This question paper contains 4 printed pages.

Roll No. .....

B.C.A. (Pt.-I)

Opre. Sym.

103

B.C.A. (Part-I) Examination, 2023

(Faculty of Science)

(Three Year Scheme of 10+2+3 Pattern)

Operating System

Paper : 103

Time Allowed : 3 Hours **Maximum Marks : 100**

Answer of all the questions (Short answer as well as are to be given in the main answer-book only. Answers of short answer type questions must be given in sequential order. Similarly all the parts of one question of descriptive part should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll number on question paper before you start writing answers of questions.

Question paper consists of **Three** parts.

All Three parts are **Compulsory**

PART-I : (Very short answer) consists of 10 questions of 2 marks each. Maximum limit for each question is up to 40 words.

PART-II : (Short answer) consists of 5 questions of 4 marks each, Maximum limit for each question is up to 80 words.

PART-III: (Long answer) consists of 5 questions of 12 marks each with one question from each unit with internal choices.

PART-I

Each question is of **2** marks. Word limit for each answer is **40** words.

1. Answer the following : 10×2=20

(a) What is the main reason of designing an operating system?

(b) What are System Calls?

(c) What is Priority Scheduling?

(d) What is Context Switching?

(e) What is a Page Fault?

(f) What is Thrashing?

(g) What are various File Operations?

(h) Name various File Attributes.

(i) What is a Kernel?

(j) List any four shells available in Linux.

PART-II

Each question is of 4 narks Attempt any five. Word limit for each answer is 80 words : 5×4=20

2. Explain the three most important functions of Operating System.

3. Explain all the states of a process with the help of a neat labelled diagram.

4. What are the limitations of contiguous memory allocation?

5. What is a device driver? What is its use?

6. How Linux is different from Windows Server?

PART-III

Each question is of 12 marks Attempt any five : 5×12=60

7. Describe the essential properties of the following types of operating systems :

(a) Batch (b) time Sharing

(c) Real Time

Or

7. Explain different services provided by an operating system and how each provides convenience to the users.

8. (a) Consider the following set of processes, with the length of CPU-burst time given in milliseconds :

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

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

Draw a Gantt Chart illustrating the execution of these processes using SJF. What is the turnaround time and waiting time of each process?

Or

Explain precess synchronization with the help of suitable examples.

9. What is a Deadlock? Dive an appropriate example. Explain the four necessary conditions for a deadlock to occur.

Or

What is the need for page Replacement? Explain LRU page replacement algorithms with the help of an example.

10. Explain any two file allocation methods.

Or

What are the functions of device Management? Explain memory mapped I/O.

11. Discuss the features of Linux OS which make it a popular operating system.

Or

Explain the file system available in Linux

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