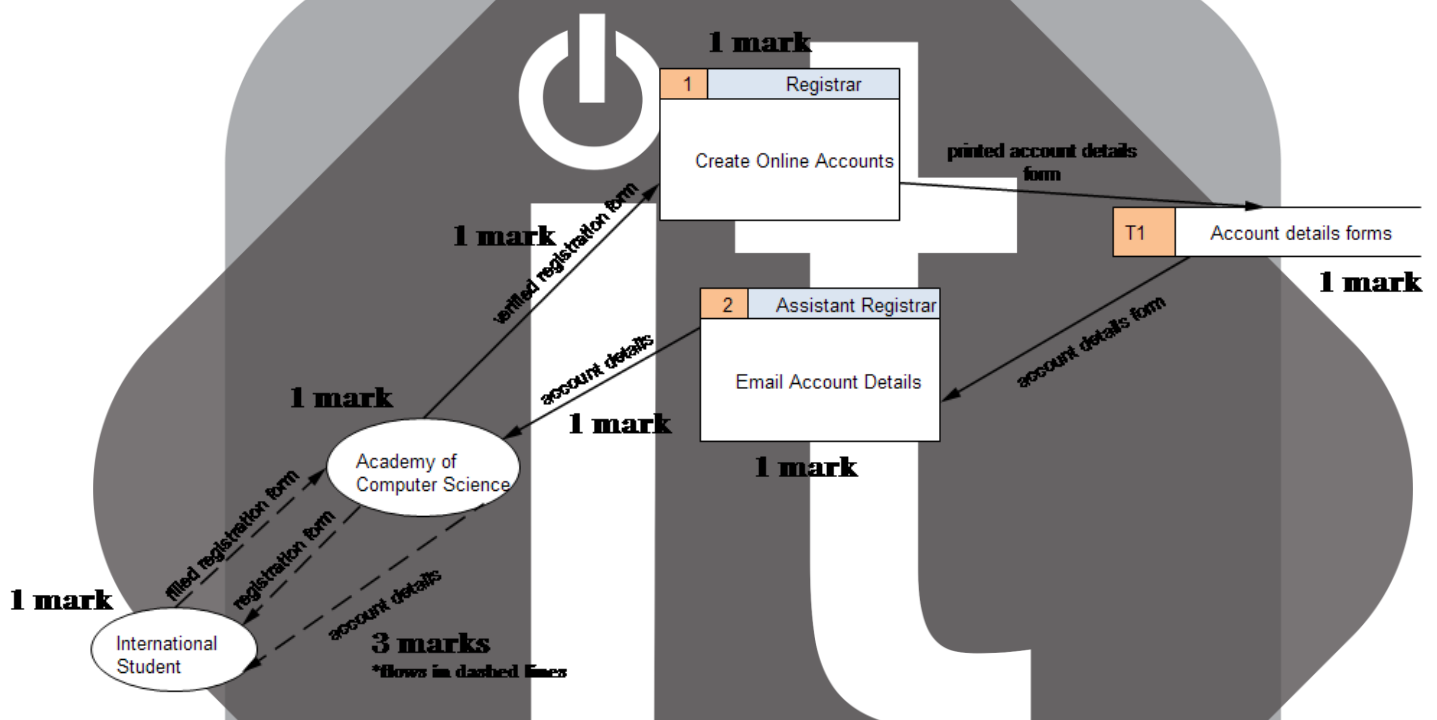| Model Paper 2 – MCQ - Answers					
1	3	**21**	4	**41**	1
2	3	**22**	5	**42**	2
3	5	**23**	3	**43**	2
4	4	**24**	2	**44**	2
5	5	**25**	2	**45**	5
6	1	**26**	4	**46**	1
7	3	**27**	2	**47**	1
8	3	**28**	3	**48**	4
9	3	**29**	2	**49**	1
10	2	**30**	1	**50**	3
11	5	**31**	4		
12	4	**32**	3		
13	5	**33**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

Model Paper 2 – Paper II

Marking Scheme

Note - Please read the instructions carefully when marking. Consider the highlighted points in the answers.

Part – A

1. **(10 Marks)**

2.

(a) Process is a program in **execution**. A program can consist of **many processes**. **(2 marks)**

(b)

   (i) Changes the state from **new to ready. (2 marks)**
   (ii) Changes the state from **ready to running. (2 marks)**

(c) **Disagree (No),** e-commerce is a subset of e-business therefore all the e-business applications are not e-commerce applications. **(2 marks in Total)**

(d) If the seller is replaced by a software agent, then agent represents a business user. Therefore, the key proactive behavior is to **take autonomous actions to make high business profit. (2 marks)**

3.

(a)
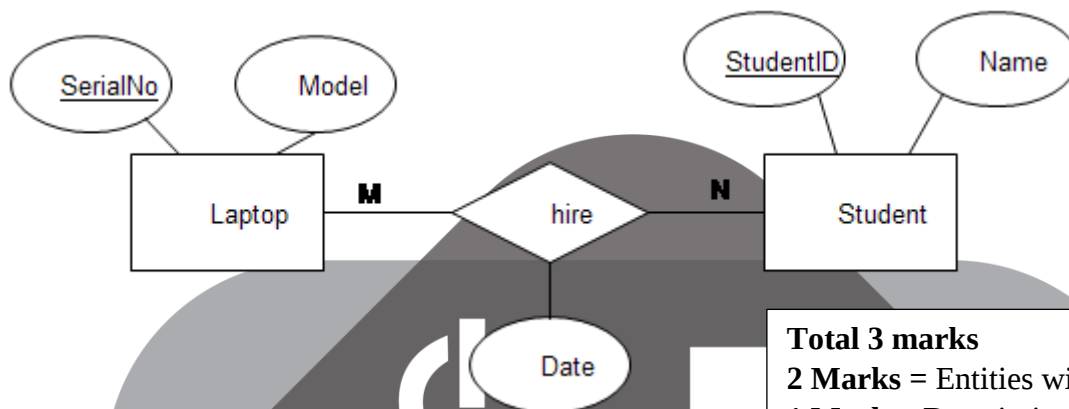
Total 3 marks
2 Marks = Entities with Attributes
1 Mark = Descriptive attribute with relationship and Cardinalities

1 mark with closing bracket

5 marks = 1 mark for each line

(b) **CREATE TABLE Hire (**
   SerialNo INT,
   StudentID INT,
   PRIMARY KEY (SerialNo,StudentID),
   FOREIGN KEY (SerialNo) REFERENCES Laptop(SerialNo),
   FOREIGN KEY (StudentID) REFERENCES Student(StudentID)
)

(Total 6 Marks)

(c) Domain integrity is used to enforce type, length, range, presence, etc, constraints to ensure that all the entries of a certain column comply with the constraints. **(1 mark)**

4.

(a)
```
rfile=open("read.csv","r")
wfile=open("write.csv","w")
for line in rfile:
        name=line.split(" ")[0]
        mark1=int(line.split(" ")[1].split(",")[0])
        mark2=int(line.split(" ")[1].split(",")[1])
        tot=mark1+mark2
        data=name+" "+str(tot)+"\n"
        wfile.write(data)
rfile.close()
wfile.close()
```

1 mark for opening and closing both the files

6 marks – content with in the for loop (each line 1 mark)

(7 Marks in Total)

(b) External fragmentation occurs when **available memory is adequate to reside a process but the free memory locations are not contiguous.** compaction can be used to **shuffle the fragmented memory into one contiguous location.**
(3 marks)

Part – B

1.

(a) Correct Truth table + outputs **(3 marks)**
   P=oil pressure, T= temperature, R = rotation, X = lamp

P	T	R	X
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

(b) $X = (\overline{P}.\overline{T}.\overline{R}) + (\overline{P}.T.\overline{R}) + (P.T.\overline{R}) + (P.T.R)$
   (without X= NO MARKS) (1 mark)

(c) $X = (\overline{P}.\overline{T}.\overline{R}) + (\overline{P}.T.\overline{R}) + (P.T.\overline{R}) + (P.T.R)$

   **Simplification steps may differ however,
   at least 3 rules should be included**

   $P.T + \overline{P}.\overline{R}$

> **(3 marks in Total)**
>
> - **Final Answer 1 mark**
> - **4 rules each ½ mark**

(d)

   (4 Marks *Note – Gates Marked with * scores 1 mark and can be replaced with NOR gates also)

(e)   L = AD + ABC + BC`D
   (4 marks= 1 mark for K-map + 3 Marks for Identified Groups)

2.

(a) **Subnet 1 (All Correct 1 Mark)**

Network Address	– 140.123.0.0
First Host Address	– 140.123.0.1
Last Host Address	– 140.123.63.254
Broadcast IP Address	– 140.123.63.255

Subnet 2 (All Correct 1 Mark)

|	
Network Address	– 140.123.64.0
First Host Address	– 140.123.64.1
Last Host Address	– 140.123.127.254
Broadcast IP Address	– 140.123.127.255

Subnet 3 (All Correct 1 Mark)

Network Address	– 140.123.128.0
First Host Address	– 140.123.128.1
Last Host Address	– 140.123.191.254
Broadcast IP Address	– 140.123.191.255

Subnet 4 (All Correct 1 Mark)

Network Address	– 140.123.192.0
First Host Address	– 140.123.192.1
Last Host Address	– 140.123.255.254
Broadcast IP Address	– 140.123.255.255

(Total 4 marks)

(b)
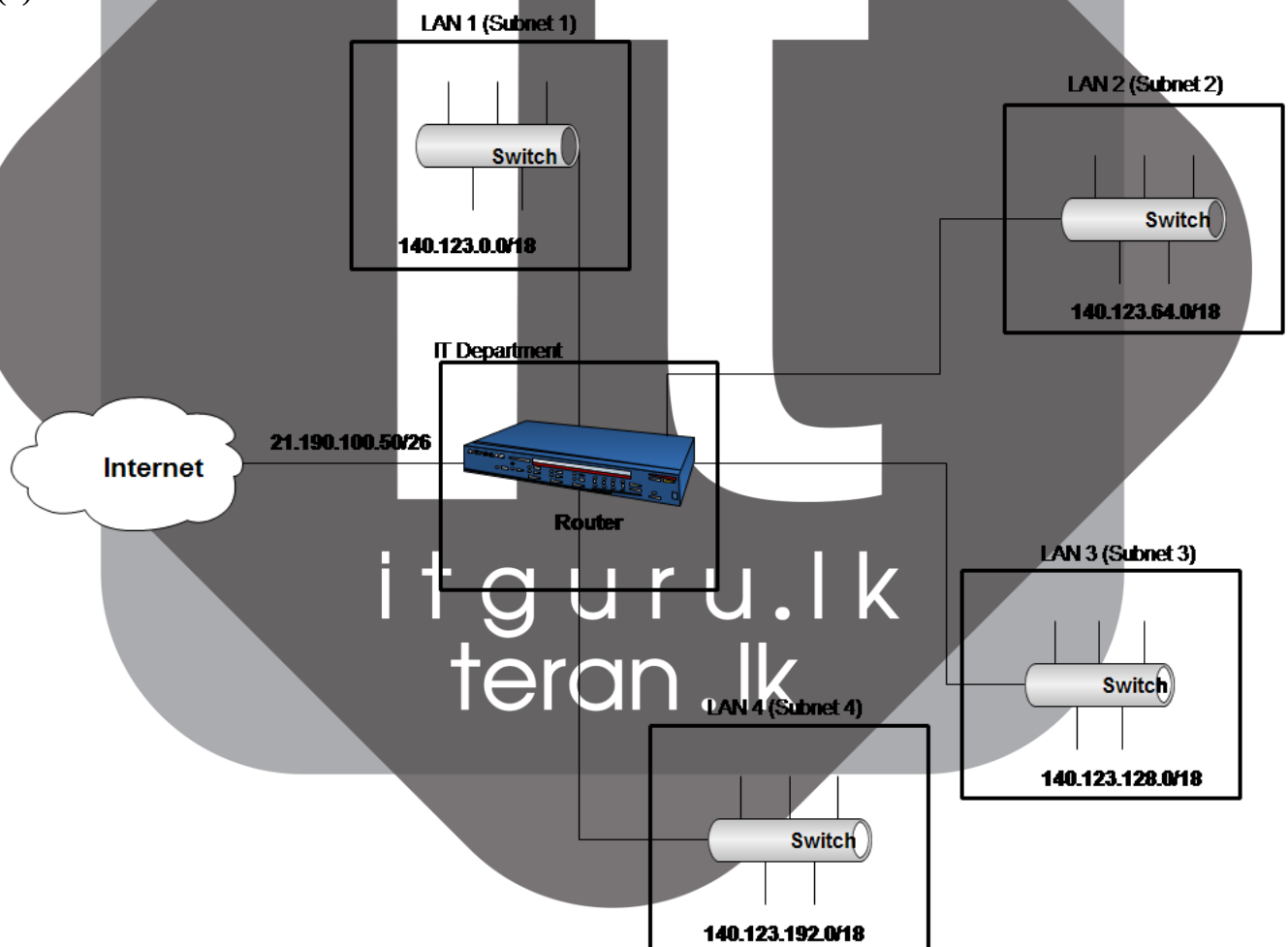
Marking Criteria:

(6 marks = 1 mark for each subnet, internet and IT department with named devices)
(5 marks = 1 mark for each IP address with slash notation)
(11 marks in Total)

3.

(a)

(i)   **Mandatory Functional requirements**
 - The system shall detect the motions with in the house and raise the alarm.
Optional Functional requirements
 - The system should blink the emergence lights located outside of the house.
 - The system should be able to send an SMS to the client.

(ii) **Mandatory Non-functional requirements**
 - Security - The system shall provide the 24/7 security to the client's house.
Optional Non-functional requirements
 - Timeliness - The system should be able to send the message within 2 minutes of time.
(5 marks in Total)
*Note = 1 mark for each, Must identify and clearly mention the type of requirement.

(b)   **G2E (Government to Employee)** – Employees can access and check EPF balance via website provided by the Central Bank (Government Organization) online.
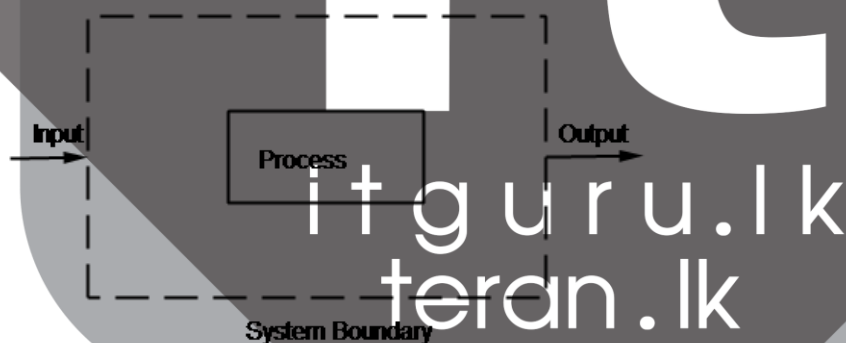**(3 marks = 1 mark for the Type 2 marks for reason)**

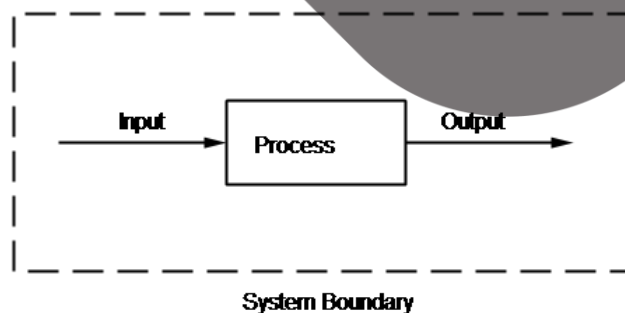**B2G (Business to Government)** – Companies sending EPF payment details via their own systems to the government online.
(3 marks = 1 mark for the Type 2 marks for reason)

(Total 6 marks)

(c) **Open System (2 Marks)**

System Boundary

Closed System (2 Marks)

System Boundary

4.

(a)
```python
def highestDevice():
    file=open("devices.txt","r")
    highestAvg=-1
    for line in file:
        deviceTot=0
        deviceAvg=0
        readings=line.split("-")[1]
        for reading in readings.split(","):
            deviceTot=deviceTot+int(reading)
        deviceAvg=deviceTot/6
        if(deviceAvg>highestAvg):
            highestAvg=deviceAvg

    file.close()
    return highestAvg
```

1 mark for each line or merged logic + 1 mark for syntax

(15 marks)

5.

(a)

| Doctor No	Doctor Name	RoomNo
D1	Dr Jones	1
D2	Dr Chin	2
D3	Dr Peters	3

Patient Clinic No	Patient Name
123	Mrs Brown
234	Mr Smith
345	Miss Ball

DoctorNo	Patient Clinic No	Appointment Date	Appointment Time
D1	123	1/8/2016	10
D2	234	1/8/2016	10
D1	345	1/8/2016	10.30
D1	234	2/8/2016	10.00
D3	123	2/8/2016	10.00
D2	345	2/8/2016	10.30

Total 8 Marks for the following:

- **3 Marks for Doctor Table with All the Data and Primary Key Underlined**
- **2 Marks for Patient Table with All the Data and Primary Key Underlined**
- **3 Marks for DoctorPatient Table with All the Data and Primary Key Underlined**
- *Note: - Deduct 1 Mark from each table if primary key is not underlined*
  In DoctorPatient Table DoctorNo and PatientClinicNo can also be taken to created the composite key.

(b)
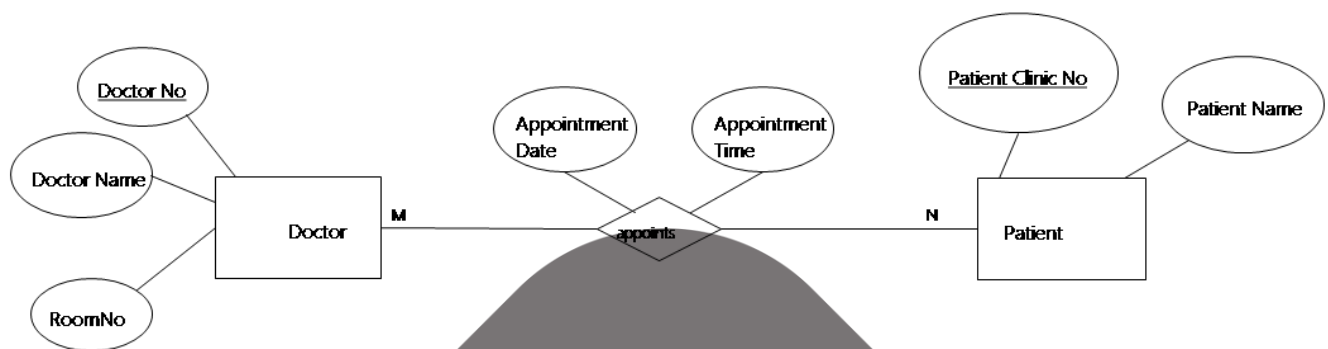
Total 7 Marks for the following:

- **2 Marks for Doctor and Patient Entities with Attributes**
- **3 Marks for Relationship with Attributes and Correct Cardinality (M:N)**
- **2 Marks for Primary Keys Underlined in Both the Entities**

6.

(a)   **8 marks in Total**

```html
<html>
<head>
    <title>IOT - 2018</title>
    <style>
        h1,h2{text-align: center;}
        ol li{color:blue;font-family: cursive;}
    </style>
</head>
<body>
    <h1>Internet of Things</h1>
    <h2>2018</h2>
    <h3>Development Boards Used:</h3>
    <ol>
        <li>Raspberry Pie</li>
        <li>Arduino</li>
        <li>Node MCU</li>
        <li>Microbit</li>
    </ol>
    <a href="register.html">Click here to Register</a>
</body>
</html>
```

1 Mark for the Title

2 Marks = 1 Mark for h1, h2 style + 1 Mark for ol li styles

2 Marks <h2> and <h3> also accepted

1 Mark <h4> is also accepted

1 Mark with <ol> and all the data

1 Mark <a> element with href and text

(b)   7 **marks in Total**

```html
<form action="reg.php" method="post">
    Username
    <input type="text" placeholder="eg:John" name="uname"/>
    <br/><br/>
    Secret Code
    <input type="password" placeholder="4 digit number" maxlength="4" name="code"/>
    <br/><br/>
    Board
    <select name="board">
    <option value="rasp">Raspberry Pie</option>
    <option value="arduino">Arduino</option>
    <option value="mcu">Node MCU</option>
    <option value="microbit">Microbit</option>
    </select><br/><br/>
    <input type="submit" value="Register"/>
</form>
```

- **1 Mark for <form> element with closing element and attributes with values**

- **2 Marks for TextBox with both name and placeholder attributes if placeholder is missing deduct 1 mark**

- **3 Marks for PasswordBox with name, placeholder and maxlength attributes if placeholder is missing deduct 1 mark and if maxlength is missing deduct 1 mark**

- **1 Mark for dropdown list with data with all correct <elements>**

END