



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2025_2 EXAMINATIONS

COURSE CODE : CIT752

COURSE TITLE: Operating Systems Concept

CREDIT: 2 Units

TIME ALLOWED: 2 Hours

INSTRUCTION: Answer Question 1 and any other TWO (2) Questions

- 1a) Briefly explain the basic types of scheduling policies in common use. *(5 marks)*
b) Distinguish between a *thread* and a *process*. *(3 marks)*
c) Enumerate five advantages of threads in process management. *(5 marks)*
d) Briefly describe the following terms in relation to concurrency control in operating system:
(i) Mutual exclusion *(2 marks)*
(ii) Synchronization *(2 marks)*
e) Using pseudo-code, define the operation of a semaphore as an instance of synchronization. *(6 marks)*
f) Explain briefly what is meant by *Inter Process Communication* *(3 marks)*.
g) Use a well-labelled diagram only to depict the communication model for a *Rendezvous* in inter-process communication. *(4 marks)*

- 2a) Outline the different ways IPC can be implemented. *(3 marks)*
b) Summarise the necessary recommendations for effective inter process communication. *(3 marks)*
c) Describe briefly the three contiguous memory partition selection algorithms *(7½ marks)*
d) List the **five** basic file operations of the operating system *(2½ marks)*
e) Briefly explain the following terms:
(i) Deadlock *(2 marks)*
(ii) Starvation *(2 marks)*

- 3a) Using the table format below, state four file operations that may be controlled as a means of protection. *(6 marks)*

S/N	Operation	Description
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- b) State the need for file and disk protection in an operating system? *(2 marks)*
c) Complete the summary table of the common file types supported by an operating system below stating one usual extension and one function of each. *(6 marks)*

S/N	File Type	Usual extension	Function
i.	Batch		
ii.	Text		
iii.	Word processor		
iv.	Library		
v.	Archive		
vi.	Multimedia		

- d) Give the memory management schemes (and any subset(s), where applicable) used to allocate jobs in memory. *(6 marks)*

- 4a)) Give the main objectives of memory management. *(3 marks)*
b) Outline the common classes of interrupts available. *(7 marks)*
c) Explain reasons for process co-operation environment *(10 marks)*
5a) State the conditions under which a parent process may terminate the execution of a child process. *(3 marks)*
b) Highlight the vulnerabilities of instant messaging? *(2 marks)*

- c) b) In a tabular form, compare Direct and Sequential file access respectively (**10 marks**)
- d) State any five common characteristics of threads (**5 marks**)