Name	Index No. /
2920/105	Candidate's Signature
OPERATING SYSTEMS	
July 2015	Date



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE I

OPERATING SYSTEMS

3 hours

2 8 JUL 2015

INSTRUCTIONS TO CANDIDATES

Time: 3 hours

Write your name and index number in the spaces provided above.

Sign and write the date of examination in the spaces provided above.

Answer any FIVE of the following EIGHT questions in the spaces provided.

All questions carry equal marks.

Candidates should answer the questions in English.

For Examiner's Use Only

Question	1	2	3	4	5	6	7	8	Total Score
Candidate's Score									

This paper consists of 12 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

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Turn over

(a)	open	ine three types of file sharing technologies that could be impler ating system.	nented in an (3 mark
(b)	(i)	Define the term cluster as used in file management.	(2 mark
	(ii)	Operating system uses file allocation table to position files or five desirable features of a good file allocation table.	a disk. Outlin (5 mark
		20 JUL 2013	1.
(c)	(i)	Outline two disadvantages of memory fragmentation.	(2 marks
	(ii)	Differentiate between device controller and device driver as u systems.	sed in comput (4 marks

		cac	k caching increases performance of a computer. Explain two way hing to justify this statement.	s used in disk (4 marks
		725		
	(a)	(i)	Outline three groups of I/O instructions used in computers.	(3 marks
	((ii)	Most computer systems have implemented dynamic memory account the procedure used to transfer data from I/O devices in these systems.	cess. Describe tems. (4 marks)
-			2 1 JUL 2015	
-			801 414 - 00800 Kingon	
(b)	Ro	salina stem t	would like to design a file management system. Outline five object that she should consider in the design.	ectives of the (5 marks)
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(c)		nendeleo Institute is experiencing data privacy problem within it's file system, plain two measures that the institute can put in place to mitigate this problem. (4 mark
_		
(d)	Mul	Itilevel operating systems must include round robin as one of the process sched orithms. Explain two advantages of this algorithm. (4 mark
		2 8 JUL 2015
(a)	Expl	ain the semaphore as used in operating system.
		e de Mile
(b)	(i)	Describe the term swapping as used in memory management. (3 marks
	(ii)	Outline four major storage levels that could be found in a memory hierarchy diagram. (4 marks)
5		

-		plain three ways in which a new process is created in an ope	erating system. (6 marks)
-			
_			
(d)	Der fou	rick was required to investigate several elements of a proces r elements that he could have established.	s control block. Outlin (4 marks)
_		The state of the s	
_		2 8 JU	
(a)	Expl (i)	ain each of the following terms as used in operating system:	(2 marks)
	(ii)	thread.	(2 marks)
b)	AXB interf	Company Ltd. intends to install an operating system with a face.	friendly user
	(i)	Identify the most appropriate type of operating system for justifying your answer.	the company (2 marks)

4.

	(,	operating system identified in (i).	while using the (4 marks)
-			
(c)	(i)	Explain the term dispatcher as used in operating systems	(2 marks)
	(ii)	Differentiate between block-oriented and stream-oriented	I/O devices. (4 marks)
		, com	
(d)	A lea	cturer described goals of I/O module during an operating systems he could have mentioned.	em class. Outline four (4 marks)
		2	8 JUL 20::
a)	(i)	Outline two memory placement algorithms.	(2 marks)

5.

_	(ii)	Differentiate between short term and long term process scheduling.(4 marks)
(b)	(i)	Define the term spatial locality as used in memory management. (2 marks)
	(ii)	Describe two limitations of dynamic memory partitioning schemes. (4 marks)
		2 0 JUL 20:.
-		114 - 0090
(c)		re 1 shows a directory structure in a typical operating system. Use it to answer the tions that follow. master file directory user 1 user 2 user 3 user 4
	user direct	ory Cat Do a fost a Cata a test X Gota a

Figure 1

Identify the directory structure depicted in the diagram justifying your answer.
 (2 marks)

	(iii) Ou	tline four typical directo	ory operations tha	t could be carried out	in the
	dir	ectory structure identifie	d in (c) (i).		(4 mar
(a)	Figure 2 sh labeled (i)	nows a NTFS volume lay	yout diagram. Ou	tline the function of t	he parts (4 mari
		Master file table	com	File area	
	(i)	easyth	(ii)		
	Figure 2			- Institut	
				. 21	JUL ?
_				. e. 80x	414 an
(b)	Most CPUs types of suc	have interrupt requests f h interrupt requests.	for operating syste	em's operations. Exp	lain two (4 mark

	(4
_	
d) (i)	Juliet intende se
200	Juliet intends to procure an I/O device for her computer. Other than cost outline four factors that she should consider when selecting the device.
	(4 ma
	TOTAL CONTRACTOR OF THE PARTY O
	Lim Lim
	2 0 JUL 2015
	9. Box 414 - 00900, Kir
755	
(11)	Solomon, a programmer with a certain company was required to explain the roles of clock software to a client. Outline four functions that
	roles of clock software to a client. Outline four functions that he could have mentioned. (4 mar)
(î)	Explain the term linking as applied in memory management. (2 marks
	(2 marks
	35 TO STORY OF THE PARTY OF THE
	2 8 JUL 26:5
	(ii)

(ii)		fferentiate be inagement.	tween <i>logical</i> addr	ess and physical	address as used in men (4 mar
Table	e I sh w.	ows details o	f FCFS scheduling	algorithm. Use i	t to answer the question
Pro	cess	Arrival time	Execution time	Service time	
PO	1,440	0	5	0	
P1		1	3	5	
P2		2	8	8	
P3		3	6	16	
			easylves		2 8 JUL 2015
(ii)	Ca	lculate the ave	erage wait time for	all the processes	. (2 marl
(iii)	Ou	tline two adva	antages of FCFS s	cheduling algorith	nm. (2 mark

	systems. Explain two types that she was likely to have identified. (4 mai
-	
7.35	
(d)	Javesh Company Ltd. would like to implement a client-server operating system. (four benefits the company will derive from this decision. (4 mar
_	
	and the
	2 8 JUL 20:3
	Box \$14-0090
(a)	Outline four reasons for implementing audit trail on a file system. (4 mar
	20°3
_	
-11	
_	
(b)	Differentiate between kernel and user spaces as applied in operating systems.
200	(4 mar
-	

c)	(1)	Outline two examples of resources required in process execution. (2 marks)			
	(ii)	Figure 3 shows memory regis register labeled (i) and (ii). Operating Process Process Process Process		ers in an operating system. Ou (ii) (i)	tline the memory (4 marks)
		102400 Figure 3		COM	
			Ne.	,.0	
)	Patricia was required to categorize computer I/O hardware. Describe three categories that she could have indicated. (6 marks)				
				Sal real	normal succession
				200	2 8 JUL 2015