

Mwhk; j t i z g; gu| l i r-2025

தகவல் தொடர்பாடல் தொழினுட்பவியல்

Part I

Question No.	Answer No.	Question No.	Answer No.	Question No.	Answer No.	Question No.	Answer No.	Question No.	Answer No.
1.	2	11.	3	21.	2	31.	4	41.	4
2.	4	12.	3	22.	5	32.	5	42.	2
3.	4	13.	4	23.	2	33.	2	43.	2
4.	3	14.	2	24.	2	34.	2	44.	4
5.	1	15.	4	25.	1	35.	2	45.	1
6.	5	16.	3	26.	4	36.	1	46.	4
7.	1	17.	3	27.	4	37.	4	47.	3
8.	2	18.	3	28.	2	38.	2	48.	5
9.	3	19.	4	29.	4	39.	3	49.	3
10.	3	20.	5	30.	3	40.	2	50.	1

50 × 2 = 100 marks

Part II - A

1.

(a)

- (i) 10
- (ii) int(5985)
- (iii) Hello.How are you!
- (iv) Hello

4 x 1 Mark = 4 Marks

(b) 20.1₈

2Marks

(c) One's complement of 00011011₂ is 11100100₂
11100100₂+1₂=11100101₂

2Marks

(d) More efficient calculations

Possible to represent negative number
Subtractions are carried out as additions
Has only one value for zero

4 x $\frac{1}{2}$ Mark = 2 Marks

2.

(a) Yes

1 Mark

Macintosh: Motorola 680xx, Power PC GX, Intel

DOS: Intel CPUs

Windows 9x and XP: Intel 80386, 80486, and Pentium CPUs

1 Mark

Linux: Intel CPUs

MS NT & 2000: Intel CPUs

(b)

(i) The width of the address bus = 16 bits

1 Mark

Maximum number of different addresses required = 2^{16}

1 Mark

Maximum usable size of memory = 2^{16} B

= $2^6 \times 2^{10}$ B

= 64KB

1 Mark

(ii) Size of a page = 4KB

1 Mark

Number of pages = 64×4

= 2^3

Therefore number of bit need to represent a page = 3 bits

1 Mark

(iii) 0 to $(2^3 - 1)$

1 Mark

(c) Gantt Chart

P1	P2	P3	P4	P1	P2	P4	P1	P1	P1	P1	P1	
0	3	6	9	12	15	16	19	22	25	28	31	33

1 Mark

Process	Arrival Time	Burst Time / Process Time	Turnaround Time	Waiting Time
P ₁	0	20	33	13
P ₂	1	4	15	11
P ₃	2	3	7	4
P ₄	3	6	16	10

$$\text{Average Turnaround Time} = \frac{(33+15+7+16)}{4} = \frac{71}{4} = 17.75$$

1 Mark

3.

(a)

(i) INSERT INTO Employee VALUES('E007','Vimal','System Enineering','IT',50000); **1 Mark**

(ii) SELECT * FROM Employee WHERE basicSalary>=40000; **1 Mark**

(iii) SELECT COUNT(empNo) No_Of_Employees, SUM(basicSalary) Total_basicSalary **2 Mark**

FROM Employee

GROUP BY Department;

(b)

(i) **Partial dependency** occurs when one primary key determines some other attribute/attributes. **1 Mark**

(ii) A **transitive dependency** refers to some non-prime attribute other than the candidate key that depends on another non-prime attribute that is dependent entirely on the candidate key. **1 Mark**

(c)

(i) 1NF **1 Mark**

(ii) Patient(PatientID, PatientName) **3 Mark**

Test(MedicalTest, MedicalTestValue)

PatientTest(PatientID, MedicalTest, Date)

4.

(a)

i.

A system can be described as a combination of parts or components that are organized to achieve a goal or perform a task.

(Key words: Goal, Resources, Interaction) **3 x 1/2 Mark = 1 1/2 Marks**

ii.

Goal – A radio is used to listen to radio transmissions.

Resources – antenna, speakers, volume controller and tuner.

Interaction – The antenna of the radio is used to receive radio signals. **3 x 1/2 Mark = 1 1/2 Marks**

iii.

No **1 Mark**

The system receives inputs from and delivers output to its environment. **1 Mark**

iv.

1. nice to have functional requirements

2. nice to have nonfunctional requirements **2 x 1 Mark = 2 Mark**

Part II - B

1.

- i. Consider voters are V1, V2 and V3
Winner is W

V1	V2	V3	W
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

4 Marks

ii. $W = \overline{V1}V2V3 + V1\overline{V2}V3 + V1V2\overline{V3} + V1V2V3$

2 Marks

ii. $W = V2V3 + V1\overline{V3} + V1V2 + V1V2V3$

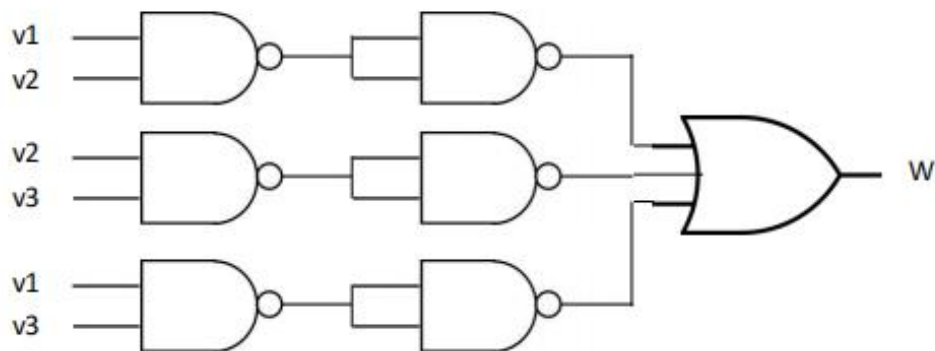
2 Marks

iii.

$$\begin{aligned}
 W &= V2V3 + V1\overline{V3} + V1V2 + V1V2V3 \\
 &= V2V3 + V1\overline{V3} + V1V2(1 + V3) \\
 &= V2V3 + V1\overline{V3} + V1V2.1 \quad [A + 1 = 1] \\
 &= V2V3 + V1\overline{V3} + V1V2 \quad [A.1 = A] \\
 &= V2V3 + V1(V2 + \overline{V3}) \\
 &= V2V3 + V1(V2 + V3) \quad [\text{Distributive law}] \\
 &= V2V3 + V1V2 + V1V3 \quad [\text{Distributive law}] \\
 &= V2(V1 + V3) + V1V3 \\
 &= V2(V1 + V3) + V1V3 \quad [\text{Distributive law}] \\
 &= V1V2 + V2V3 + V1V3 \quad [\text{Distributive law}]
 \end{aligned}$$

4 Marks

iv.



3 Marks

v. $W = (V1 + V2 + V3).(V1 + V2 + \overline{V3}).(V1 + \overline{V2} + V3)(\overline{V1} + V2 + V3)$

2 Marks

2.

i.

Star topology is a network topology in which each network component is physically connected to a central node such as a router, hub or switch.

2 Marks

Advantages:

- It is very reliable – if one cable or device fails then all the others will still work
- It is high-performing as no data collisions can occur
- Less expensive because each device only need one I/O port and wishes to be connected with hub with one link.

1 Marks

Disadvantages:

- Requires more cable than a linear bus.
- If the connecting network device (network switch) fails, nodes attached are disabled and can't participate in network communication.
- More expensive than linear bus topology due to the value of the connecting devices (network switches)

1 Marks

ii.

Network address: 194.168.0.0

Subnet mask: 255.255.255.192

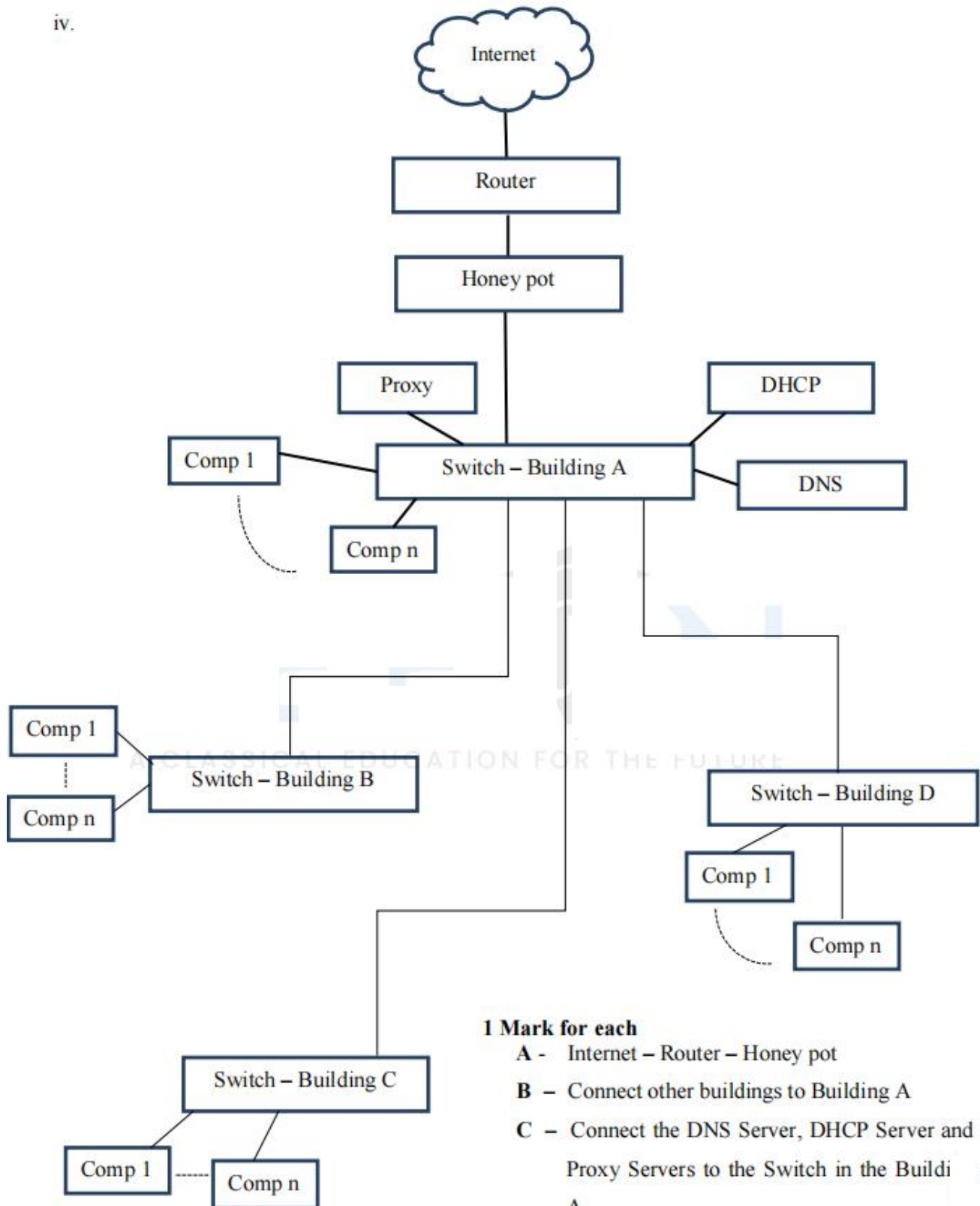
2 Marks

iii.

Building	Network Address	Subnet Mask	IP address Range
A	194.168.0.0	255.255.255.192	194.168.0.1 – 194.168.0.62
B	194.168.0.64	255.255.255.192	194.168.0.65 – 194.168.0.126
C	194.168.0.128	255.255.255.192	194.168.0.129 – 194.168.0.190
D	194.168.0.192	255.255.255.192	194.168.0.193 – 194.168.0.254

4 Marks

iv.



1 Mark for each

- A - Internet – Router – Honey pot
- B – Connect other buildings to Building A
- C – Connect the DNS Server, DHCP Server and Proxy Servers to the Switch in the Building A
- D – Connect some computers in all the switches
- E – Connect the computers with twisted pair cables & LAN's connect with fiber optics

3.

(a)

(i) A process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

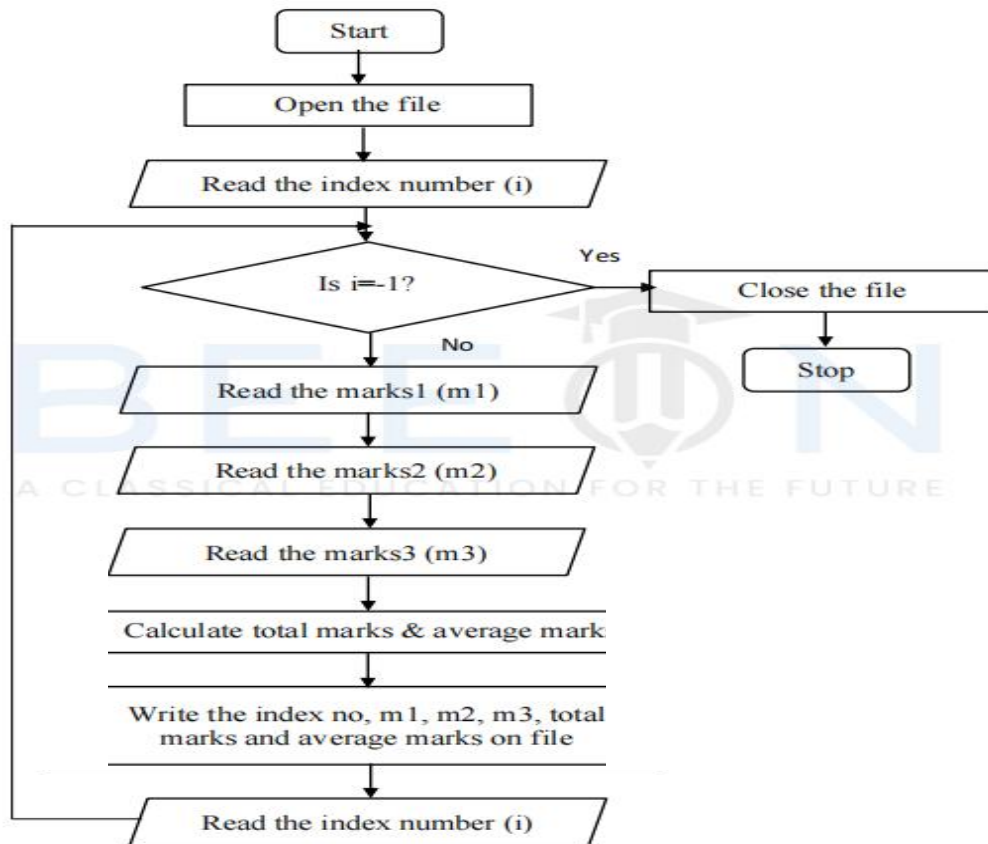
1 Mark

(ii) Flow chart & Pseudo code

2 Marks

(b)

(i)



Open file – 1 Mark

Close file – 1 Mark

Proper iteration – 1 Mark

Proper inputs – 1 Mark

Total & average calculation – 1Mark

Write on file – 1 Mark

(ii)

```
f=open('marks.txt','w')
```

```
i=int(input('Enter index number:'))
```

```
while i!=-1:
```

```
    m1=int(input('Enter marks1:'))
```

```
    m2=int(input('Enter marks2:'))
```

```
    m3=int(input('Enter marks3:'))
```

```
    tot=m1+m2+m3
```

```
    avg=tot/3
```

```
    f.write(str(i)+'\t'+str(m1)+'\t'+str(m2)+'\t'+str(m3)+'\t'+str(tot)+'\t'+str(avg)+'\n')
```

```
    i=int(input('Enter index number:'))
```

```
f.close()
```

Open file – 1 Mark

Proper iteration – 1 Mark

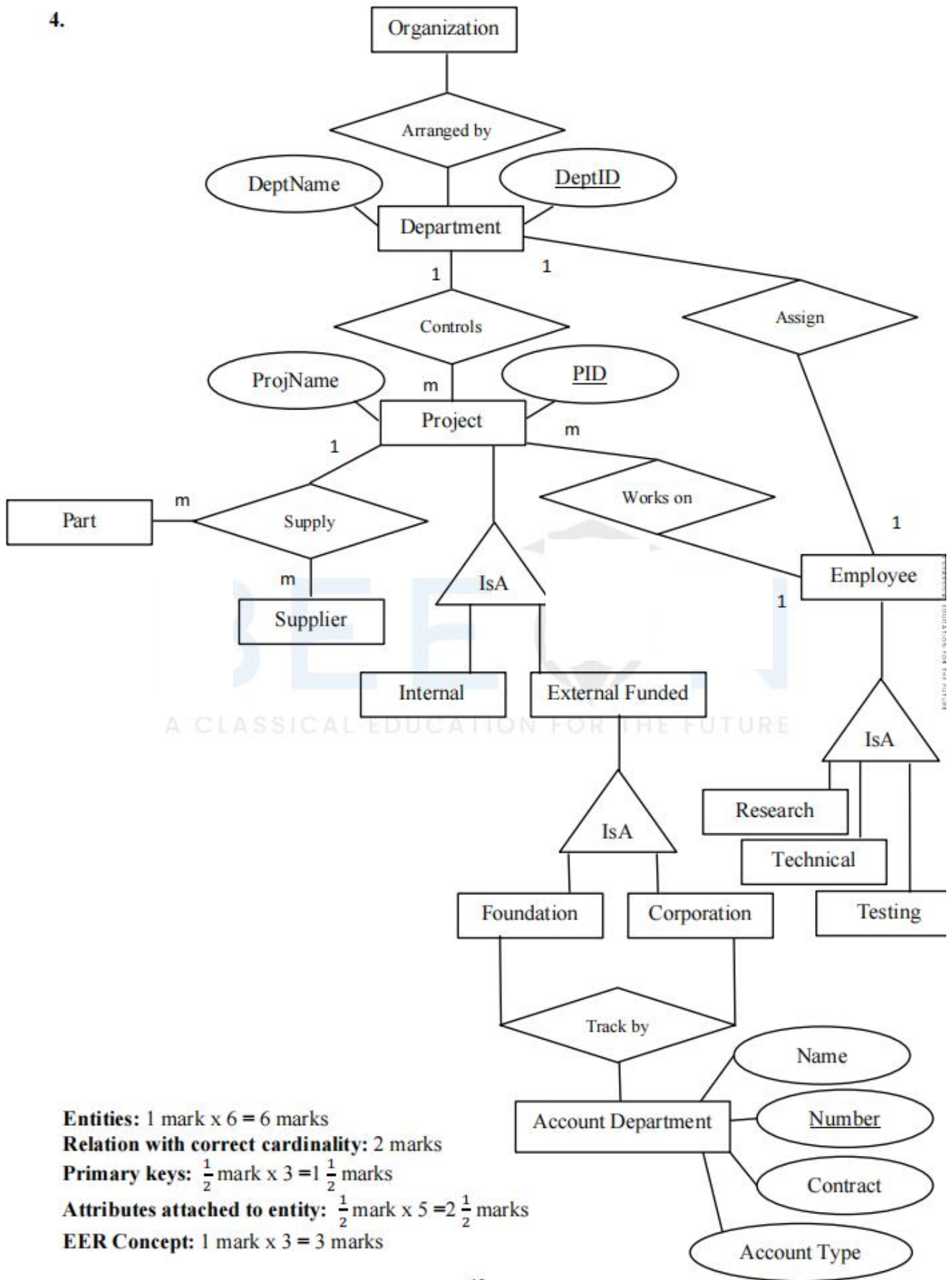
Proper inputs – 1 Mark

Total & average calculation – 1Mark

Write on file – 1 Mark

Close file – 1 Mark

4.



5.

a)

i) `<style type="text/css">
body{background-image:url("backimage.jpg");}
</style>`

2 Marks

ii) `<h1 style="color:red;font-family:'Time New Roman';text-align:center;">Welcome to
You!</h1>`

2 Marks

b)

i) First Name:`<input type="text" name="fname"/>`
Last Name:`<input type="text" name="lname"/>`

2 Marks

ii) New Password:`<input type="password" name="pwd"/>`
Confirm Password:`<input type="password" name="pwd1"/>`

2 Marks

iii) Date of Birth:`<select name="month">
<option value="">Month</option></select>
<select name="day">
<option value="">Day</option></select>
<select name="year">
<option value="">Year</option>
</select>`

2 Marks

iv) Sex:`<input type="radio" name="sex" value="male" checked/>Male
<input type="radio" name="sex" value="female"/> Female`

2 Marks

v) `<form name="input" action="html_form.asp" method="get">
<input type="submit" value="Submit"/>
</form>`

2 Marks

vi) `<input type="reset" value="Reset"/>`

1 Marks

6.

a)

(i) P – Address

Q – Customer Order

R – Copy of the receipt and Coupon

S – Order

T – Daily totals

5 Marks

(ii) U – Sales details

V – Daily sales

W – Customer Order

4 Marks

b)

(i)

- A functional requirement defines a system or its component, whereas a non functional requirement defines the performance attribute of a software system.

- Functional requirements, along with requirement analysis help identify missing requirements, while the advantage of Non-functional requirements is that it helps you to ensure a good user experience and ease of operating the software.

- Functional Requirement is a verb, while Non-Functional Requirement is an attribute

2 Marks

(ii) B, E, G

4 Marks
