

G.C.E. (A/L) ICT
2016 Batch
June Examination



Field Work Center (FWC)
Marking Scheme

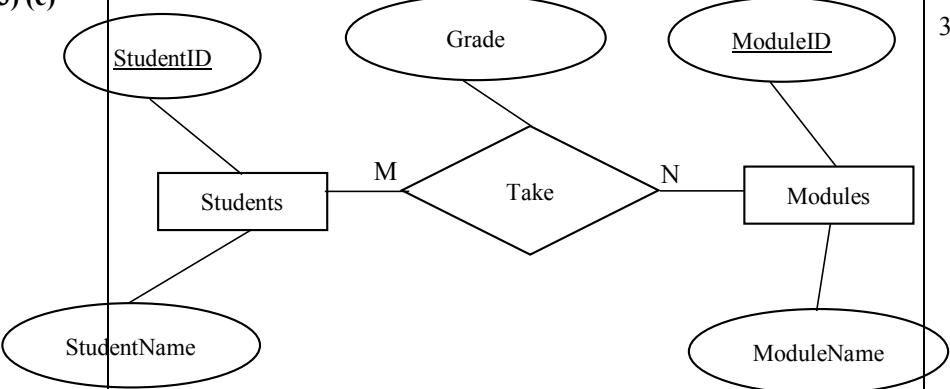
Part - I

(1)	2	(11)	2	(21)	4	(31)	4	(41)	4
(2)	3	(12)	2	(22)	2	(32)	1	(42)	1
(3)	3	(13)	1	(23)	1	(33)	2	(43)	4
(4)	3	(14)	2	(24)	3	(34)	3	(44)	4
(5)	5	(15)	4	(25)	5	(35)	1	(45)	2
(6)	3	(16)	3	(26)	2	(36)	2	(46)	1
(7)	2	(17)	4	(27)	3	(37)	4	(47)	5
(8)	1	(18)	2	(28)	4	(38)	3	(48)	5
(9)	1	(19)	2	(29)	3	(39)	4	(49)	5
(10)	2	(20)	3	(30)	4	(40)	5	(50)	5

Part – II A Structured Essay – All questions

Note:- * Amendments to be included.

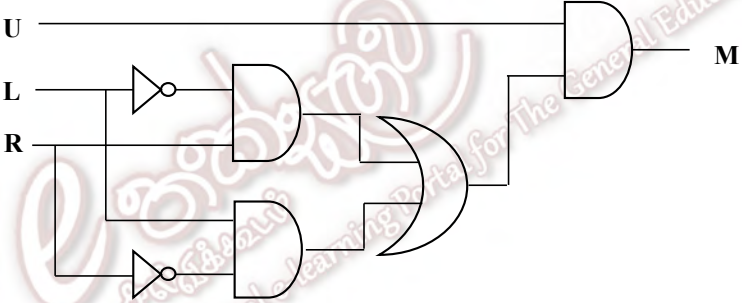
Question No.	Suggested Answers	Marks
(1)(a)(i)	A – Protocol OR Hypertext transfer protocol secured B – Domain name	1 +1 marks
(1)(a)(ii)	lk OR .lk	1 marks
(1)(a)(iii)	DNS <u>translates / maps IP address into domain name</u> or vice versa.	2 marks
(1) (b)	$13_{10} = 00001101_2$ $-9_{10} = 11110111_2 +$ <hr style="width: 20%; margin-left: 0;"/> 00000100_2 (discard carry bit 1)	2 marks
(1)(c)(i)	Number of physical pages = Size of physical memory / size of a page $= 1 \text{ GB} / 1\text{KB}$ $= 2^{30} \text{ bytes} / 2^{10} \text{ bytes}$ $= 2^{20} \text{ pages}$	1 marks

(1)(c)(ii)	Size of Virtual address = 32 bits Virtual address space = 2^{32} bytes	1 marks
(1)(c)(iii)	Number of virtual pages = Size of virtual address space / Size of a page = 2^{32} bytes / 2^{10} bytes = 2^{22} pages	1 marks
10 marks		
(2) (a)	1 – link 2 – stylesheet 3 – styles.css	3 marks
(2) (b)(i)	#header OR id="header"	2 marks
(2) (b)(ii)	.boldRed OR class="boldRed"	2 marks
(2) (c)	Can be used by <u>search engines/programs to categorize /list the page.</u> OR Provides <u>metadata</u> about the document. OR Provides a <u>description of the page /site.</u>	3 marks
(3) (a)	The table violates 2nd Normal Form. because there are <u>two partial dependencies</u> : StudentID → StudentName and ModuleID → ModuleName	2 marks
(3) (b)	Students (<u>StudentID</u> , StudentName) Modules (<u>ModuleID</u> , ModuleName) Results (<u>StudentID</u> , <u>ModuleID</u> , Grade)	3 marks
(3) (c)	 <pre> erDiagram Students --o{ Modules : Take Students { string StudentID PK string StudentName } Modules { string ModuleID PK string ModuleName } Take { string Grade } </pre>	3 marks

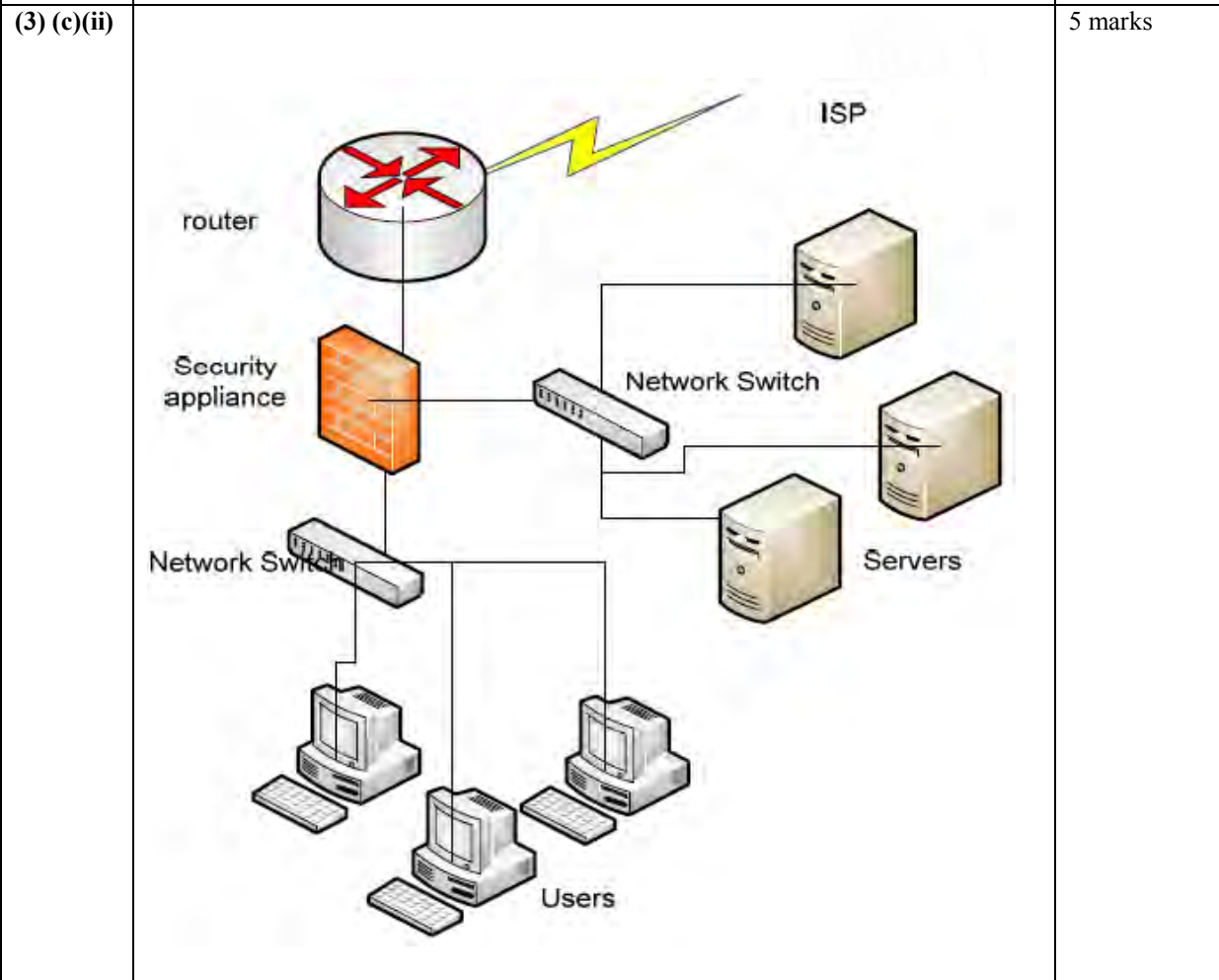
(3) (d)	Many-to-many relationship. One student takes more than one modules while one module is taken by more than one students.	2 marks
(4) (a)	Encryption is a <i>mathematical technique</i> used to <i>scramble / encode</i> a message into an <i>unreadable format</i> to <i>unauthorized person</i> .	2 marks
(4)(b)(i)	B will not be able to decrypt it. A's private key would be needed to decrypt it. Only A could decrypt it.	2 marks
(4)(b)(ii)	As A's public key is available to anyone, Anybody could decrypt it.	2 marks
(4) (c)	<ul style="list-style-type: none"> • System will be storing confidential/personal data (that must be kept securely/safely). • Centralized/improved security management /centralized login system/ centralized administration /administration will be easier. • Centralized backup. • Running database from a server will avoid concurrency issues. • Server (operating system) may allow more simultaneous connections than a workstation. 	2 marks (any two)
(4) (d)	<pre>CREATE TABLE Insurance (PolicyNumber VARCHAR(6), RegistrationNumber VARCHAR(6), DateStarted DATE(10), PolicyType VARCHAR(20), Amount FLOAT(15), PRIMAY KEY(PolicyNumber))</pre>	2 marks

Part - II B Essay – Four questions only

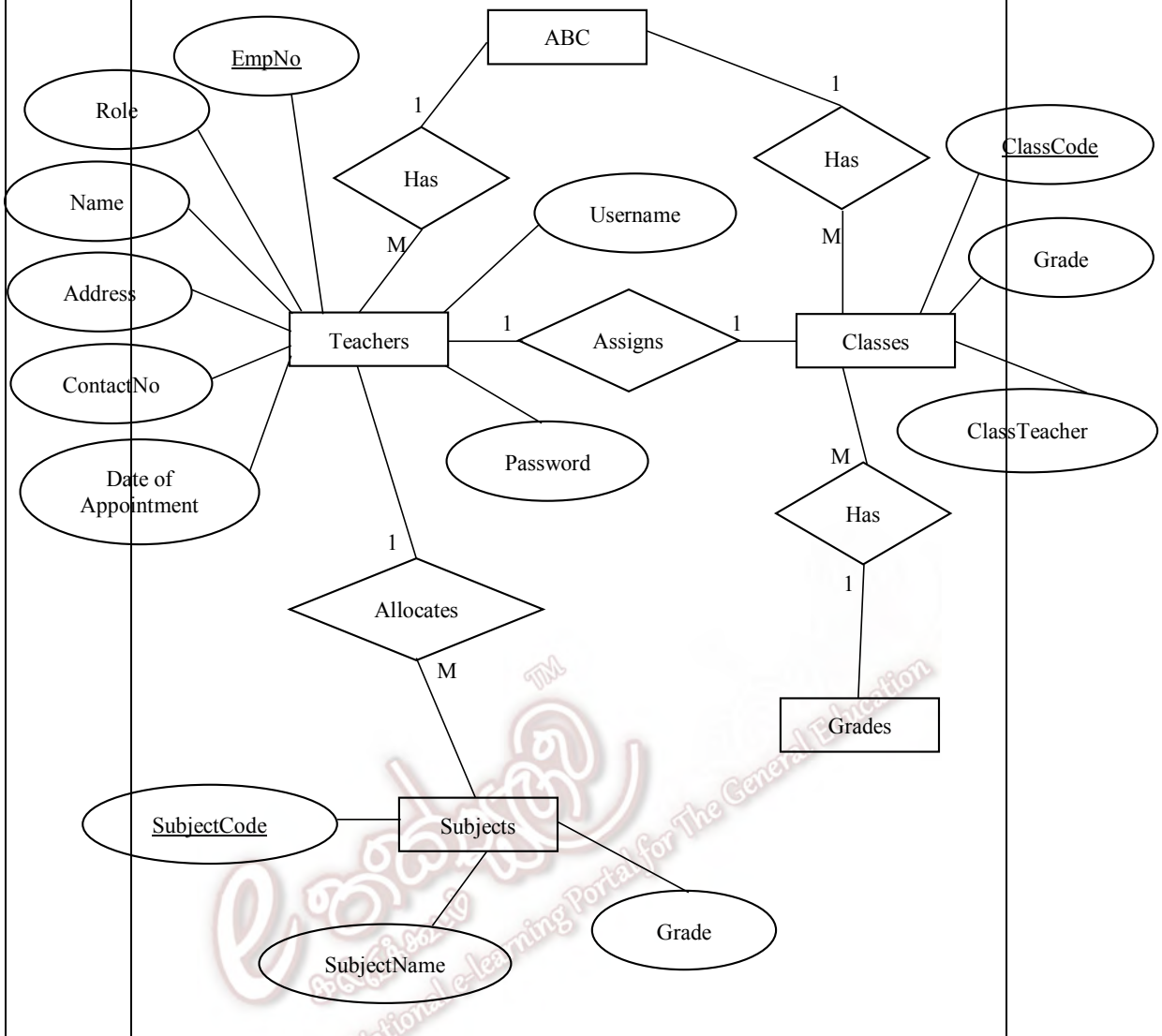
Question No.	Suggested Answers	Marks
(1) (a)	$F = \overline{\overline{A} + (B \cdot A)}$ $F = \overline{\overline{A} \cdot \overline{B \cdot A}}$ <p>[De Morgan's Law]</p> $F = A \cdot (B \cdot A)$ <p>[Double Complement Law]</p> $F = A \cdot B \cdot A$ $F = A \cdot A \cdot B$ <p>[A.A = 1]</p> $F = A \cdot B$	3 marks

(1)(b)(i)	$\bar{U}(L \oplus R)$ Or $\bar{U}(L\bar{R} + \bar{L}R)$	3 marks																																																						
(1)(b)(ii)	<table border="1" data-bbox="341 427 863 857"> <thead> <tr> <th>U</th> <th>L</th> <th>R</th> <th>\bar{U}</th> <th>$L \oplus R$</th> <th>$\bar{U}(L \oplus R)$</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td></tr> </tbody> </table>	U	L	R	\bar{U}	$L \oplus R$	$\bar{U}(L \oplus R)$	0	0	0	1	0	0	0	0	1	1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	1	0	0	0	0	0	1	0	1	0	1	0	1	1	0	0	0	0	1	1	1	0	0	0	4 marks
U	L	R	\bar{U}	$L \oplus R$	$\bar{U}(L \oplus R)$																																																			
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(1)(b)(iii)	XOR gate	2 marks																																																						
(1)(b)(iv)		3 marks																																																						
(2)(a)	<ul style="list-style-type: none"> • More numbers of employees needed. • Leads to manufacturing delay. • Unable to pack more milk powder into packets per day. 	3 marks																																																						
(2)(b)	<p>Functional requirement of a system is <i>the services provided to the user</i> by the system or the <i>services expected</i> by the user.</p> <ul style="list-style-type: none"> • System shall be able to measure milk powder correctly & quickly. • System shall be able to pack more milk powder into packets per day. 	3 marks + 4 marks																																																						
(2)(c)	Non-functional requirement of a system is the <i>constraints / limitations</i> of the system.	3 marks																																																						
(2)(d)	Manufacturing expert system Or Computer Aided Manufacturing (CAM)	2 marks																																																						

(3) (a)(i)	<p>TCP A file to be transmitted in its <u>entirety without any errors</u>, therefore the error <u>detection and correction properties</u> of TCP are needed.</p>	2 marks [1+1]
(3)(a)(ii)	<p>UDP When watching a movie, <u>delay is critical</u> and therefore there isn't any time to seek the retransmission of any errors.</p>	2 marks [1+1]
(3)(a)(iii)	<p>TCP Web pages need to be delivered <u>without error</u> so that all content is properly formatted and presented. Therefore the <u>error detection and correction properties</u> of TCP are needed.</p>	2 marks [1+1]
(3) (b)(i)	The computer is <u>unable to obtain an IP address</u> from a DHCP server.	2 marks
(3) (c)(i)	Router, Switch/hub, Security appliance/firewall, Servers.	2 marks



(4)



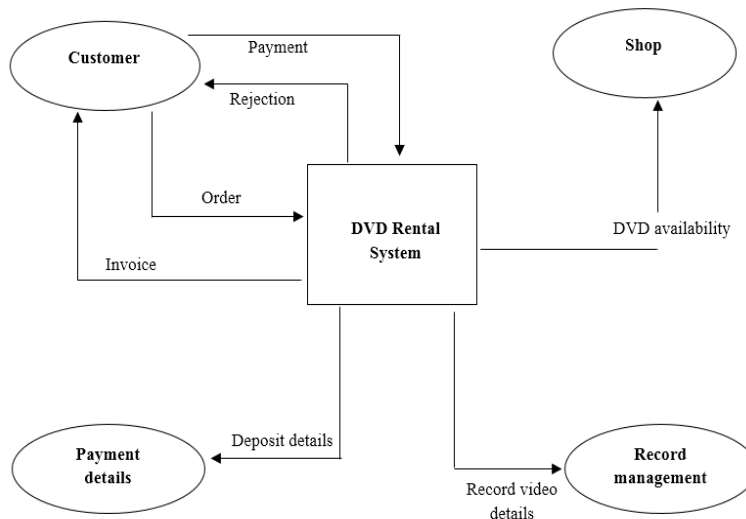
Entities – 5 marks
Attributes – 3 marks
Relationships – 4 marks
Primary keys – 3 marks

(5) (a)

Context diagram shows the system boundaries, external entities that interact with the system and the major information flows between the entities and the system.

3 marks

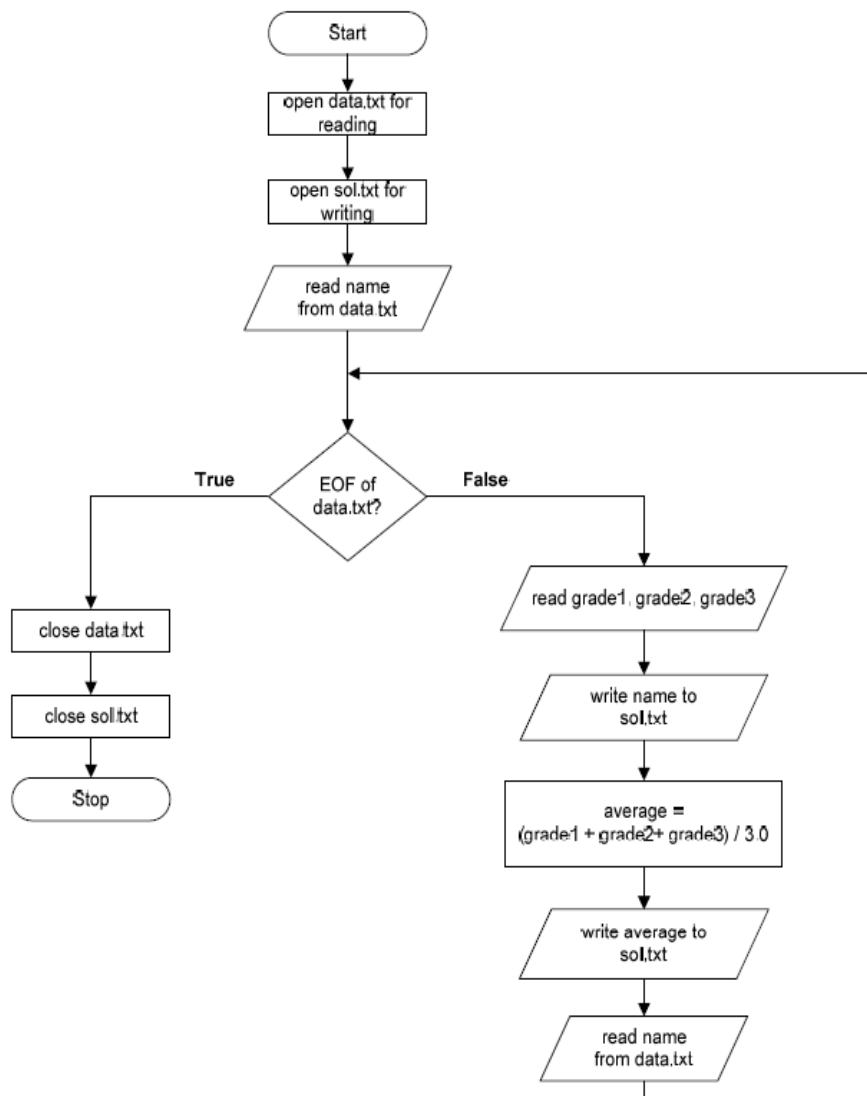
(5) (b)



4 marks for external entities.
1 marks for system.
7 marks for correct data flows.

(6) (a)

6 marks



(6) (b)

9 marks

```
fin = open('data.txt','r')
fout = open('sol.txt','w')
name = fin.readline()
while (name!= ""):
    grade1 = fin.readline()
    grade2 = fin.readline()
    grade3 = fin.readline()
    fout.write (name)
    s1 = int (grade1)
    s2 = int (grade2)
    s3 = int (grade3)
    average=(s1+s2+s3)/3.0
    fout.write(str(average)+"\n")
    name = fin.readline()
fin.close()
fout.close()
```

Note: - Teachers are expected to follow this marking scheme strictly for marking. (In the answers given, Words with **Bold** / Underlined must be in the answer scripts of students).

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Part – I 2 x 50 =100 marks

Part – II A 10 x 4 = 40 marks

Part – II B 15 x 4 = 60 marks

200 / 2 = 100 marks
