

Answer the following questions using the banker's algorithm :

- i) What is the content of array need?
- ii) Is the system in safe state.
- iii) If a request from process P arrives for (0,4,2,0) can the request be immediately granted.

Roll No

MCA - 201

M.C.A. II Semester

Examination, June 2015

Operating System

Time : Three Hours

Maximum Marks : 70

4. a) Explain free space management.
- b) Write in brief about DMA.
- c) Explain various types of clocks.
- d) Compare the throughput of C_SCAN and SCAN, assuming a uniform distribution of requests.

OR

www.rgpvonline.com

When the average queue length is small all the disk scheduling algorithm reduce to FCFS scheduling explain why?

- 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

5. a) What are the threads? Explain.
- b) What are the features of distributed systems?
- c) Explain feed back loops.
- d) Write a note of WINDOWS operating system.

OR

Discuss the design issues in distributed file system.

1. a) What are the functions of operating system?
- b) Compare multithreading, multiprogramming and real time operating system.
- c) Give an equation to relate the following three times for a job.
 - i) Turn around time
 - ii) CPU busy time and
 - iii) Waiting time
- d) Differentiate between a multilevel feed back scheduling algorithm and a multi queue (foreground / background) CPU scheduling algorithm which uses round robin for the foreground and preemptive priority algorithm for the

OR

Assume you have following jobs to execute with one processor :

<u>Job</u>	<u>Burst time</u>	<u>Priority</u>
1	10	3
2	1	1
3	2	3
4	1	4
5	5	2

The jobs are assumed to have arrived in the order 1,2,3,4,5.

- Give Gantt chart illustrating the execution of these jobs using FCFS, RR, (quantum = 1), shortest job first and a non-preemptive priority scheduling algorithm.
- What is the turnaround time and waiting time of each job for each of the above scheduling algorithm?

Unit - II

- Explain the difference between logical and physical address.
 - Differentiate between internal and external fragmentation.
 - Why are segmentation and paging sometimes combined into one scheme?
 - Consider the following sequence of memory references from a 460 word program :
10,11,104,170,73,309,185,245,246,434,458,364
 - Give the reference string assuming page size of 100 words.
 - Find the page fault rate for this reference string assuming 200 words of primary memory available to the program and FIFO and LRU replacement algorithm are used.

OR

Consider a demand paging system, measured utilizations are
CPU utilization 20%

Paging drum 99.7%

Other Input Output devices 5%

Which (If any) of the following will (Probably) improve CPU utilization?

- Get faster CPU
- Get bigger paging drum
- Increase the degree of multiprogramming
- Decrease the degree of multiprogramming
- Get other faster Input Output devices

Unit - III

- Explain the concept of mutual exclusion.
 - What are the necessary conditions for deadlock?
 - What are concurrent programming?
 - Explain dining philosopher problem write a monitor for solving dining philosopher problem.

OR

Consider the following snapshot of a system :

	<u>Allocation</u>	<u>Max</u>	<u>Available</u>
P ₀	0012	0012	1520
P ₁	1000	1750	
P ₂	1354	2356	
P ₃	0632	0652	
P ₄	0014	0656	