NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF COMPUTING
COMPUTER SCIENCE DEPARTMENT
2024_2 EXAMINATION

CIT 752: OPERATING SYSTEM CONCEPTS **Credit:** 2 units

INSTRUCTION: Answer Three Questions. Question One is Compulsory

TIME: 2 HRS

Question 1

1a). With the aid of diagrams, describe a typical process state and its associated transitions. **(5 marks)**

1b) Debugging in computer programming is important to remove form of unwanted errors. Itemize the common techniques for program debugging. **(5 marks)**

1c) The directory structure records information such as name, location, size and type for all files stored on the storage devices. Highlight the issue(s) associated to single-Level directory and discuss solution provided by other directory structures **(8 marks)**

1d) Consider the following set of processes to be scheduled for execution on a first come, first serve (FCFS) basis. (12 marks)

Process	Arrival Time (sec)	Execution Time (sec)	Service Time (sec)
P0	0	2	0
P1	1	1	2
P2	1	5	5
P3	2	3	12

Compute the followings

i. Start time for each process **(2 Marks)**
ii. Finish time for each process **(2 Marks)**
iii. Turnaround time for each process **(2 Marks)**
iv. Average turnaround time **(2 Mark)**
v. Waiting time of each process **(2 Marks)**
vi. Average Waiting Time **(2 Mark)**

Question 2

2a) State and discuss two internal registers being used by the CPU to exchange data with memory. **(5 marks)**

2b) Describe file access methods in operating system (6 marks)

2c) Describe the function of the following in input/output operation. **(9 marks)**

Question 3

3a) Examine the variety of computer resources that operating systems make available to user (2 marks)

3b) State the attributes of files and operations on them (6 marks)
3c) In a tabular form, describe the file types in operating systems (12 marks)

Question 4

4a) What did you understand by Interrupt Handler? (3 marks)

4b) Examine the deadlock in operating system (4 Marks)

4c) Consider the following set of processes to be scheduled for execution on a Shortest Process Next (SPN) basis. (13 marks)

Process	**Arrival Time (sec)**	**Execution Time (sec)**	**Service Time (sec)**
P0	1	5	1
P1	3	3	5
P2	5	9	9

Compute the followings:

i. Start time for each process **(3 Marks)**
ii. Finish time for each process **(3 Marks)**
iii. Turnaround time for each process **(3 Marks)**
iv. Average turnaround time **(1 Mark)**
v. Waiting time of each process **(2 Marks)**
vi. Average Waiting Time **(1 Mark)**

Question 5

5a) Examine three memory partition selection algorithms. (3 marks)

5b) In an interrupt processing, hardware events occurs when an I/O device completes an I/O operation. Highlight these events. (5 marks)

5c) Discuss the merits and demerits of concurrency in operating system (12 Marks)