Total No. of Questions : 8] *[Total No. of Printed Pages : 3*

Roll No .....

CS-502 (GS)

B.E. V Semester

Examination, December 2017

Grading System (GS)

Operating System

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. Explain operating system services.

2. What is meant by a system cell? How it can be used? How does an application program use these cells during execution? How is all this related to the compilation process?

3. Explain in detail about various ways of free space management.

4. The head of a moving head disk with 200 tracks is currently serving a request for truck 143 and has just finished a request for track 125. If the queue of requests is kept in FIFO order : 86, 147, 91, 177, 94, 150. What is the total head movement to satisfy these request for the following scheduling scheme :
   i) FCFS
   ii) C-SCAN
   iii) SSTF

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5. Consider the following set of process with the length of the CPU burst time given in milliseconds:

Process	Burst time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

i) Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF a non-pre-emptive priority RR (quantum = 1) scheduling.
ii) What is the turn around time of each process for each of the scheduling algorithms?
iii) What is the waiting of each process for each of the scheduling algorithms?
iv) Which of the scheduling in part a results in the minimal average waiting time?

6. A system with following processes and resource exists:
   i) Check the system for safe state.
   ii) Process P_1 request one more instance of resource type X and two instances of resource type Z can the request be granted.

Process	Allocation	Max	Available
	X Y Z	X Y Z	X Y Z
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	

7. Consider the main memory with capacity of 3 frames. Assume that the pages of a process are referenced in the order as given below :

   7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3

   Which one is better FIFO or LRU and why?

8. Answer any four of the following:
   a) Explain Real time operating system.
   b) Define levels of RAIO.
   c) Explain preemptive and non preemptive scheduling algorithms.
   d) Explain swopping concept.
   e) Explain distributed shared memory.
   f) Explain file protection in UNIX.

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