Roll No. .....

97669

BCA 3rd Semester (New) Examination – November, 2018

INTRODUCTION TO OPERATING SYSTEM

Paper : BCA-201

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 : Attempt *four* more questions, selecting *one* question from each unit. Question No. 1 is *compulsory.*

1. (a) What is the advantage of Multiprogramming ?

(b) Explain the different operations on processes.

(c) What are the various scheduling criteria for CPU scheduling ?

(d) Define deadlock prevention.

(e) What are the main functions of the memory-management unit ?

(f) Why should we use virtual memory ?

(g) What are the different accessing methods of a file ?

(h) Summarize the characteristics that determine the disk access speed ? $8 \times 2 = 16$

UNIT – I

2. (a) What are the system components of an operating system & explain them ? 8

(b) Why operating system is called an Extended Machine and Resource Manager ? 8

3. (a) Differentiate a thread from a process. 8

(b) Describe the action taken by a kernel to context-switch between processes. 8

UNIT – II

4. Consider the following set of processes with the length of the CPU burst time given in milliseconds :

Process	Burst Time	Priority	Arrival Time
P_1	6	4	0
P_2	4	3	1
P_3	2	1	2
P_4	5	2	3
P_5	3	5	4

Draw Gantt chart; calculate Avg. Turnaround time and Avg. Waiting time for FCFS, SJF (pre-emptive & non-pre-emptive), Priority Scheduling (pre-emptive and non-pre-emptive) and RR (Quantum=2) scheduling algorithms. 16

5. (a) Define Deadlock. Explain different methods for deadlock prevention with example. 8

(b) Explain Deadlock Detection & Recovery and Deadlock Avoidance. 8

UNIT – III

6. (a) Differentiate External fragmentation with Internal fragmentation. 8

(b) Explain how logical address is translated into physical address with the neat diagram. 8

7. (a) Explain FIFO and LRU page replacement algorithms with the help of examples. 8

(b) What is thrashing and explain the methods to avoid thrashing. 8

UNIT – IV

8. Discuss the following :

(a) Contiguous Allocation 6

(b) Indexed Allocation 5

(c) Linked Allocation 5

9. Suppose that a disk drive has 1000 cylinder, numbered 0 to 999. The drive is currently serving a request at cylinder 43, and the previous request was at cylinder 125. The Queue of pending requests in FIFO order is : 76, 479, 919, 734, 948, 519, 32, 730, 135

Calculate the total distance (in cylinder) that the disk arm moves to satisfy all the pending requests for each of the disk-scheduling algorithms i.e. FCFS, SSTF, SCAN, LOOK, C-SCAN, C-LOOK. 16

(iii) Thrashing

(iv) paging

UNIT – IV

8. Why disk scheduling is necessary ? Explain the various disk scheduling methods with example.

9. (a) Explain any ***two*** types of allocation method.

(b) What do you mean by Linked List and Grouping ? Explain.

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Note : Attempt ***five*** questions in all, by selecting ***one*** question from each Unit. Question No. **1** is ***compulsory***. All question carry equal marks.

1. (a) What is distributed system ?

(b) What is inter-process communication ?

(c) What is bankers algorithm ?

(d) What is Virtual Memory ?

(e) What is Logical address space ?

(f) What is page replacement ?

(g) What is bit-Vector ?

(h) What is counting ?

UNIT – I

2. (a) What is an Operating System ? What are the responsibilities of an operating system ?

(b) Explain :

(i) Time-sharing

(ii) Real Time System

3. Explain the following :

(i) Threads and their uses

(ii) Process and process states

UNIT – II

4. What is a scheduler ? What should be the performance criteria for a scheduler ? Compare and contract importance scheduling techniques.

5. What do you mean by deadlock ? Explain deadlock prevention, avoidance and detection.

UNIT – III

6. What is a Swapping system ? Consider a swapping system in which memory of the following hole sizes in memory order: 10k, 4k, 20k, 18k, 7k, 9k, 12k and I5k. Which hole is taken for successive request of :

(i) 12k

(ii) 10k

(iii) 9k for First-Fit, Best-Fit, Worst-Fit and Next-Fit.

7. Explain :

(i) Demand paging

(ii) Segmentation