BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE AND ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE

BSc HONS DEGREE IN COMPUTER SCIENCE

BSc HONS DEGREE IN NETWORK ENGINEERING

BSc HONS DEGREE IN SOFTWARE ENGINEERING

CS111/NWE112/SWE111 OPERATING SYSTEMS

DURATION 3 HOURS Total marks is 100

Instructions to candidates:

Answer all **questions**

Question 1

a) Explain any **five** services provided by an operating system showing how **each** service provides convenience to the user. **[10]**

b) Define the following Operating System terms:

i. multiprogramming

ii. time sharing

iii. program

iv. processor

v. process state **[10]**

Question 2

i. List any three examples of deadlocks that are not related to computer system environment and explain how the deadlock occurs in each case. **[6]**

ii. Name two strategies for dealing with deadlock **[2]**

iii. Name two strategies for deadlock prevention [2]

iv. Name two strategies for deadlock Avoidance [2]

v. Give any four classes of interrupts and state any one source of interrupt for each class mentioned. [8]

Question 3

a. Explain the differences between segmentation and paging. [4]

b. Give a detailed definition of swapping. [2]

c. Determine the sequence of execution of processes for each of the following scheduling algorithms.

i. First Come First Served. [5]

ii. Shortest Job First. [5]

Process/Arrival Time/Execution time/Burst Time

1	0	14	14
2	2	12	14
3	5	10	15
4	7	4	11
5	19	7	26

Question 4

a. With aid of a diagram illustrate the Linux file structure. [10]

b. Examine the relationship between Linux and Unix [4]

c. If Linux is not using all the memory installed, how do you make it use the rest? [6]

Question 5

a. Define concurrency. [1]

i Concurrency arises in three different contexts. Name and explain in full the **three** contexts. [9]

b. The operating system must allocate and deallocate various resources for each active process. Name and explain **five** resources. [10

*****END OF EXAMINATION*****