Marking scheme

Part - I

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

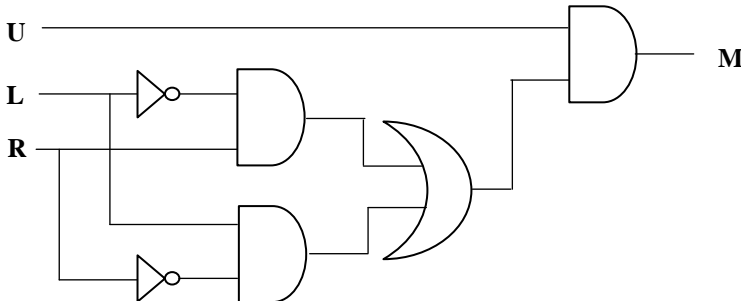## Part – II(A) Structured Essay – All questions

Note:-*Amendments to be included.
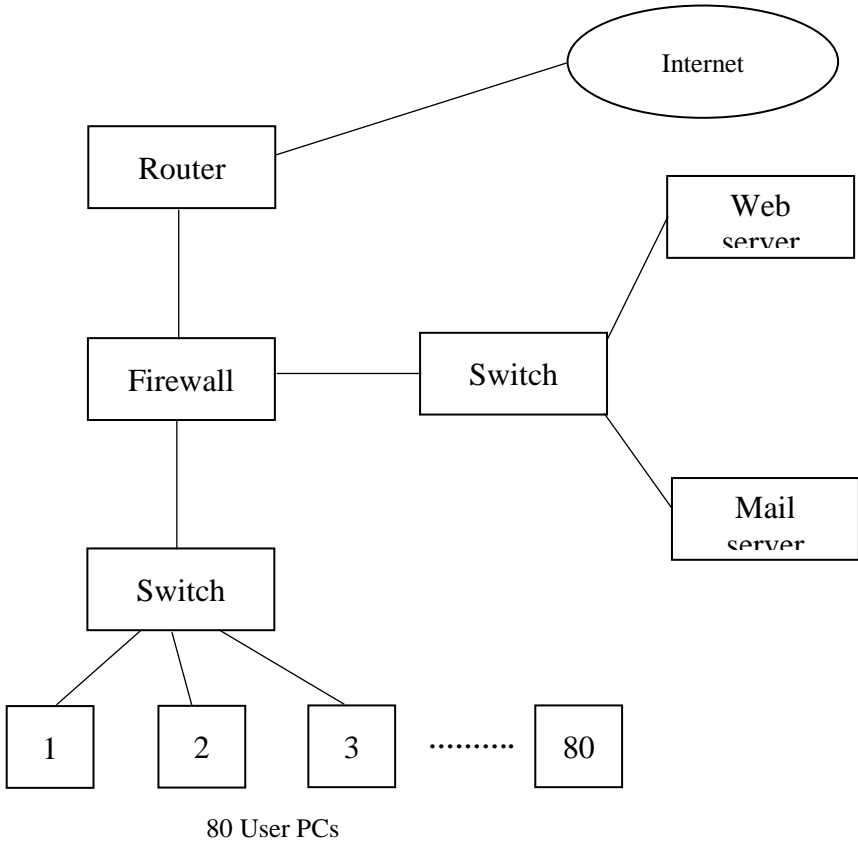
Question No.	Suggested Answers	Marks
(1) (a)	$13_{10} = 00001101_2$ $-9_{10} = 11110111_2 +$ $\overline{}$ 00000100_2(discard carry bit 1) $\overline{}$	3 marks
(1)(b)(i)	A – Protocol **OR** Hypertext transfer protocol secured B – Domain name	1 +1 marks
(1)(b)(ii)	lk **OR** .lk	2 marks
(1)(c)	DNS *translates / maps IP address into domain name* or vice versa.	3 marks

(2) (a)	while i<=10 →while i<=10: Syntax / compile time error
	 i=i+2; →i=i+2 and should be indented right. Syntax / compile time error
	 i=2
	 while i<=10:
	    print(i, end = ' ')
	    i=i+2
		1 + 1 marks for errors findings.
		
		 2 marks for right program

| **(2) (b)** | i=1 | 1 marks <br> sum=0

 while i<=10:
   sum=sum+i | 1 marks

   i=i+2 <br> print(sum, end = ' ') | 1 marks | 3 marks

 Partial marks could be given. |
|---|---|---|
| **(2)(c)(i)** | Number of physical pages = Size of physical memory / size of a page
 = 1 GB / 1KB

 $= 2^{30}$ bytes $/ 2^{10}$ bytes
 $= 2^{20}$ pages | 1 marks

 Steps needed |
| **(2)(c)(ii)** | Size of Virtual address = 32 bits
 Virtual address space = 2^{32} bytes | 1 marks

 Steps needed |
| **(2)(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

 Steps needed |
| | | |
| **(3) (a)** | 1 – link   2 – stylesheet   3 – styles.css | 3 marks [1 for each] |
| **(3) (b)(i)** | #header   OR id="header" | 1 marks |
| **(2) (b)(ii)** | .boldRed OR class="boldRed" | 1 marks |
| **(3) (c) (i)** | Encryption is a ***mathematical technique*** used to ***scramble / encode*** a message into an ***unreadable format*** to ***unauthorized person***. | 3 or 0 marks

 No partial marks given |
| **(3) (c)(ii)** | Y will not be able to decrypt it. X's private key would be needed to decrypt it. Only X could decrypt it. | 2 marks |
| | | |
| **(4) (a)** | The table violates 2ndNormal Form.
 because there are ***two partial dependencies***: StudentID →StudentName and ModuleID →ModuleName | 2 marks [1 for each] |

(4) (b)	Student (<u>StudentID</u>, StudentName) Module (<u>ModuleID</u>, ModuleName) Student_Module (<u>StudentID</u>, <u>ModuleID</u>,Grade)	3 marks (1 for each)
(4) (c)	CREATE TABLE Insurance (PolicyNumber VARCHAR (6), RegistrationNumber VARCHAR (6), DateStarted DATE (10), PolicyType VARCHAR (20), Amount FLOAT(15), PRIMAY KEY (PolicyNumber))	3 marks or 0 marks No partial marks given Primary key not important
(4) (d)	- More security - Less risky	1 + 1 marks

Part – II(B) Essay – Four questions only

Question No.	Suggested Answers	Marks
(1) (a)	$$F = \overline{\overline{A} + \overline{(B.A)}}$$ $F = \overline{\overline{A}}.\overline{\overline{B.A}}$ [De Morgan's Law] $F = A.(B.A)$ [Double Complement Law] $$F = A.B.A$$ $F = A.A.B$ [A.A =1] $$F = A.B$$	3 marks
(1) (b) (i)	$\overline{U}(L \oplus R)$ Or $\overline{U}(L\overline{R} + \overline{L}R)$	3 marks
(1)(b)(ii)		U	L	R	$\overline{U}$	$L \oplus R$	$\overline{U}(L \oplus R)$
---	---	---	---	---	---
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 Row order – ascending or descending must. No partial marks given
(1)(b)(iii)	XOR gate	2 marks
(1)(b)(iv)		3 marks
(2)(a)	• More numbers of employees needed. • Leads to manufacturing delay. • Unable to pack more milk powder into packets per day.	3 marks
(2)(b)	Functional requirement of a system is ***the services provided to the user*** by the system or the ***services expected*** by the user. • System shall be able to measure milk powder correctly & quickly.	3 marks + 4 marks

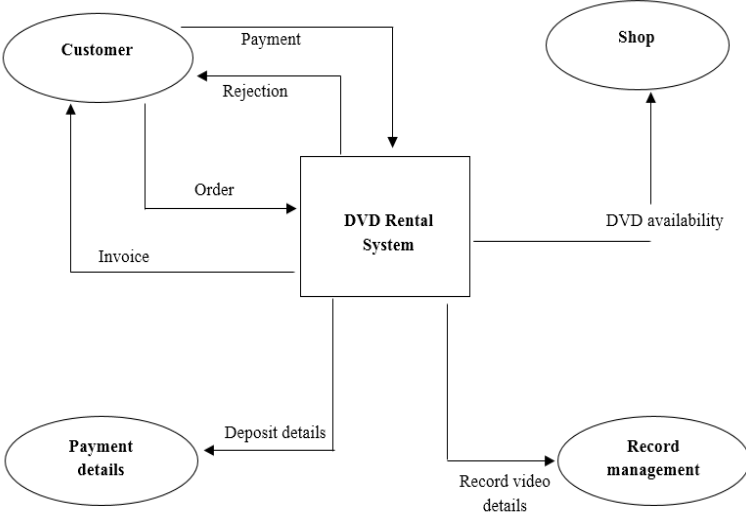|		
	• System shall be able to pack more milk powder into packets per day.	
(2)(c)	Non-functional requirement of a system is the _**constraints / limitations**_ of the system.	3 marks
(2)(d)	Manufacturing expert system Or Computer Aided Manufacturing (CAM)	2 marks
(3) (a)(i)	**TCP :** A file to be transmitted in its _**entirety without any errors**_, therefore the error _**detection and correction properties**_ of TCP are needed.	2 marks [1+1]
(3)(a)(ii)	**UDP :** When watching a movie, _**delay is critical**_ and therefore there isn't any time to seek the retransmission of any errors.	2 marks [1+1]
(3)(a)(iii)	**TCP :** Web pages need to be delivered _**without error**_ so that all content is properly formatted and presented. Therefore the _**error detection and correction properties**_ of TCP are needed.	2 marks [1+1]
(3) (b)	The computer is _**unable to obtain an IP address**_ from a DHCP server.	2 marks
(3) (c)(i)	Subnetting	1 marks
(3) (c)(ii)	Router, Switch/hub, Security appliance/firewall, Web Servers, Mail Server.	0.5 x 4 = 2 marks 4 marks [0.5 x 8] 0.5 marks for each devices / technologies mentioned.

(4)
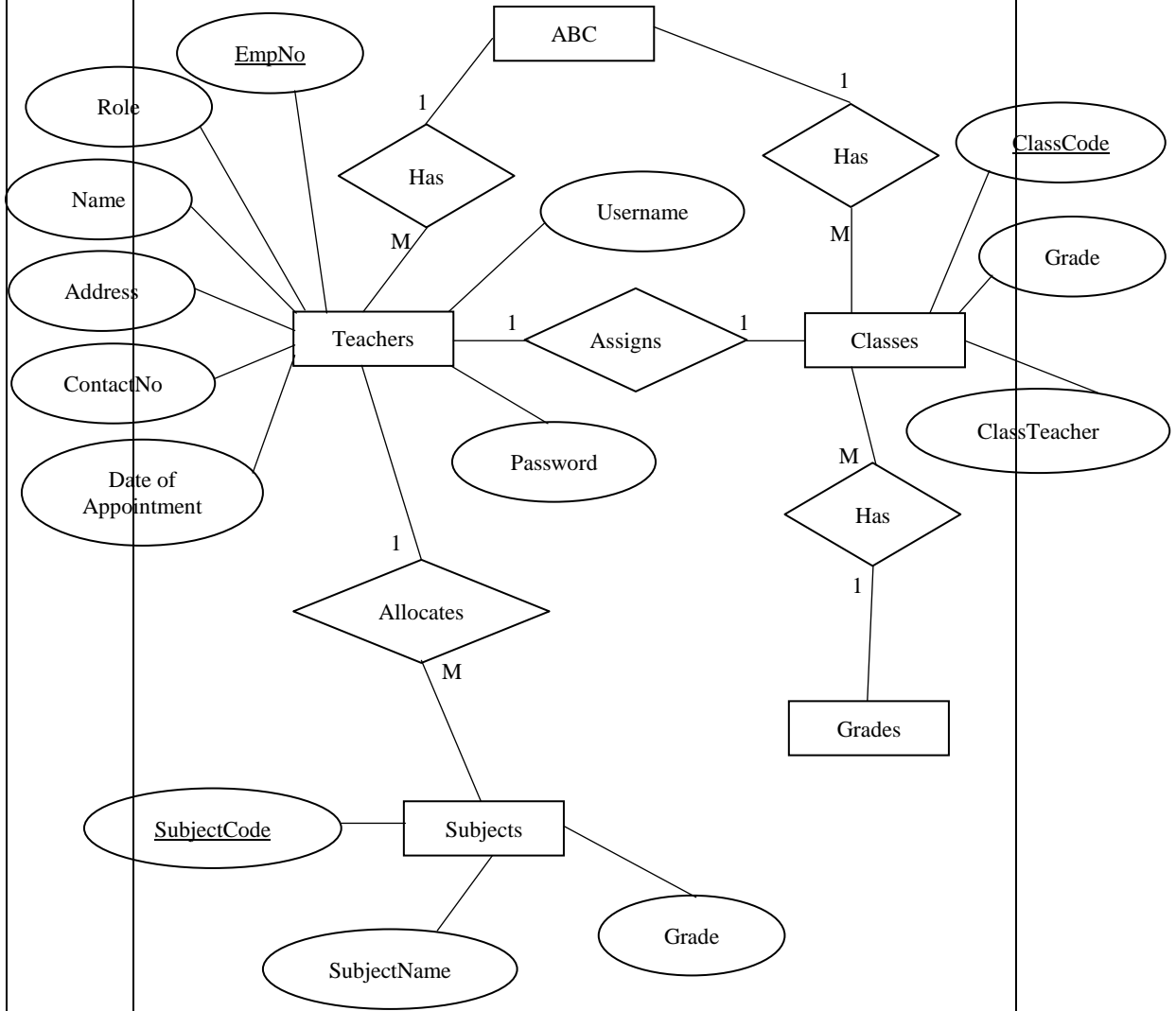
Entities – 5 marks. 1 marks for each entity.
Attributes – 3 marks.
Relationships – 4 marks. 1 marks for each relationship.
Primary keys – 3 marks

(5) (a)

Flowchart:

Start → Open the file → Enter student name (name) → name = 'stop'?

- Yes → Close the file → End
- No → Enter first marks m1 → Enter second marks m2 → Enter third marks m3 → total = m1+m2+m3 → average = Total/3 → Write 'Name - Total - Average' → Write name, m1, m2, m3, total, average → (loop back to Enter student name)

8 marks

Each component – 0.5 marks [0.5x16 = 8 marks]

Partial marks given

(5) (b)

```
f = open('marks.txt','w')
name = input('Enter student name:')
while (name!= 'stop'):
    m1 = int (input('Enter marks 1:'))
    m2 = int (input('Enter marks 2:'))
    m3 = int (input('Enter marks 3:'))
    total=m1+m2+m3
    average=(m1+m2+m3)/3.0
    f.write('Name  - Total  - Average\n')
    f.write(name+'-'+str(m1)+'-'+str(m2)+'-'+str(m3)+'-'+str(total)+'-'+str(average)+'\n')
    name = input('Enter student name:')
f.close()
```

7 marks

Every two lines – 1 marks

[6x 1= 6 marks + 1 marks for complete program]

Partial marks given

Equivalent logic accepted.

(6) (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 No partial marks given
(6) (b)		4 marks for external entities. 1 marks for system. 7 marks for correct data flows.

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Part – I　　　　2 x 50 =100 marks

Part – IIA　　　10 x 4 = 40 marks

Part – IIB　　　15 x 4 = 60 marks

　　　　　　　　200 / 2 = 100 marks

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