COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCSC 211 OPERATING SYSTEM

SUPPLEMENTARY EXAMINATIONS

JANUARY 2020

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DURATION: (3 HRS)

INSTRUCTIONS

Answer **ALL QUESTIONS** from **Section A (COMPULSORY)**

Answer any **THREE** questions from **Section B**

All questions carry equal marks (25)

Section A *(compulsory, answer ALL questions)*

Question One

i.   List any 5 purposes of scheduling algorithm   [5 marks]

ii. Operating System uses various schedulers for the process scheduling, briefly describe the 3 common process schedulers.   [6 marks]

iii. With the aid of a diagram outline and explain the process state.   [14 marks]

Section B   *(answer any three (3) questions)*

Question Two

a. Define a deadlock, briefly explain deadlock detection and deadlock prevention.   [10 marks]

b. Consider the following system snapshot using data structures in the Banker's algorithm, with resources A, B, C, and D, and processes P1 to P5:

	MAXIMUM				ALLOCATION				NEED				AVAILABILITY			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
P1	6	0	1	2	4	0	0	1					3	2	1	2
P2	1	7	5	0	1	1	0	0								
P3	2	3	5	6	1	2	5	4								
P4	1	6	5	3	0	6	3	3								
P5	1	6	5	6	0	2	1	2								

Using Banker's algorithm, answer the following questions.
i) How many resources of type A, B, C, and D are there?   [6 marks]
ii) What are the contents of the Need matrix?   [6 marks]
iii) Is the system in a safe state? Why   [3 marks]

Question Three

Using examples, explain the following scheduling algorithm

a. Round Robin

b. Shortest Job First

c. First Come First Serve

d. Priority based scheduling

e. Shortest remaining time first   [25 marks]

Question Four

a) Table below shows a set of processes and the associated burst time

Process	Burst time
P1	36
P2	23
P3	64
P4	53
P5	17

Compute the average waiting time when each of these algorithms is used. For each of the algorithms show the total waiting time. Assume a quantum of 25.   [13 marks]

b.) Briefly explain the difference thread and a process   [12 marks]

Question Five

Describe the evolution of operation systems up to the 20th century.   [25 marks]

END OF EXAMINATION