SP-1100

M.Sc. (Previous) Examination, 2017

COMPUTER SCIENCE

MCS-104

(Operating System)

Time allowed : Three hours

Maximum Marks : 100

Attempt five questions in all, selecting at least one question from each Unit. All questions carry equal marks.

श्री जैन (पी.जी.) कॉलेज, बीकानेर

UNIT – I

1. Write short notes on each of following :　　　　　[4×5]

    (a) Real time system

    (b) Distributed system

    (c) CPU management as a function of operating system

    (d) Parallel system

2. (a) Describe any five functions of operating system.　[5]

    (b) Explain the features of multiprogramming operating system.　[5]

(c) Describe different types of operating system. [5]

(d) Describe the benefits of time sharing operating system. [5]

UNIT – II

3. (a) Describe various fields of process control block. [5]

(b) Explain preemptive and non-preemptive CPU scheduling. [5]

(c) What do you mean by starvation of a process ? What can be done to overcome the process of starvation ? [5]

(d) Describe MLQ (Multi level Queue) scheduling algorithm with its benefits and drawbacks. [5]

4. (a) Discuss five scheduling criteria that are suggested to compare CPU- scheduling algorithms. [10]

(b) Suppose that following processes arrive for execution at the times indicated. Each process will run for an amount of time listed. In answering the questions use non-preemptive scheduling. [10]

(i) Draw the Gantt chart. Find the average turnaround time using FCFS algorithm.

(ii) Draw the Gantt chart wing SJF algorithm and find the average waiting time.

Process	Arrival Time	Burst Time
P_1	0.0	8
P_2	0.4	4
P_3	1.0	1

UNIT – III

5. (a) What do you understand by Page replacement in virtual memory management ? Discuss the advantages and disadvantages of using FIFO, LRU and optimal page replacement techniques. [10]

(b) Discuss the address mapping between logical address space and physical address space using page table in paging memory management techniques. [5]

6. (a) Describe segmentation memory technique in your words. [5]

(b) Explain the concept of demand paging in memory management. [5]

(c) Describe file access methods in file system. [5]

(d) Find the corresponding location in physical memory of a reference to byte 52 of segment 4 whose limit is 1000 and base is 4700. [5]

UNIT – IV

7. (a) Discuss the recovery method to come out of deadlock in a system in brief. [5]

(b) Differentiate between deadlock prevention nad avoidance methods. [5]

(c) Explain the three requirements that must be satisfied for a good solution to a critical section problem. [5]

(d) What are four (4) necessary conditions for existence of deadlock in a system ? Explain. [5]

8. (a) Write the steps for safety algorithm for finding if a system is in safe state. [5]

(b) When a system is said to be in safe state? Explain it with reference to possibility of a safe sequence. [5]

(c) How do operations wait and signal work with semaphores? Explain. [5]

(d) Explain the situation when a system may enter into deadlock while implementing semaphores.

UNIT –V

9. (a) How do you manage changing permissions and ownerships for files and directories in Linux ? Explain. [5]

(b) Write a shell script to accept three numbers from the user and find the smallest number among them. [5]

(c) Describe the various modes in vi editor and working in those modes. [5]

(d) Explain following commands in very brief : [5]
(i) rm (ii) cat (iii) kill (iv) echo (v) chmod

10. (a) Write a shell script to print the number between 50 and 150. [5]

(b) How do you manage user accounts in Linux ? Explain. [5]

(c) Describe the processes init, getty and login in brief. [5]

(d) Name any five directories in root (top most directory) and explain their purposes. [5]

SP-1113

M.Sc. (Previous) Examination, 2018

COMPUTER SCIENCE

MCS-104

(Operating Systems)

Time allowed : Three hours

Maximum Marks : 50

SECTION-A (Marks : 2 × 10 = 20)

Answer all **ten** questions (Answer limit 50 words). Each question carries 2 marks.

SECTION-B (Marks : 3 × 5 = 15)

Answer all **five** questions. Each question has internal choice (Answer limit 200 words). Each question carries 03 marks.

SECTION - C (Marks : 5 × 3 = 15)

Answer any **three** questions out of five (Answer limit 500 words). Each question carries 5 marks.

SECTION – A

1. (i)   What is the main purpose of an operating system ?   [2]

    (ii)   What is meant by a system call ?   [2]

    (iii) What is pre-emptive scheduling ?   [2]

    (iv) What is CPU Utilization ?   [2]

    (v)   List the four conditions for deadlock   [2]

process ? State your answer. [2]

(vii) Why are segmentation and paging sometimes combined into one scheme ? [2]

(viii) What are the advantages of having an inverted page table? [2]

(ix) Write the syntax of while loop in Linux. [2]

(x) What is the use of Cat Command in Linux. [2]

SECTION - B

2. With a neat diagram, explain the layered structure of operating system. [3]

Or

What is a process ? Explain about various fields of process control block. [3]

3. What is a critical section problem ? Give the condition that a solution to the critical section problem must satisfy. [3]

Or

What is Reader-writers problem ? Discuss the solution to Reader-writers problem using monitors. [3]

4. Explain multi-level Queue scheduling. [3]

Or

Explain multi-level Queue with feedback scheduling. [3]

5. With a neat sketch, explain segmentation with paging. [3]

Or

What is a Virtual Memory ? Discuss the benefit of Virtual Memory Technique. [3]

6. Write a program in Linux to print table of two. [3]

Or

Write the following commands with example: [3]

(i) Cd

(ii) Mkdir

(iii) rm

(iv) Uname

(v) CP

SECTION - C

7. Explain thread with its types. What is multithreading ? Explain. [5]

8. Discuss performance evolution of FCFS, SJF and RR scheduling. [5]

9. Explain the use of Banker's algorithm for multiple resources for deadlock avoidance with suitable example. [5]

10. Explain Linux Kernel and its functions. [5]

11. Explain different types of decision-making statements in Linux. [5]

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(Operating Systems)

Time allowed : Three hours
Maximum Marks : 50

SECTION – A   (Marks 2 × 10 = 20)

Answer all **ten** questions (Answer limit **50** words). Each question carries **02** marks.

SECTION – B   (Marks 3 × 5 = 15)

Answer all **five** questions. Each question has internal choice (Answer limit **200** words). Each question carries **03** marks.

SECTION – C   (Marks 5 × 3 = 15)

Answer any **three** questions out of **five**. (Answer limit **500** words). Each question carries 5 marks.

SECTION – A

1. (i)   Discuss various management done by operating system.   2

    (ii)   Define the PCB.   2

    (iii) What do you mean MLQ scheduling ?   2

    (iv)   Describe the difference among short-term scheduling and long-term scheduling.   2

    (v)   What do you mean by critical section problem ?   2

    (vi)   Write short notes on semaphores.   2

    (vii) Define physical and virtual address space.   2

    (viii) What is Kernel in operating system ?   2

    (ix)   Write the syntax of for and while loop in Linux.   2

    (x)   What is the use of pwd command in Linux ?   2

SECTION – B

2.   What is an operating system ? Explain real time system and time sharing system.   3

OR

Write notes on the following :   1½ × 2 = 3

(i)   Process states

(ii)   Threads

3. Explain first come first served (FCFS) and shortest job first process scheduling algorithm. **3**

OR

Write short notes on the following : **1+1+1=3**

(i) Throughput

(ii) Response time

(iii) MLQ with feedback

4. What is Deadlock ? Explain its prevention and avoidance technique. **3**

OR

Explain the following : **1½ × 2 = 3**

(i) Synchronization

(ii) Requirements for a solution to the critical section problem.

5. Explain the page-replacement algorithms with suitable example. **3**

OR

Explain with neat diagram UNIX file system structure and its characteristics.

6. Explain the following command with syntax and example : **1×3=3**

(i) cut

(ii) pwd

(iii) man

OR

(a) Write a shell script to print the greatest of three input number.

(b) Write a shell script to find the factorial to a given input number. **1½ × 2 = 3**

SECTION – C

7. Explain the different-different scheduling algorithm with examples. **5**

8. What is context switch ? Explain in detail. **5**

9. What is the physical and virtual address space ? Explain in detail. **5**

10. Write short notes on the following : **2½ × 2 = 5**

(i) Banker's Algorithm

(ii) Recovery from Deadlock

11. Explain all loop structure of shell programming by syntax and giving suitable examples. **5**

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BPG–1105

M.Sc. (Previous) Examination, 2021

COMPUTER SCIENCE

MCS-104 श्री जैन (पी.जी.) कॉलेज, बीकानेर

(Operating Systems)

Time : 1½ Hours]　　　　　　[*Maximum Marks : 50*

Section–A　　　　　　**(Marks : 2 × 10 = 20)**

Note :– Answer all *ten* questions. Each question is to be attempted in around 50 words. Each question carries **2** marks.

Section–B　　　　　　**(Marks : 3 × 5 = 15)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit 200 words). Each question carries **3** marks.

Section–C　　　　　　**(Marks : 5 × 3 = 15)**

Note :– Answer any *three* questions out of five (Answer limit **500** words). Each question carries **5** marks.

Section–A　　　　　　2 each

1. Attempt all *ten* questions.

   (i)　Types of Operating System.

   (ii)　What is a Process ?

   (iii)　Why is paging used ?

(iv)   What do you mean by throughput ?

(v)   Explain Threads.

(vi)   What is Semaphore ?

(vii)   Explain virtual memory.

(viii) What do you mean by Data Recovery ?

(ix)   What do you mean by Open-Source System ?

(x)   What are shell variables ?

Section–B   3 each

2. Define System Calls. How system call works ? Give example of system call.

Or

What do you mean by Multithreading ? Explain with example.

3. What do you mean by CPU Scheduling ? Explain primitive scheduling.

Or

Explain Turnaround time, Waiting time and Response time.

4. What is Synchronization ? Explain critical section problem.

Or

Write simple solution to readers-writers problem.

5. What is Linux ? Explain their features and steps of Linux installation.

Or

What do you mean by Virtual Memory ? Explain page replacement algorithms with suitable examples.

6. Explain the following command with syntax example :

(i)   chmod

(ii)   rmdir

(iii)   cp

Or

Write a shell script to determine prime no. of given value.

7. What is Process Scheduling ? Explain types of schedulers and context switch.

8. Compare FCFS, Round Robin, and Shortest Job First Scheduling algorithm on the basis of the following characteristics :

    (a) Selection Function

    (b) Decision Mode

    (c) Response Time

    (d) Effect of Processes

9. What is Deadlock ? Explain its prevention and avoidance technique.

10. What do you understand by Page Replacement ? Explain LRU and FIFO page replacement algorithm with example.

11. What do you mean by vi editor in Linux ? Explain different commands used in vi editor.