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GABA CAMPUS - ELDORET

MAIN EXAMINATION

SEPTEMBER – DECEMBER 2021 TRIMESTER

FACULTY OF SCIENCE

BACHELOR OF SCIENCE

DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

CMT 206: OPERATING SYSTEM

Date: December 2021	**Duration:** 2 Hours
Instructions: Answer Question **ONE** and any other **TWO** Questions	

QUESTION ONE

a) What is an Operating System? **(1 Mark)**

b) List at least four main functions of an operating system. **(2 Marks)**

c) Draw logical architecture of a computer System. Explain the role of an operating system in this architecture. **(4 Marks)**

d) What is threading? State two advantages of multithreading? **(3 Marks)**

e) Briefly explain the booting process. **(8 Marks)**

f) Explain the role of an operating system with respect to the following functions: **(4 Marks)**

   i) Memory Management
   ii) Process Management

g) Explain the Process Control Block (PCB). **(8 Marks)**

QUESTION TWO

a) Highlight the operating system services for process management. **(4 Marks)**

b) Explain the need to separate the command interpreter from the kernel. **(4 Marks)**

c) For a system with 'n' processes, how many possible ways can those processes be scheduled? **(2 Marks)**

d) What is deadlock? List four necessary conditions for the occurrence of deadlock. **(5 Marks)**

e) State the main objectives of CPU scheduling. **(3 Marks)**

f) What is process Synchronization? **(2 Marks)**

QUESTION THREE

a) Discuss priority scheduling algorithm with a suitable example. **(6 Marks)**

b) Explain preemptive and non-preemptive scheduling. **(6 Marks)**

c) What is the difference between instruction and interrupt? **(4 Marks)**

d) What are the two major differences between segmentation and paging? **(4 Marks)**

QUESTION FOUR

a) Explain the difference between Internal and External fragmentation. **(6 Marks)**

b) Compare and contrast Deadlock Prevention and Deadlock Avoidance. **(8 Marks)**

c) Define Race conditions and describe the method used to prevent race condition. **(6 Marks)**

QUESTION FIVE

a) Explain message passing mechanism. **(6 Marks)**

b) Write the advantages of multiprogramming **(4 Marks)**

c) Compare and contrast Direct and Indirect naming of processes. **(4 Marks)**

d) Write short notes on the following terms: **(6 Marks)**

i) Throughput

ii) Turnaround time

iii) Response Time

END