U.S.N | | | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E, - Information Science and Engineering

Semester End Examination ; Dec. - 2014

Operating System

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer any **FIVE** full questions, selecting at least **TWO** full questions from each part.*

PART – A

1. a. Briefly explain the common services provided by the various operating systems for helping the user and for ensuring the efficient operations of the system. 10

   b. Write a note on Symmetric multiprocessing and Asymmetric multiprocessing. 5

   c. Briefly explain computer system organizations. 5

2 a. Write and explain the sequence of system calls for copying a file to another file. 8

   b. Differentiate between short term, medium term and long term scheduler. 8

   c. What is PCB? Explain various fields in PCB. 4

3 a. Consider the following set of processes with a length of the CPU burst time (in ms) 12

Process	Arrival Time (in ms)	Burst Time (in ms)
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

   Write the Gantt Chart and calculate average waiting time, average turnaround time using following CPU scheduling algorithms.

   i) FCFS ii) Preemptive SJF iii) RR (1 time unit)

   b. List and explain different Multithreading Models. 8

4 a. What are the three requirements to be met by a solution to the critical section problem? Explain. 6

   b. Describe the following : 6

   i) Semaphore ii) Wait ( ) Operation iii) Signal Operation

   c. What are monitors? Explain bounded buffer problem using monitors. 8

Contd….2

PART – B

5	a.	Give the deadlock detection algorithms for both single and multiple instances of resources.	10
	b.	Why is deadlock state more critical than starvation in a multiprogramming environment? Describe a resource allocation graph, (i) with a deadlock (ii) with a cycle but no deadlock.	6
	c.	What is wait-for graph? Explain how it is useful for detection of deadlock.	4
6	a.	Given memory partitions of 100KB, 500KB, 200KB, 300KB, 600KB, (in order) how would each of the first fit, best fit and worst fit algorithm place processes of 212KB, 417KB, 12KB, 426KB (in order) which algorithm makes the most efficient use of memory.	10
	b.	Explain the concept of Paging and segmentation in detail.	10
7	a.	Consider the following page reference string 1 0 7 1 0 2 1 2 3 0 3 2 4 0 3 0 2 1 0 7. How many page faults would occur for FIFO, LRU and optimal page replacement algorithms, assuming 3 page frames?	10
	b.	What is thrashing? How it can be controlled?	5
	c.	What is page fault? Explain different steps involved in handling page fault.	5
8	a.	Explain the different access methods for files.	10
	b.	Consider a disk queue with requests for I/O to blocks on following cylinders in order 55, 58, 39, 18, 90, 160, 150, 38, 184. If the disk head is initially at 100, Calculate the total head movements when the following scheduling are used. i) FCFS ii) SSTF iii) SCAN	10

* * * * *