

**UNIVERSITY OF PUNE**  
**[4363]-261**  
**T. E. (IT) Examination 2013**  
**314441: OPERATING SYATEM**  
**(2008 Pattern)**

**[Total No. of Questions:12]**  
**[Time : 3 Hours]**

**[Total No. of Printed pages :3]**  
**[Max. Marks : 100]**

***Instructions :***

- (1) *Answers any 3 questions from each section*
- (2) *Answers to the two Sections should be written in separate answer-books*
- (3) *Figures to the right indicate full marks.*
- (4) *Assume suitable data, if necessary.*

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**SECTION I**

- Q.1 a) Describe with the help of neat diagram the interaction of operating system with hardware. [8]
- b) Write a shell script for following. [8]
- i) Count number of directories in current directory
  - ii) Search a file in current directory
  - iii) Display all the users logged in and count them
  - iv) Simulate DOS copy command using command line arguments

**OR**

- Q.2 a) What is OS? Write different functions of OS. [8]
- b) Write an AWK script to generate a report of students having marks above 40% and count them. Input data file contains fields as roll no, name, percentage marks. fields are separated by space. [4]
- c) What is thread? Give comparison between thread and process. [4]
- Q.3 a) What resources are used when a thread is created? How do they differ from those when a process is created? [6]
- b) Draw Gantt chart and calculate turnaround time, wait time for following processes using FCFS, SJF nonpreemptive and Round Robin CPU scheduling algorithms. (Round robin time quantum=2) [12]

Process	Arrival Time	Burst time
P1	0	8
P2	1	5
P3	3	3
P4	4	1
P5	6	4

**OR**

- Q.4 a) Explain real time scheduling with examples. [8]  
 b) Explain multilevel feedback queue scheduling. [8]  
 c) What is race condition? [2]
- Q.5 a) What is deadlock? Explain necessary conditions for deadlock? How to prevent deadlock? [10]  
 b) Write pseudo C code of BAKERY algorithm for N process solution to the critical section problem. [6]

**OR**

- Q.6 a) Write structure of producer processes using semaphore and explain synchronization. [8]  
 b) Explain different strategies for deadlock recovery. [8]

## **SECTION II**

- Q.7 a) For following addresses write page references and calculate number of page faults using FIFO, LRU and Optimal page replacement policies with number of page frame = 3 page size 100 bytes Reference String 12,19,100,121,200,150, 360,300,309,312,122,53,59,415,212,515 [12]  
 b) What is Compaction? How it deals with external fragmentation? [6]

**OR**

- Q.8 a) Consider the following table [6]

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses?

i) 0,430 ii) 1,10 iii) 2,500 iv) 3,400 v) 4,112 vi) 2,60

- b) Explain Fixed Partitioned memory management scheme. [6]

c)Why are segmentation and paging sometimes combined into one scheme? [6]

Q.9 a)Explain different blocking methods used by I/O subsystem. [6]

b)Write different methods used for space allocation for files on disk. [10]

**OR**

Q.10a)Define following terms [6]

i)Seek time

ii)Rotational Latency

iii)Transfer time

b)Explain different methods used for disk free space management. [10]

Q.11 a)If virus must execute to replicate, how can a word processing document transmit a virus? [4]

b)Explain Unix Password scheme with neat diagram [6]

c)Explain Different methods used for authentication. [6]

**OR**

Q.12a)Describes system and network threats [6]

b)Write short note on [10]

i)Trusted System

ii)Virus & Trojan Horse