[4]

Unit - V

5. a) What is File organization and file access methods.

   b) Discuss about free space management techniques.

   c) Explain Directory structure in detail.

   d) A Disk Drive having 5000 cylinders 0 to 4999. The Drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order is :

   86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

   Compute total head movements using following algorithms :

   i) FCFS

   ii) SSTF

   iii) SCAN

   iv) LOOK

OR

Discuss different disk scheduling algorithms.

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Total No. of Questions :5]   [*Total No. of Printed Pages :4*

Roll No ....

IT-504

B.E. V Semester

Examination, December 2016

System Programming and Operating System

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

   ii) All parts of each questions are to be attempted at one place.

   iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

   iv) Except numericals, Derivation, Design and Drawing etc.

Unit – I

1. a) Differentiate between translation and interpretation.

   b) What are Linker, compiler and assembler?

   c) Explain application software and system software with examples.

   d) Compare the features of various types of operating system.

OR

Discuss services provided by an operating system.

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Unit – II

2. a) Write basic concept and criteria of CPU scheduling.

   b) Explain multiple processors scheduling with its types.

   c) What are the Threads? Write the advantages of threads over a process.

   d) Explain critical section problem and its solution.

OR

For the following :

Process	Arrival time	CPU time	Priority
P_0	0	8	2
P_1	1	4	1
P_2	2	9	4
P_3	3	5	3

Compute following properties for FCFS, SJF, NON Preemptive Priority (small the no. higher the Priority), round robin (TQ = 4), turnaround time Waiting time response time.

Unit – III

3. a) What are the necessary conditions for the deadlock situation?

   b) What is the resource allocation graph? How it is useful in deadlock situation?

   c) Explain memory management in multiprogramming environment.

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d) For the following :

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P_0	0	0	1	2	0	0	1	2	1	5	2	0
P_1	1	0	0	0	1	7	5	2				
P_2	1	3	5	4	2	3	5	6				
P_3	0	6	3	2	0	6	5	2				
P_4	0	0	1	4	0	6	5	6				

i) Is the system is in safe state.

ii) If a request from process arrives for P_1 (0, 4, 2, 0) can request be granted immediately.

OR

Explain best fit, first fit and worst fit memory allocation with example.

Unit - IV

4. a) Explain Cache memory organization.

   b) What is Thrashing? Explain in brief.

   c) Discuss the role of operating system in security.

   d) Write short note on password management.

OR

How many page faults occur for an optimal page replacement algorithm for the following reference string, with four page frames?

1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

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