightly-coupled systems ?
 - (b) Hard real-time systems and soft real-time systems ?
 - (c) Multi-programming systems and multi-tasking systems ? 6
- II. Discuss the following functions of an operating system with the help of examples :
- (a) Information and resource protection.
 - (b) Spooling.
 - (c) Buffering.

6

UNIT—II

- III. What are the components of a process ? Also discuss the various states of a process. 6
- IV. Consider below table of four processes under Multi-level queue scheduling. Queue number denotes the queue of the process. Priority of queue 1 is greater than queue 2. Queue 1 uses Round Robin (Time Quantum=2) and Queue 2 uses FCFS. Prepare a GANT chart for the given problem.

Process	Arrival Time	CPU Burst Time	Queue Number
P1	0	4	1
P2	0	3	1
P3	0	8	2
P4	20	5	1

6

UNIT—III

- V. What are the steps to create a resource allocation matrix with the help of resource allocation graph ? Explain with the help of an example. 6
- VI. What are the algorithms for detecting deadlocks in an operating system ? Explain. 6

UNIT—IV

- VII. What is segmentation ? What are its types ? How address translation is done by operating system in segmentation ? 6

VIII. What is the virtual memory management system ? What is the problem of thrashing in this system ? What are the methods to handle this problem ? 6

UNIT—V

IX. Answer the following questions in brief :

- (a) What is next fit memory allocation scheme ?
- (b) What is mutual exclusion condition for a deadlock ?
- (c) In what state the process resides in the secondary memory ?
- (d) What is the role of Master Boot Record ?
- (e) What is the File System ?
- (f) What is a Page Fault ? 6×1=6