



A/L ICT 2022 (Gr.12)

Marking Scheme

Term – 3 , 2022 Examination

Field Work Center (FWC)



Final Marks Distributions

Part – I 1 x 40 = 40 marks

Part – II A 10 x 4 = 40 marks

Part – II B 10 x 2 = 20 marks

Total: 100 marks

*This document /scheme has been prepared for the use of marking examination paper.
Some changes and alternative anaswers would be made by the teachers.*

Amendments to be included.

Part – I – Suggested Answers

(1)	1	(11)	4	(21)	3	(31)	5
(2)	3	(12)	2	(22)	5	(32)	5
(3)	5	(13)	3	(23)	4	(33)	3
(4)	3	(14)	5	(24)	2	(34)	1
(5)	2	(15)	2	(25)	3	(35)	3
(6)	3	(16)	5	(26)	3	(36)	2
(7)	4	(17)	4	(27)	2	(37)	3
(8)	4	(18)	2	(28)	4	(38)	1
(9)	3	(19)	4	(29)	3	(39)	4
(10)	4	(20)	1	(30)	3	(40)	3

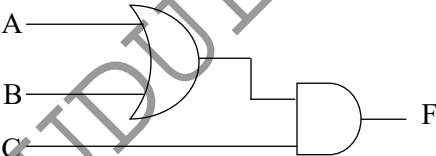
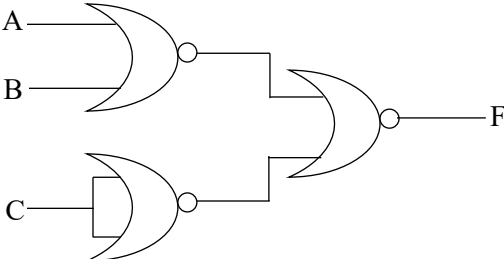
Part – II A – Suggested Answers

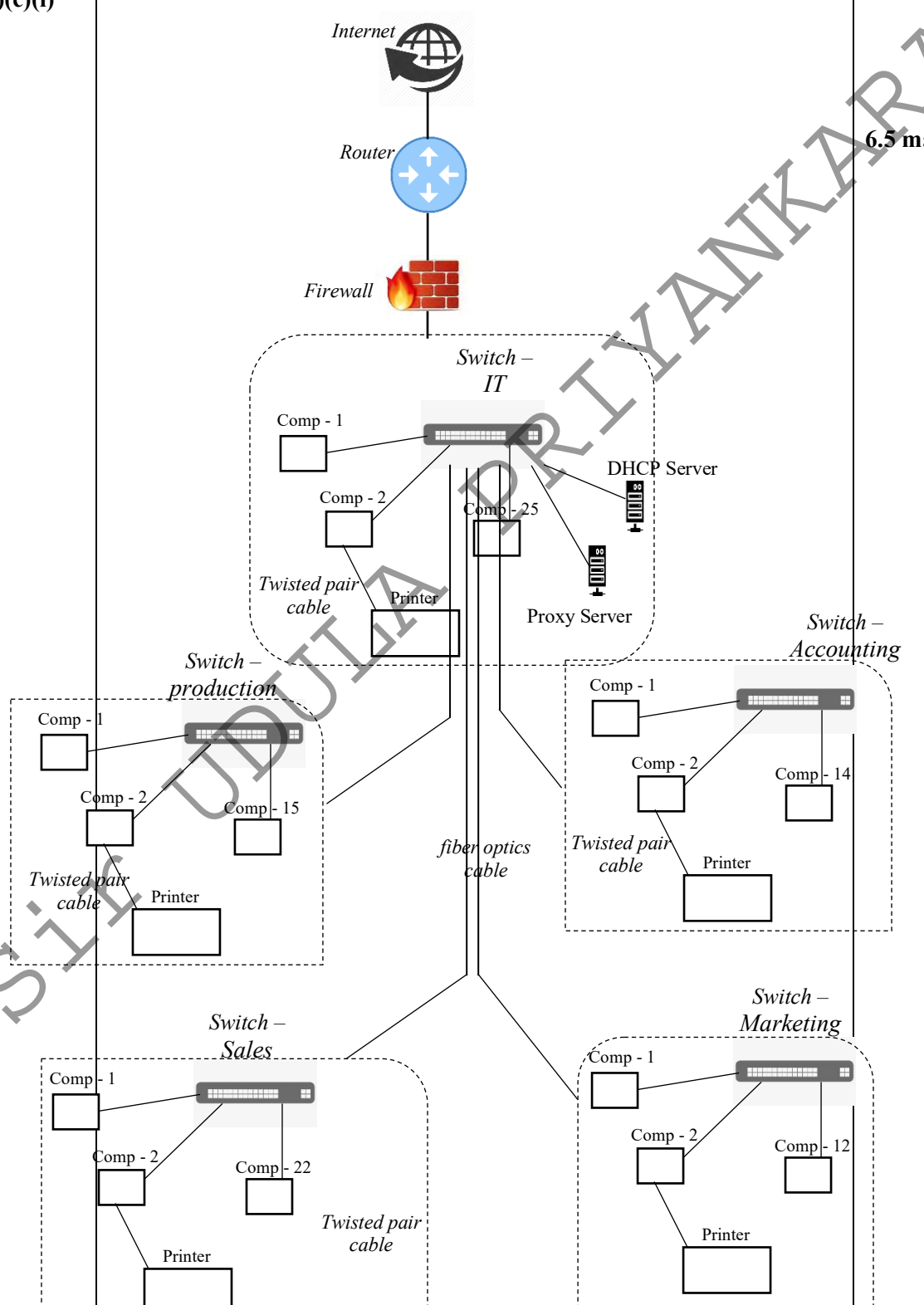
Question No.		Marks
(1)(a)(i)	00010111 ₂	1 marks
(1)(a)(ii)	11110000 ₂	1 marks
(1)(a)(iii)	00010111 ₂ 11110000 ₂ 00000111 ₂	2 marks
(1)(a)(iv)	<ul style="list-style-type: none"> • Possible to represent negative number • Subtractions are carried out as additions • A single representation is used to represent a zero • More efficient calculations 	2 marks
(1)(b)(i)	<ul style="list-style-type: none"> • Infrastructure as a Service (IaaS) • Platform as a Service (PaaS) • Software as a Service (SaaS) • Function as a Service (FaaS) 	2 marks

(1)(b)(ii)	<ul style="list-style-type: none">• Awareness program about ICT and its benefits• Introducing ICT as a subject for all the age groups in school levels• Donating used computers for low – economic level people who wish to learn• Establishing telecommunication infra-structure in rural areas.	2 marks <i>Any relevant answers accepted</i>																				
(2)(a)	<table><tr><td>No.</td><td>True / False</td><td>No.</td><td>True / False</td></tr><tr><td>(i)</td><td>False</td><td>(v)</td><td>True</td></tr><tr><td>(ii)</td><td>False</td><td>(vi)</td><td>False</td></tr><tr><td>(iii)</td><td>False</td><td>(vii)</td><td>True</td></tr><tr><td>(iv)</td><td>False</td><td>(viii)</td><td>False</td></tr></table>	No.	True / False	No.	True / False	(i)	False	(v)	True	(ii)	False	(vi)	False	(iii)	False	(vii)	True	(iv)	False	(viii)	False	4 marks
No.	True / False	No.	True / False																			
(i)	False	(v)	True																			
(ii)	False	(vi)	False																			
(iii)	False	(vii)	True																			
(iv)	False	(viii)	False																			
(2)(b)(i)	255.255.255.240	1 marks																				
(2)(b)(ii)	16	1 marks																				
(2)(c)	<table><tr><td>Application layer</td></tr><tr><td>Presentation layer</td></tr><tr><td>Session layer</td></tr><tr><td>Transport layer</td></tr><tr><td>Network layer</td></tr><tr><td>Datalink layer</td></tr><tr><td>Physical layer</td></tr></table>	Application layer	Presentation layer	Session layer	Transport layer	Network layer	Datalink layer	Physical layer	4 marks <i>Partial marks can be given</i>													
Application layer																						
Presentation layer																						
Session layer																						
Transport layer																						
Network layer																						
Datalink layer																						
Physical layer																						
(3)(a)	<ol style="list-style-type: none">① Give Open marks② Request or payment③ Invoice + DVD/Movie④ Shop⑤ Payment system or Payment details system⑥ Rental details or movie details	3 marks [0.5 x 6]																				

(3)(b)	(i) ④ (ii) ② (iii) ③ (iv) ① (v) ⑤	5 marks 1 for each
(3)(c)(i)	Phase deployment	1 marks
(3)(c)(ii)	<ul style="list-style-type: none"> • Training can be completed in small parts. • A failure of the new system has minimal impact because it is only one small part. • Issues around scale can be addressed without major impact. 	1 marks <i>Any relevant answers accepted</i>
(4)(a)(i)	7 bits	1 marks
(4)(a)(ii)	11011010101	1 marks
(4) (b)	A – Ready B – Waiting C – Terminated / Exit D - Interrupt	4 marks <i>1 for each</i>
(4) (c)	<ul style="list-style-type: none"> • Allocates disk space as a collection of adjacent/contiguous blocks. • This technique needs to keep track of unused disk space. • File size is needed to know at the time of creation • Extending file size is difficult • External fragmentation (free unusable space between allocation) 	2 marks <i>Any relevant answers accepted</i>
(4) (d)	It can be larger than physical memory OR When an application requires more memory space than the maximum memory space available in the main memory of a computer is ready for execution, operating system uses virtual memory system OR Virtual memory is a technique that allows the execution of processes that are not completely in memory.	2 marks <i>Any relevant answers accepted</i>

Part – II B – Suggested Answers

Question No.																																						
(5)(a)	<table><tr><th>A</th><th>B</th><th>C</th><th>F</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr></table>	A	B	C	F	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	1	1	0	0	0	1	0	1	1	1	1	0	0	1	1	1	1	3 marks
A	B	C	F																																			
0	0	0	0																																			
0	0	1	0																																			
0	1	0	0																																			
0	1	1	1																																			
1	0	0	0																																			
1	0	1	1																																			
1	1	0	0																																			
1	1	1	1																																			
(5)(b)	$\bar{A}BC + A\bar{B}C + ABC$	1 marks																																				
(5)(c)	<table><tr><td></td><td>C</td><td>0</td><td>1</td></tr><tr><td>AB</td><td>00</td><td>0</td><td>0</td></tr><tr><td></td><td>01</td><td>0</td><td>1</td></tr><tr><td></td><td>11</td><td>0</td><td>1</td></tr><tr><td></td><td>10</td><td>0</td><td>1</td></tr></table> $C.(A + B)$		C	0	1	AB	00	0	0		01	0	1		11	0	1		10	0	1	2 marks																
	C	0	1																																			
AB	00	0	0																																			
	01	0	1																																			
	11	0	1																																			
	10	0	1																																			
(5)(d)		2 marks																																				
(5)(e)		2 marks																																				

(6)(a)	<table><tr><th>Bus</th><th>Star</th></tr><tr><td>Less cabling</td><td>More cabling</td></tr><tr><td>Central device not needed</td><td>Central device (eg:switch) needed</td></tr></table>	Bus	Star	Less cabling	More cabling	Central device not needed	Central device (eg:switch) needed	1 marks Any relevant answers accepted
Bus	Star							
Less cabling	More cabling							
Central device not needed	Central device (eg:switch) needed							
(6)(b)	- Can be reduced the wastages of IP addresses in allocation.	1 marks						
(6)(c)(i)	 <p>The diagram illustrates a network architecture. At the top, the Internet is connected to a Router, which is connected to a Firewall. Below the Firewall is a central Switch – IT. This central switch is connected via fiber optics to four departmental switches: Switch – production, Switch – Sales, Switch – Marketing, and Switch – Accounting. Each departmental switch is connected to its respective computers and printers via twisted pair cables. The central switch is also connected to a DHCP Server and a Proxy Server. The diagram shows a star topology for each department and a central star topology for the entire network.</p>	6.5 marks						

	<p><i>For diagram</i></p> <p>0.5+0.5+0.5+0.5+0.5 marks for each switch / labels</p> <p>0.5+0.5 marks for two servers in proper place</p> <p>0.5 marks for firewall/router/ISP each in proper place</p> <p>0.5 marks for fiber cable label in proper place</p> <p>0.5 marks for twisted pair cable label for all places</p> <p>0.5 marks for printers label for all places</p>																															
(6)(c)(ii)	<table><tr><th>Departments</th><th>Network address</th><th>Broadcast address</th><th>Subnet mask</th><th>Usable IP address range</th></tr><tr><td>Production</td><td>196.1.1.0</td><td>196.1.1.31</td><td>255.255.255.224</td><td>196.1.1.1 - 196.1.1.30</td></tr><tr><td>Marketing</td><td>196.1.1.32</td><td>196.1.1.63</td><td>255.255.255.224</td><td>196.1.1.33 - 196.1.1.62</td></tr><tr><td>Accounting</td><td>196.1.1.64</td><td>196.1.1.95</td><td>255.255.255.224</td><td>196.1.1.65 - 196.1.1.94</td></tr><tr><td>Sales</td><td>196.1.1.96</td><td>196.1.1.127</td><td>255.255.255.224</td><td>196.1.1.97 - 196.1.1.126</td></tr><tr><td>Information Technology</td><td>196.1.1.128</td><td>196.1.1.159</td><td>255.255.255.224</td><td>196.1.1.129 - 196.1.1.158</td></tr></table>	Departments	Network address	Broadcast address	Subnet mask	Usable IP address range	Production	196.1.1.0	196.1.1.31	255.255.255.224	196.1.1.1 - 196.1.1.30	Marketing	196.1.1.32	196.1.1.63	255.255.255.224	196.1.1.33 - 196.1.1.62	Accounting	196.1.1.64	196.1.1.95	255.255.255.224	196.1.1.65 - 196.1.1.94	Sales	196.1.1.96	196.1.1.127	255.255.255.224	196.1.1.97 - 196.1.1.126	Information Technology	196.1.1.128	196.1.1.159	255.255.255.224	196.1.1.129 - 196.1.1.158	<p>2.5 marks</p> <p>0.5 marks for each row</p> <p>Any relevant methods accepted</p>
Departments	Network address	Broadcast address	Subnet mask	Usable IP address range																												
Production	196.1.1.0	196.1.1.31	255.255.255.224	196.1.1.1 - 196.1.1.30																												
Marketing	196.1.1.32	196.1.1.63	255.255.255.224	196.1.1.33 - 196.1.1.62																												
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(7)(a)	<p>Functional requirements – B,C,E,F,G</p> <p>Non-functional requirements – A,D,G</p>	<p>4 marks</p> <p>[0.5 x 8]</p>																														
(10)(c)		<p>6 marks</p> <p>[external entities – 0.5 marks, processes – 1 x 3 marks, data stores – 0.5 x 2 marks, data flows – 1.5]</p>																														
