G.C.E. (A/L) Examination – November 2015

Conducted by Field Work Center, Thondaimanaru.

MARKING SCHEME

In Collaboration with the Zonal Education Office, Jaffna

Information & Communication Technology (ICT)

Grade - 13 (A/L) 2016   **Part – I and II**

Part - I

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

Part 2 - A

1.

(a)

(i) Tom & Jerry   (1.5 marks)

(ii) <html>   (1.5 marks)

(b)

<img src="bird.png" alt="birds"> or   (2 marks)

(c)

1 – table

2 – tr

3 – colspan = "2"

4 – /tr

5 – /table   (1 x 5 marks)

2.

(a)
The table *violates 2nd Normal* form because there are two *partial dependencies*: StudentID → StudentName and ModuleID → ModuleName   (2 marks)
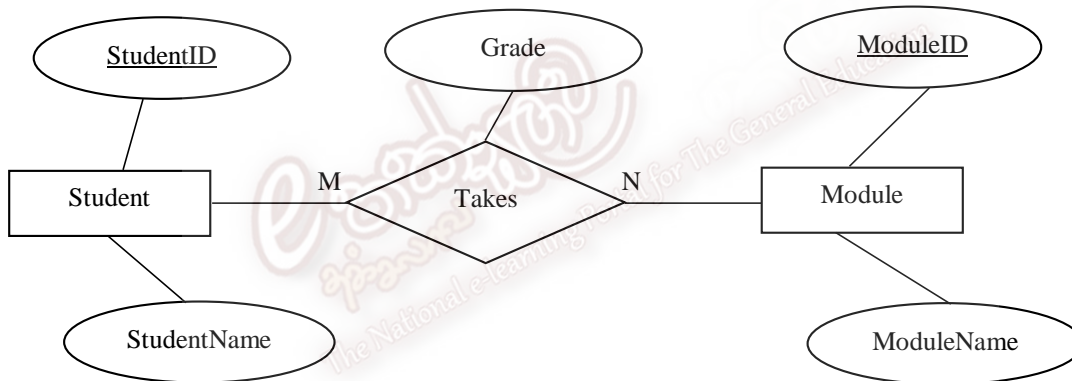
(b)
Student (StudentID, StudentName)
Module (ModuleID, ModuleName)
Results (StudentID, ModuleID, Grade)   (3 marks)

(c)

(3 marks)

(d)
Many-to-many – One student may take many modules and a module is taken by many students. (2 marks)

3.
(a)
(i) call, a, b
(ii) b < 10
(iii) fib.py
(iv) fib
(v) call()
(vi) a, b
(vii) print (b, end = ' ')   a ,b =b ,a+b
(viii) +   (8 x 0.5 = 4 marks)

(b)

```
n=1
sum = 0
for n in range(1,11):
    sum=sum+n
    print (sum,end= ' ')          (3 marks)
```

(c)

B2C – Involves online businesses attempting to reach individual consumers (www.sampath.lk).

C2C – Provides a way for consumers to sell each other, with the help of Internet / world wide web.
(www.ebay.com).

G2C – Government provides services for their citizens via Internet / world wide web.   (1 x 3 = 3 marks)

(4)
(a)

$17_{10} = 00010001_2$

$-6_{10} = 11111001_2$

(2 marks)

(b)

$17_{10} = 00010001_2$

$-6_{10} = 11111001_2$

       00001010

                1 [add 1 to LSB]

       00001011

(2 marks)

(c)

(i) System maintenance & review

(ii) System testing

(iii) System analysis

(iv) Problem definition / Preliminary system study

(1 x 4 = 4 marks)

(d)

(i) Process

(ii) Swapping

(iii) Multi-programming

(iv) Dynamic loading   (4 x 0.5 = 2 marks)

1.

(a)

A	B	C	Output
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	1
1	1	1	1

(5 marks)

(b)

$\bar{A}BC + A\bar{B}C + AB\bar{C} + ABC$ (3 marks)

(c)

$= \bar{A}BC + A\bar{B}C + AB(\bar{C} + C)$ [Distributive Law]

$= \bar{A}BC + A\bar{B}C + AB$ $[C + \bar{C} = 1]$

$= \bar{A}BC + A(B + \bar{B}C)$ $[B + \bar{B}C = B + C]$

$= \bar{A}BC + A(B + C)$

$= \bar{A}BC + AB + AC$
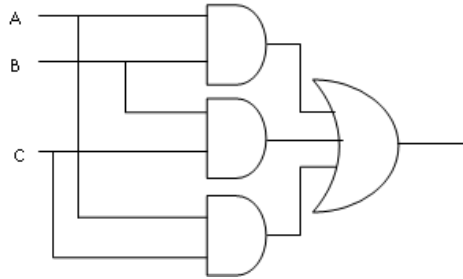
$= B(\bar{A}C + A) + AC$

$= B(A + C) + AC$

$= AB + AC + BC$ (4 marks)

(d)

(3 marks)

(2)

External entities: Proprietor, Suppliers (2 x 2 = 4 marks- no marks for others)
Data store: Sales, Orders, Stock, Accounts, Recipes, Goods for sales. (1 x 5 = 5 marks-any five)
Processes: Make goods, Review sales, order raw ingredients, Receive orders, Order stock products, Sell goods & products. (1 x 6 = 6 marks)
[**Note:** Equivalent words can be considered]

(3)
(a)
Syntax error: Syntax refers to the structure of a program and the rules about that structure. For example, parentheses have to come in matching pairs, so (1 + 2) is legal, but 8) is a **syntax error**.
[Programming languages can only execute a program if the syntax is correct; otherwise, the interpreter /compiler displays an error message]. (2 marks)

Run-time error: the error does not appear until after the program has started running, but not contain syntax error. These errors are also called **exceptions** because they usually indicate that something exceptional has happened. (2 marks)

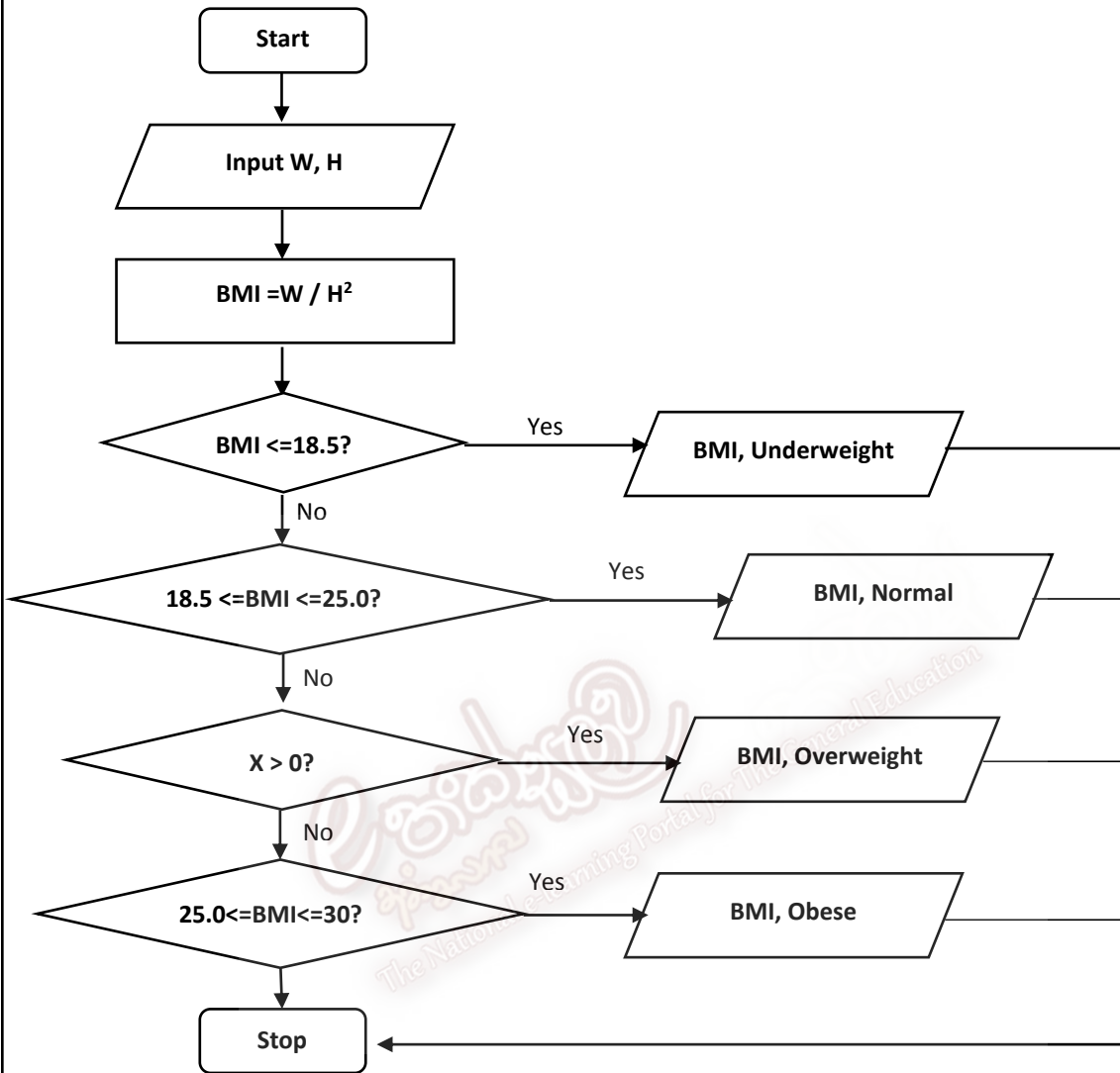**(b) (i)**

Begin

       Input W, H
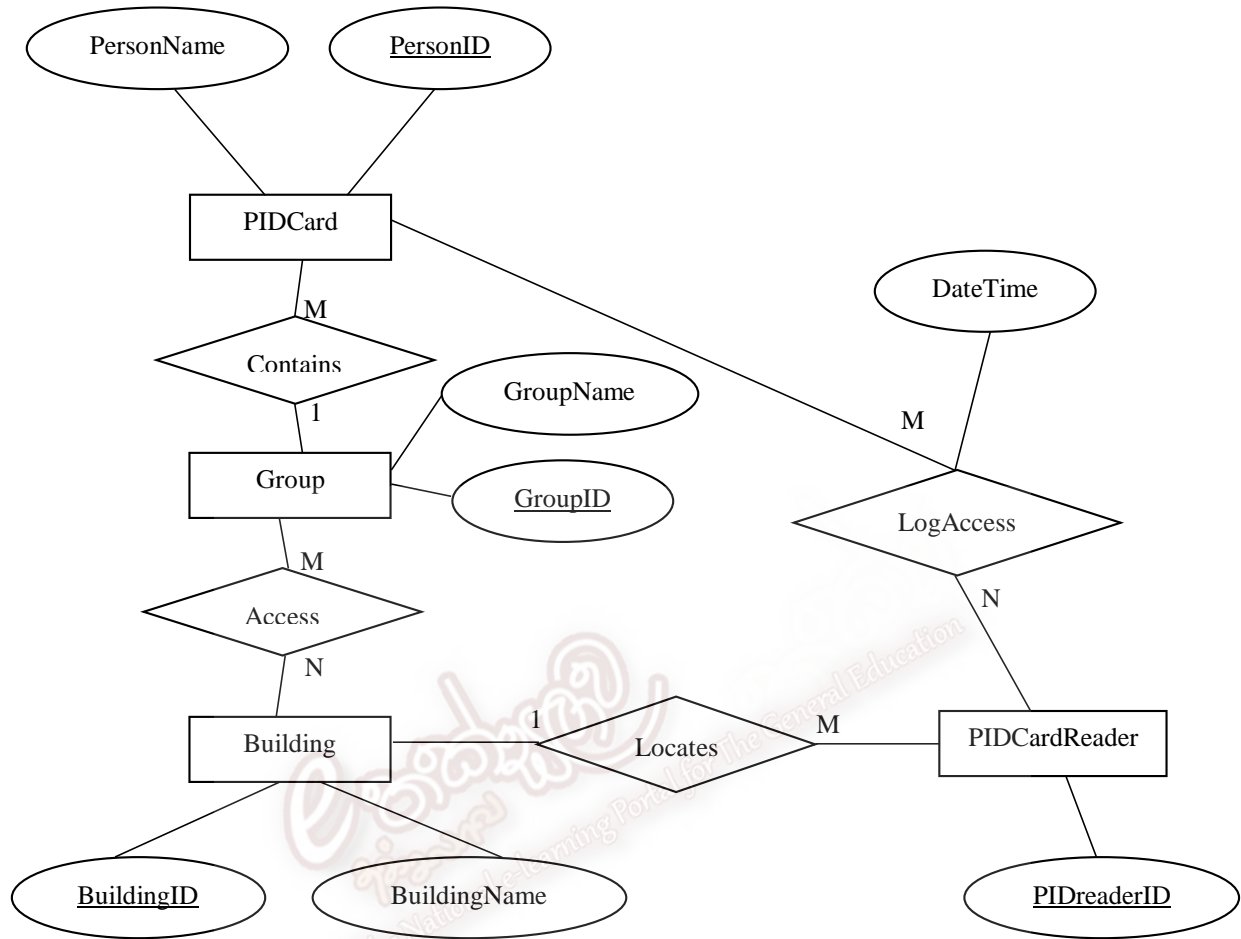
       $BMI = W / H^2$

       Display BMI

End

(4 marks)

(b) (ii)

```
                         ┌──────────────┐
                         │    Start     │
                         └──────┬───────┘
                                ↓
                        ╱──────────────╲
                       ╱   Input W, H    ╲
                       ╲                 ╱
                        ╲──────┬────────╱
                                ↓
                         ┌──────────────┐
                         │  BMI =W / H² │
                         └──────┬───────┘
                                ↓
                        ◇──────────────◇          Yes    ╱──────────────────╲
                        │  BMI <=18.5? │────────────────╱  BMI, Underweight   ╲
                        ◇──────┬───────◇                 ╲──────────────────╱
                                │ No
                                ↓
                 ◇───────────────────────◇      Yes     ╱────────────────╲
                 │  18.5 <=BMI <=25.0?    │────────────╱   BMI, Normal     ╲
                 ◇───────────┬────────────◇             ╲────────────────╱
                              │ No
                              ↓
                    ◇──────────────◇        Yes        ╱──────────────────╲
                    │    X > 0?    │──────────────────╱  BMI, Overweight    ╲
                    ◇──────┬───────◇                   ╲──────────────────╱
                            │ No
                            ↓
                 ◇───────────────────◇     Yes         ╱────────────────╲
                 │  25.0<=BMI<=30?   │────────────────╱   BMI, Obese      ╲
                 ◇─────────┬─────────◇                 ╲────────────────╱
                           ↓
                    ┌──────────────┐
                    │     Stop     │
                    └──────────────┘
```

(7 marks)

(4)

(4 entities = 4 marks, 4 relationships = 4 marks, primary keys = 2 marks, other attributes = 5 marks)

(5)

(a)

	ADSL	**ISDN**
Data Rate	High	Low
Connectivity	Point-to-point	End-to-end
Download/ Upload speed	Upload speed < Download speed	Upload speed = Download speed

(4 marks)

(b)
The **round-trip delay time (RTD)** / **round-trip time (RTT)** is the **length of time it takes for a signal to be sent** plus the **length of time it takes for an acknowledgment** of that **signal to be received**. (3 marks)

(c)

Star

- ✓ All the computers are connected through hub / switch.
- ✓ Hub / switch are a single point of failure.
- ✓ More cabling needed.
- ✓ Easy to troubleshoot.
- ✓ Easy to setup/ Easy to connect computers / to remove computers to/from network.

Bus

- ✓ Easy to setup.
- ✓ Difficult to troubleshoot.
- ✓ Less cabling.
- ✓ If the signal terminators / T-connectors are not properly installed, the entire communication will be down.

(5 marks)

(d)

P2P	Client-Server
A distributed application architecture that partitions tasks (workloads) between peers.	A distributed application architecture that partitions tasks (workloads) among servers / Server takes full load.
Decentralized.	Centralized.
Every user is the administrator of his machine. User can control their shared resources.	All of the controls are on the servers.
Failure of one peer doesn't affect the functioning of other peers.	Server is a single point of failure.
Less over-all cost (No additional hardware/software needed).	More cost (additional hardware/software needed).

(3 marks)

(6)

(a)

- Staff of the department shall be able to store details about license such as photo, finger print, bio-data and blood group. Or staff of the department shall be able to scan person's photo / finger print.

- Staff of the department shall be able to protect information from unauthorized people about persons.

(4 marks) (Any relevant answers)

(b)

- preventing forged licenses.
- following rating system on accidents.
- making fine / legal procedures easily and quickly.

(3 marks) (Any relevant answers)

(c)
- Fraudulent identity cards could be prevented.
- Data on chips could be digitally captured easily & quickly / accurately.
- The chip stores the data printed on the card. While it may be possible to counterfeit the data visible on the card, the data stored on the card is secure and its integrity.
- The chip guarantees the privacy of the citizen is respected.
(4 marks) (Any relevant answers)

(d)
Bar Codes / Magnetic Stripes / Wiegand interface / Watermark Magnetics / Proximity Cards / RFID/ Contact Smart Cards / Contact-less Smart Cards.
(4 marks) (Any relevant answers)

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

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