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Provincial Department of Education - NWP

20 | E | I

First Term Test - Grade 13 - 2020

Index No : ..... Information and Communication Technology I Two - Hours

Instructions :

- **Answer all the Questions**
- **Write down your index number in the space provided in the answer sheet.**
- **Select the correct or most appropriate answer from the given answers of 1,2,3,4 or 5**

1. Which of the following are the correct validation techniques?

A - Type check **B - Direct check** **C - Range check**
D - Local or remote check **E - Presence check**

(1) ABC only. (2) ACE only. (3) BCD only. (4) BDA only. (5) CDE only.

2. Mobile computing is used in ……..…….. and, for that a ……..……..can be used.

(A)	**Processing data in different locations**	**-**	**Desktop computer**
(B)	**Sending an email while a person is going to his office**	**-**	**Laptop computer**
(C)	**Processing data wirelessly without depending on a specific place.**	**-**	**Laptop computer**
(D)	**Creating a social network account**	**-**	**Smart phone**
(E)	**Informing an emergency message**	**-**	**Mobile phone**

Which of the following answer can be used to fill in the above blanks?

(1) ABC (2) BCD (3) CDE (4) DEA (5) EAB

3. What is the answer that contains the computers designed only using the concept of Von Neumann Architecture?

(1) ENIAC and UNIVAC (2) ENIAC and EDSAC (3) EDSAC and EDVAC
(4) CDC 1604 and Mark I (5) CDC 1604 and CDC 3600

4. Mark–I was made using electronic valves and the electronic valves were designed by …… in ……..……..…… era.

(1) Howard Aiken, Electronic (2) John Mauchly, Electronic
(3) Lee De Forest, Electro mechanical (4) J. Presper Eckert, Electro mechanical computer
(5) Von Neumann, Electronic

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5. Consider the following statements.

A. Execution of the instructions.
B. Accessing the memory locations of the instruction
C. Decoding the instructions.
D. Fetching the next instruction from the main memory
E. Storing the results

What is the correct order of the Fetch-Decode-Execution cycle according to the Von Neumann computer architecture from the following answers?

(1) ABCE (2) BCDE (3) CBDE (4) DBAE (5) DCAE

6. Consider the following data storage devices.

A - Optical storage B- Cache memory C- Solid state devices.
D- Memory registers E-Main memory

Which of the following are the deseeding order of storage devices considering the read/write speed of data and the cost of storing an average data bit?

(1) BCDEA (2) BDAEC (3) DBECA (4) DEBCA (5) EDBAC

7. What is the correct representation of (-45) in sign magnitude and one's complement method respectively?

(1)11010010 and 00010010 (2) 00101101 and 10101101
(3) 10101101 and 11010010 (4) 11010010 and 11010011
(5)10101101 and 11010011

8. What is the correct bit sequence that was received after the one's complement values of (+45), (-45) and (-53), simplified according to the bitwise XOR operation?

(1) 00101101 (2) 00110101 (3) 11010010 (4) 11001010 (5) 11111111

9. What is the correct answer when the Boolean expression $A\bar{B} + B\bar{C} + \bar{A}C$ is converted into POS form?

(1) $(\bar{A}+\bar{B}).(\bar{B}+C).(\bar{A}+\bar{C})$ (2) $(\bar{A}+B).(B+C).(\bar{A}+C)$
(3) $(\bar{A}+\bar{B}+\bar{C}).(A+B+C)$ (4) $(\bar{A}+\bar{B}+C).(A+\bar{B}+C).(A+\bar{C})$
(5) $(\bar{A}+\bar{B}+\bar{C}).(A+B+C)$

10. The logical memory that was divided equal to the size of the frames is known as,

(1) Pages (2) Frames (3) The page table (4) Segments (5) Holes

11. Storing the data send to the output devices temporarily is known as,

(1) spooling (2) buffering (3) Caching (4) Segmentation (5) Swapping

12. What is/are the correct statement/statements from the following regarding Open Systems and Closed Systems?

A - Outputs of a closed system are taken back as inputs.
B - While a closed system takes inputs from the environment, it doesn't give outputs.
C - Outputs of an open system release its outputs towards inside or outside.
D - An open system always takes inputs from the surrounding environment.

(1) D only. (2) A, C only. (3) A, D only. (4) A, B, C only. (5) B, C, D only,

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13. Consider the following statements regarding Pilot and Parallel deployment methods.

A - Pilot deployment is more costly than parallel deployment.

B - You can get more user training from a parallel deployment.

C - In pilot deployment, the same task occurs twice.

Which of the above statements is correct?

(1) A only. (2) B only. (3) A, B only. (4) A, C only. (5) A, B, C only.

14. Which of the following statements about the system development process is correct?
    (1) The data about documents exchanged in the system are stored in the Data Dictionary.
    (2) The Entity Matrix represents the relationship between functional requirements and non-functional requirements of the system.
    (3) Test Cases are filed during the system development phase.
    (4) The White Box Testing only checks if the output is correct related to the input.
    (5) The Black Box Testing fails when using an independent test group.

15. Select the answer that contains the correct order of the OSI layer performing the respective functions of multiplexing, encryption and data transmission methods (simples, half-duplex ...etc.)

(1) Transport, Session and Network (2) Transport, Session and Presentation

(3) Data Link, Transport and Session (4) Presentation, Data Link and Transport

(5) Data Link, Transport and Session

16. What is the TTL value when a data packet is sent from a computer of a certain network to a host computer of another computer network through 04 routers and received back, where the packet is sent in order to check the connectivity?

(1) 4 (2) 8 (3) 251 (4) 247 (5) 255

17. The subnet mask of a certain network is 255.255.252.0 and its broadcast address is 120.100.47.255.

(1) 120.100.44.0 (2) 120.100.40.0 (3) 120.100.46.0

(4)120.100.46.254 (5)120.100.0.0

18. There are 5 subnets in a certain network. One of their Network address is 170.20.64.0. Its broadcast address is,

(1) 170.20.64.127 (2) 170.20.95.255 (3) 170.20.91.255

(4) 170.20.127.255 (5) 170.20.64.255

19. What is the suitable subnet mask for a computer network with 600 hosts?

(1) 255.255.252.0 (2) 255.255.254.0 (3) 255.255.255.128

(4) 255.255.248.0 (5) 255.255.240.0

20. Select the answer that contains the protocols those can only be seen in the Network Layer?

(1) PPP, IMAP, ARP (2) ICMP, ARP, TCP (3) ARP, RARP, IGMP

(4) SNMP, PPP, IGMP (5) IGMP, RIP, ICMP

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21. Which of the following is an IP address that can only be assigned to a Wide Area Network (WAN)?
(1) 10.50. 31.0 (2) 10.192.168.0 (3) 172.15.192.0
(4) 172. 20. 192. 0 (5) 192.168.10.0

22. Which of the following answer does not express an intention of using a digital signature?
(1) Confirming whether the message has been changed during the transmission.
(2) Confirming the person who sent the message.
(3) Maintaining the confidentiality of the message.
(4) Prevent the sender of the message from declaring that he or she did not send the message.
(5) Adding a legal validity for the message.

23. Consider the following statements regarding databases:
A - A candidate key is used to identify a field / fields uniquely.
B - Composite primary key cannot be used to identify fields uniquely.
C - Primary key cannot be null.
Which of the following is true regarding the above statements?
(1) A only. (2) B only. (3) C only. (4) A & C only. (5) B & C only.

24. Consider the following relational schema:
Student_Mark (student_id, subject_code, term, mark)
In this relation student_id, subject_code, term and mark are …… while student_id and subject_code are the examples for ……
What are the most suitable terms that can be used to fill in the above blanks respectively?
(1) attributes , alternate keys (2) records, candidate key (3) attribute, foreign key
(4) records, composite primary key (5) relation, primary key

- **Use the following relational schema to answer the questions 25 and 27.**

Programmer (Programmer_id, programmer_name, contact, skill1, skill2, skill3)

A programmer may have more than one skill.

25. Consider the following statements.
A – Programmer table is not normalized.
B – Programmer is a relation that is only in the First Normal Form.
C - According to the normalization definitions, the Programmer relation is in the zero normal form.
Which of the above statement/s is/are correct?
(1) A Only (2) B Only. (3) C Only. (4) A and C only. (5) A, B and C all.

26. Assume that the above relation is converted into database tables. The following SQL query was executed in that database.
DELETE * FROM Programmer;
Which of the following statements is correct regarding the output of the above SQL query?
(1) It can be an empty table.
(2) The Programmer table no longer appears in the database.
(3) This SQL clause is erroneous and shows errors during execution.
(4) All the subsets of the programmer table are deleted from the table but the table still appears in the database.
(5) The data contained in Programmer_id will not be erased as the primary key cannot be zero.

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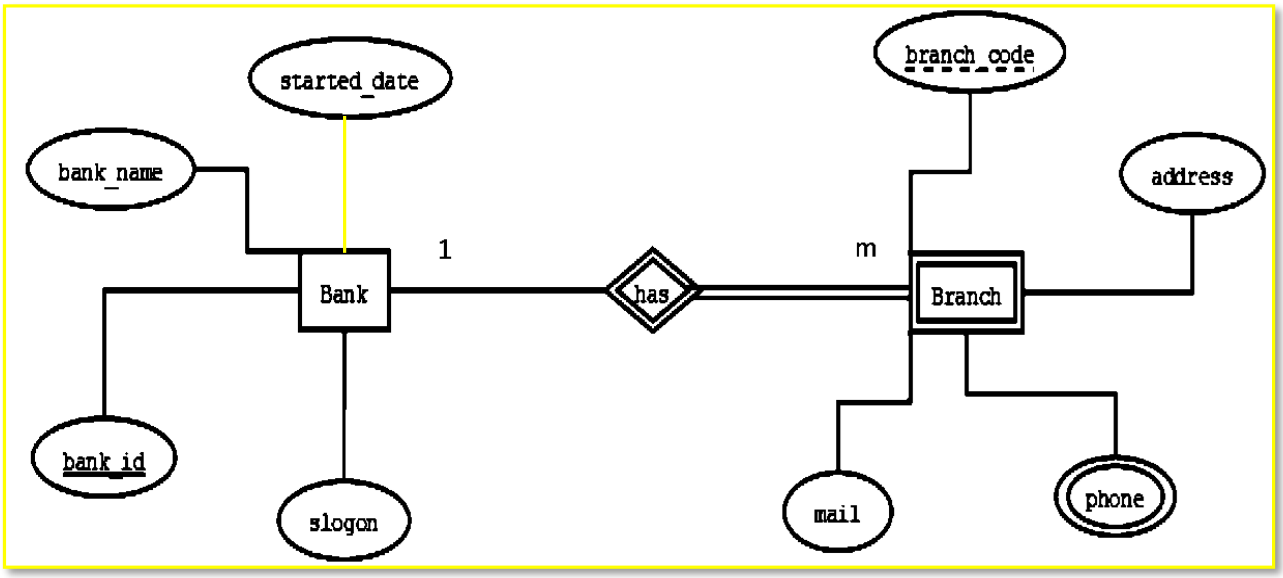
27. The Skill3 attribute should be removed from this link. The SQL clause that can be used for this is,

(1) DELETE FROM Programmer Skill = 3;
(2) DELETE Skill3 from Programmer;
(3) DELETE Skill3;
(4) ALTER TABLE DROP Skill3;
(5) ALTER TABLE Programmer DROP Skill3;

- **To answer questions No. 28 and 29, refer to the Entity Relationship (ER) Diagram given below.**



28. The Phone attribute here is;

(1) A composite primary key
(2) A multivalued attribute
(3) A derived attribute
(4) A composite attribute
(5) A weak attribute

29. Here is the answer that includes the most suitable primary key field for the Branch entity,

(1) branch_code
(2) bank_id
(3) branch_code, phone
(4) branch_code , bank_id
(5) bank_id , phone

30. The correct answer with the table / tables generated by the above Entity Relationship Diagram is,

(1) Bank (bank_id, bank_name, reg_date, slogon, branch_code)
(2) Bank (bank_id, bank_name, reg_date, slogon, branch_code, phone)
(3) Bank (bank_id, bank_name, reg_date, slogon, branch_code) and
Branch(branch_code, address, branch_mail)
(4) Bank (bank_id, bank_name, reg_date, slogon)
Branch(branch_code, address, branch_mail, bank_id) and
Branch_Phone(branch_id, phone_number, bank_id)
(5) Bank (bank_id,bank_name, reg_date,slogon)
Branch(branch_code, address, branch_mail, bank_id) and
Branch_Phone(branch_id, phone_number)

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31. Consider the following statements regarding the features of Python programming language.

(A) Having a broad standard library.

(B) Consisting a higher number of Reserved Words.

(C) Portability.

(D) Using Dynamic Data Types.

Which of the above are true for the features of Python Programing Language?

(1) A and B only. (2) A and C only. (3) B, C and D only.
(4) A, C and D only. (5) B , C and D only.

32. What is not a Programming Paradigm?

(1) Procedural programming paradigm (2) Object oriented programming paradigm
(3) Parallel processing paradigms (4) Agile programming paradigms
(5) Functional programming paradigms

33. What is a valid Python identifier?

(1) my 01 (2) my#2 (3) _4mat (4) 3_port (5) _joke 6

34. What is the output when the following Python code is executed?

```
x=" wasana was washing her hands for preventing coronavirus”

print (x.replace("was", "is"))
```

(1) wasana is washing her hands for preventing coronavirus
(2) wasana iss washing her hands for preventing coronavirus
(3) isana is washing her hands for preventing coronavirus
(4) isana is ishing her hands for preventing coronavirus
(5) An error message is generated.

35. What will be the output when the following Python code is executed?

```
x={"ict" , 'Phy' , 45 , 32 , 'ict', 54 ,'phy', 32 , ' " ict " ', 32 , 2.5 }
print(len(x))
```

(1) 6 (2) 7 (3) 8 (4) 9 (5) 11

- **Answer the questions from 36 to 38 using the following flowchart. This is a flowchart of a program that finds the winner when the name and the year of birth of a person are inputted. The selection of the winner is done as given below.**
  - If the birth year of the contestant is **not divisible** without remainders by the number of characters of his/her name, he/she is selected for the second round.
  - At the second round if the number of letters of his/her name is less than 8 she/he is titled as “God Winner” and if not she/he is titled as “Silver Winner”

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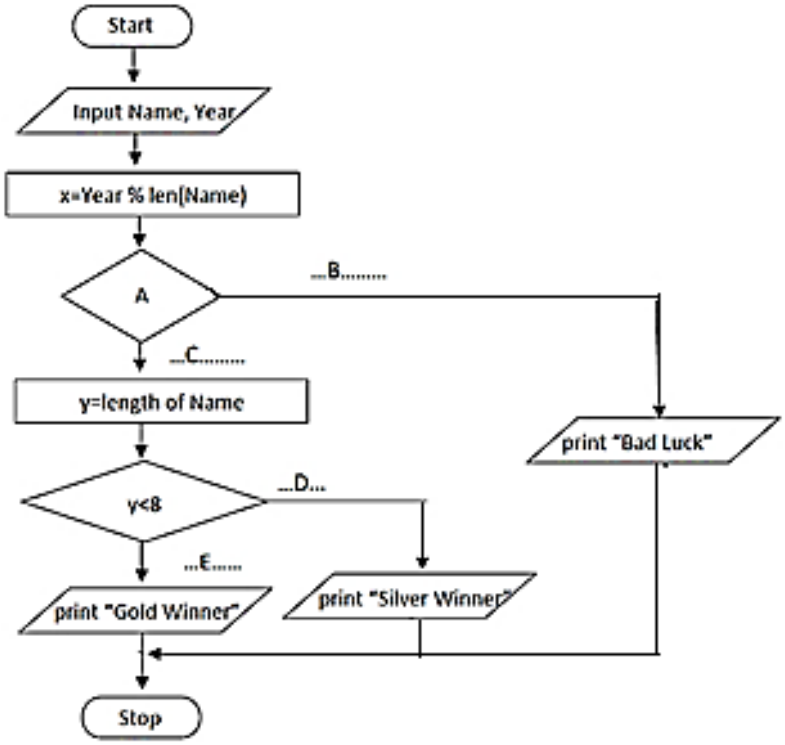
36. The suitable answers for the blanks A, B, C, D. and E of the above flowchart respectively contains in,



(1) x=0, Yes , No , Yes , No (2) x!=0, Yes , No , Yes , No (3) x=0, Yes , No , No , Yes
(4) x!=0, Yes , No , No, Yes (5) 8=len(x)0, Yes , No , Yes , No

37. What will be the output of the above flowchart if the following inputs are given?

Name = Suraj Year= 2001

(1) Bad Luck (2) Gold Winner (3) Silver Winner
(4) Yes (5) No

38. Which of the following Python code is correct for the flowchart?

(1)
```
Name=input(" your Name : ")
Year=int(input("Year: "))
x=Year%len(Name)
if (x=0):
    y=len(Name)
 if(y<8):
    print("Gold Winner")
else:
    print("Silver Winner")
else:
print("Bad Luck")
```

(2)
```
Name=input(" your Name : ")
Year=int(input("Year: "))
x=Year%len(Name)
if (x!=0):
    y=len(Name)
 if(y<8):
    print("Gold Winner")
else:
    print("Silver Winner")
else:
print("Bad Luck")
```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(3)
```
Name=input(" your Name : ")
Year=int(input("Year: "))
x=Year%len(Name)
while(x=0):
      y=len(Name)
 if(y<8):
      print("Gold Winner")
else:
      print("Silver Winner")

print("Bad Luck")
```

(4)
```
Name=input(" your Name : ")
Year=int(input("Year: "))
x=Year%len(Name)
while (x!=0):
      y=len(Name)
 if(y<8):
      print("Gold Winner")
else:
      print("Silver Winner")
else:
print("Bad Luck")
```

(5)
```
Name=input(" your Name : ")
Year=int(input("Year: "))
x=Year%len(Name)
if (x!=0):
      y=len(Name)
 while(y<8):
      print("Gold Winner")
else:
      print("Silver Winner")
else:
print("Bad Luck")
```

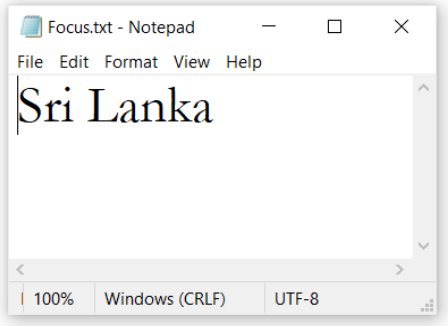
39. What will be the output by executing the following interactive Python program?

>>> 28.75%5+1.25*5-28.75//5

(1) -3.75 (2) -3.0 (3) -0.75 (4) 5.0 (5) 10

40. Consider the following Python code that is connected to the given “”focus.txt” file.

```
myfile=open("e:/focus.txt","r")
x=myfile.read(7)
y=myfile.readline()
z=myfile.readlines()
w=myfile.read()
myfile.close()
print(x)
print(x[1:4])
print(y)
print(z)
```



What is the correct output for the above Python code?

(1)
```
Sri Lan
ri
ka
[]
```

(2)
```
Sri Lan
Sri
Lanka
1
[]
```

(3).
```
Sri Lan
ri
Sri Lanka
[Sri Lanka]
```

(4)
```
Sri Lan
Sri Lanka
7
```

(5)
```
Sri Lan
Sri Lanka
7
[]
```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41. What is the attribute of the <a> (anchor) element that indicates the destination of a hyperlink?

(1) rel (2) src (3) href (4) link (5) alt

42. Consider the following HTML code.

```
<ul>
<li>Hardware</li>
<ul> <li>Secondary Storage Devices</li>
<ul> <li>Hard Disk</li>
<li> Flash Memory</li></ul>
</ul>
</ul>
```

Which of the following is the correct output generated by the above code?

(1)

- Hardware
- Secondary Storage
- Hard Disk
- Flash Memory

(2)

- Hardware
  - Secondary Storage
- Hard Disk
- Flash Memory

(3)

- Hardware
  - Secondary Storage
  - Hard Disk
  - Flash Memory

(4)

- Hardware
  - Secondary Storage
    - Hard Disk
    - Flash Memory

(5)

- Hardware
  - Secondary Storage
    - Hard Disk
    - Flash Memory

43. What is the correct code for connecting a HTML form to the file,"userlogin.php" ?

(1) <form action= "GET" method="/userlogin.php" >
(2) <form action= "userlogin.php" method="GET" >
(3) <form submit= "GET" method=" userlogin.php" >
(4) <form submit= "userlogin.php" method="submit" >
(5) <form action= "GET" method=" userlogin.php" >

44. Consider the following HTML code for creating a table to a web page.

```
<table border="1">
<tr> <td colspan="2">Subject</td></tr>
<tr> <td rowspan="2">ICT</td>
<td>Mathematics</td></tr>
<tr><td>Science</td></tr></table>
```


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What is the correct output for the above code?

(1)

<table>
<tr><td colspan="2">Subject</td></tr>
<tr><td rowspan="2">ICT</td><td>Mathematics</td></tr>
<tr><td>Science</td></tr>
</table>

(2)

<table>
<tr><td colspan="2">Subjects</td></tr>
<tr><td colspan="2">ICT</td></tr>
<tr><td>Mathematics</td><td>Science</td></tr>
</table>

(3)

<table>
<tr><td>Subject</td><td>ICT</td></tr>
<tr><td>Mathematics</td><td>Science</td></tr>
</table>

(4)

<table>
<tr><td>Subject</td><td>ICT</td></tr>
<tr><td colspan="2">Mathematics</td></tr>
<tr><td colspan="2">Science</td></tr>
</table>

(5)

<table>
<tr><td colspan="3">Subject</td></tr>
<tr><td>ICT</td><td>Mathematics</td><td>Science</td></tr>
</table>

45. Which of the following can be used to style a hyperlink in HTML?
(1) XML (2) JavaScript (3) PHP (4) CSS (5) SQL

46. Consider the codes for a **Reset** button in a HTML form. Reset
Which of the following code would satisfy the function expected from the above **Reset** button?
(1) <input type=”Reset” name =”Reset”> (2) <input type=”Reset” type =”Reset”>
(3) <button type=”Reset” name =”Reset”> (4) <button type=”Reset” value =”Reset”>
(5) <input type=”Reset” value =”Reset”>

47. What is the institute that makes the web standards?
(1) ANSI (2) W3C (3) ISO (4) Microsoft (5) Oracle

48. Which of the following code is correct for inserting an image to a web page?
(1) <img src=”myimage.gif” alt=”MyImage”> (2) <img alt=”MyImage”>myimage.gif</img>
(3) <img src=”myimage.gif” alt=”MyImage”> (4) <img href=”myimage.gif” alt=”MyImage”>
(5) <img rel=”myimage.gif ”>MyImage</img>

49. Which of the following **cannot** be given as a value for the “target” attribute of a “**Submit button**” of a HTML form?

(1) _child (2) _self (3) _parent (4) _blank (5) _top

50. Consider the following HTML codes.

A – <embed type=”video/webm” src=”movie.mp4” width=”400” height=”300” >
B - <video width=”320” height=”240”>
<source src=”movie.mp4” type=”video/mp4”></video>
C – <source src=”video/webm” href=”movie.mp4” width=”400” height=”300”>

Which of the above HTML code/codes can be used to insert a video file named “movie.mp4” into a HTML web page?

(1) A only. (2) B only. (3) C only. (4) A and B only. (5) A, B and C all.

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Provincial Department of Education - NWP

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First Term Test - Grade 13 - 2020

Index No : ..... Information and Communication Technology II Three Hours

Answer all questions in Part A and only four questions selected from part B

Part –A

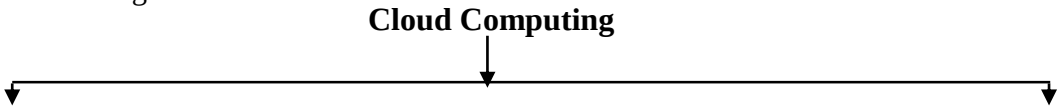
- **Answer all the four questions on this paper itself.**
- **Write your answers in the space provided for each question.**

01. (a) Name the main steps of the Data Life Cycle.

.....

(b) Complete the following diagram related to the abstract model of information creation.

(c) Services of the cloud computing are divided into 03 categories. Complete the following diagram according to that.



IaaS	…….	…….
Ex:- Google drive	Ex:- Google docs	Ex:- Google app engine
……	……	……

(d) Select the most suitable term from the bracket for each of the following definitions about data input methods.

(Remote Access, Direct Data Input, Online, Offline, Real time)

i. .....is inputting data without intervention of the users.

ii. Data input occurs at the time of transaction in ……..method.

iii. Although in ……, data is input into the system directly without direct user interference, in …… data storing and transactions are taking place in different geographical places.

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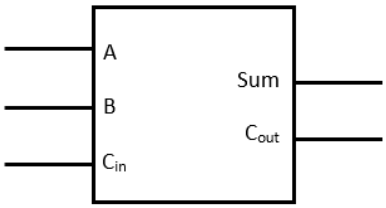
02. Following is a block diagram of a Full Adder. Draw a Full Adder in the given space using logic gates considering that diagram.

(a)



(b) Briefly explain the basic usage of a **Latch Flip-flop** and complete the truth table related to the given Latch Flip-flop.

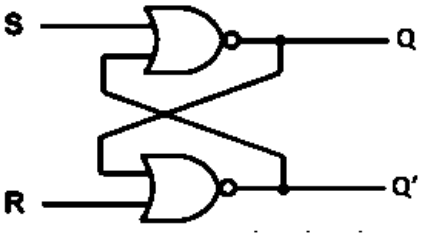
.....

.....

.....

.....

.....



S	R	Q	Q'
1	0		
0	0		
0	1		
0	0		
1	1		

03. Consider the following two tables **BOOK** and **AUTHOR**. Answer the questions only considering the data shown in the tables.

BOOK Table

BookID	BookName	AuthorID	Price	PublishedYear
B0011	Madol Duwa	A005	Rs. 350/=	1992
B0012	Akkara Paha	A002	Rs. 750/=	1983
B0013	Amba Yaluwo	A003	Rs. 600/=	1995
B0014	Ape Gama	A005	Rs. 625/=	2000
B0015	Bawa Tharanaya	A005	Rs. 350/=	2001

AUTHOR Table

AuthorID	AuthorName	DateOfBirth	Address	Contact
A001	K. Jayathilaka	1941.05.14	No 179/B, Heerassagala, Penideniya	0812245987
A002	Madawala S. Rathnayaka	1933.04.05	"Singha", Dikarawa , Bandarawela	0572245653
A003	T.B. Illangarathna	1952.12.11	No 84, Udugama,Akuressa	0912225687
A004	Karunasena Jayalath	1948.06.30	No 89/D, Seda Mawatha, Kelaniya	0112229478
A005	Martin Wickramasinghe	1961.08.13	Baddegama, Galle	0912236974

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(a) Draw the entity relationship diagram to show the relationship between these two tables. (Cardinality should be clearly shown.)

(b) Write the SQL query required to input the following record to the above BOOK table.

'B0010','Upan daa sita','A005','Rs.550/=','2015'

.....

.....

.....

(c) It is required to get a list of books written by an author with the Author ID "A005". Write down the SQL query required for this.

.....

.....

(d) What are the features of a table in second normal form?

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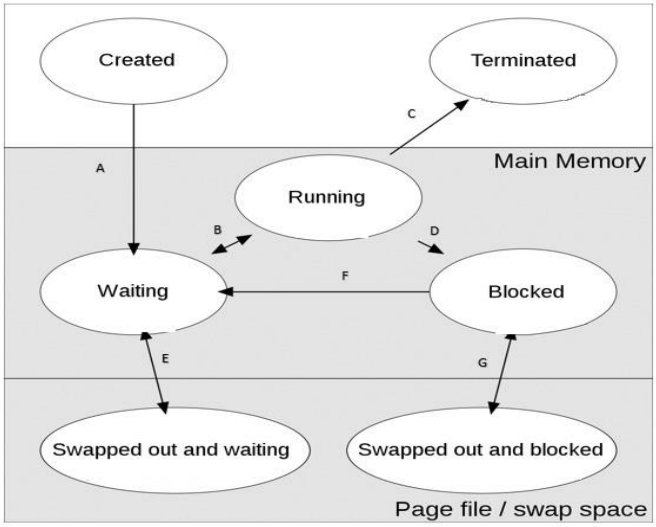
04. Following is a Process State Transition diagram.



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(a) Name A, B, C, D, E and F

A - ……. B - …….

C - ……. D - …….

E - …… F - …….

(b) Total number of frames of the physical memory of a certain computer is 2^{22}. The total capacity of that memory is 8GB. Calculate the size of a frame in the physical memory.

.....

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First Term Test – 2020

Information Communication Technology -13 - Part B

Important:

*** Answer only four questions from part** B.

Part B

01. An application has been developed in order to quarantine people, who are suffering from various illnesses due to a disease caused by a virus, which is difficult to be controlled. There the application identifies whether a person or a few of them have cold with fever (S1) and sore throat or breathing difficulties (S2).If the system reveals a person has both symptoms he is sent to be quarantined (Q). If it is found that a person with no cold with fewer but has sore throat or breathing difficulties and has contacted a person within last 14 days who is already positive with the virus (C), will also be sent for quarantine(Q).

Situation	Logical Value
Identifying a person who has cold with fever by the system.	**1**
Identifying sore throat or breathing difficulties.	**1**
Not having contact with any virus infected patient within 14 days.	**1**
Sending a person for quarantine.	**1**

Answer the following questions about sending a person for quarantine considering the functions of the above application.

(a) Draw the truth table that shows sending a person for quarantine
(b) Get the SOP expression relevant to the output of the truth table.
(c) Get the POS expression relevant to the output of the truth table.
(d) Simplify the Boolean expression you got for above **b**.
(e) Design a logic circuit diagram related to the above simplified Boolean expression using only NOR gates.

02. A company named **COSMIC** decide to network its departments using the IP address 172.40.0.0/23 in order to make 04 subnets and assigning them to each department. Number of computers owned by each department are given below.

Department	Number of Computers
PRODUCTION	200
SUPPLY	120
HUMAN RESOURCE	50
SALES	25

There is internet connection for the network of PRODUCTION department where there are a Proxy Server and a Web Server. There is an Employee Information System (EIS) installed in the HUMAN RESOURCE department and there is a Customer Information System (CIS) installed in the SUPPLY Department. A printer is set up in the Sales department.

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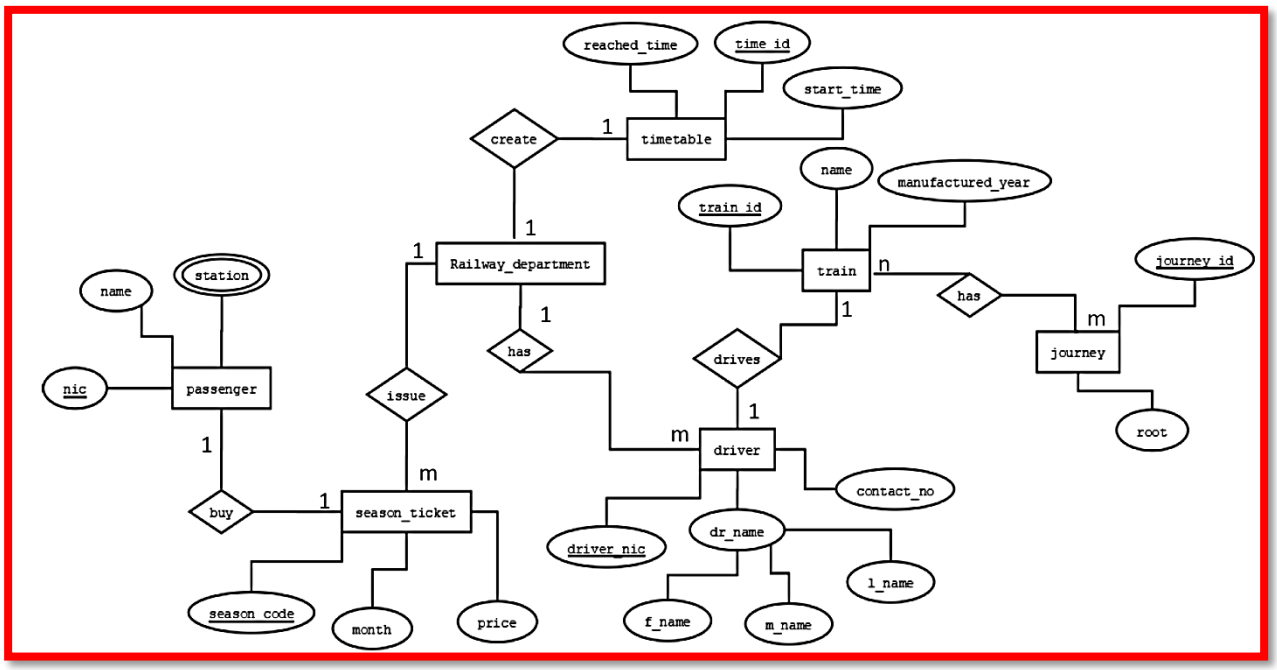
(i) Complete the following table with the relevant information according to establishing the above network.

Department	Subnet Mask	Network Address	Broadcast Address	Host IP Range	Number Of Computers To Be Established In The Network.
PRODUCTION					
SUPPLY					
HUMAN RESOURCE					
SALES					

(ii) Design a logical network diagram with suitable network devices to develop the above network.

03. Note the following Entity Relationship Diagram (ER).



(a) The date of issue (issued_date) of the season ticket must be inserted in this database. Write the most suitable entity or the relation for that.

(b) Classify all the relationships included here according to their cardinality.

(c) Write down all the tables with their attributes generated by this Entity Relationship diagram.

(d) Write the primary keys for all the tables you named in (c) above.

(e) There are local railway stations for the Railway Department and the General Manager of Railways decides to issue season tickets at the first week of every month by each station. Draw how the ER diagram should be changed according to this decision. (It is sufficient to draw only the relevant part of the ER diagram.)

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04. Following is a description of a processing system in an organization called **Virgo** which performs online sales and distribution.

The name, email address and the phone number must be entered into Virgo for a person to register in it. Then the system sends the registration request to the manager with the required information for the registration. The manager verifies the registration after checking that information. Then the applicant becomes a registered customer for this organization and he or she is given a Registration Number and a User name. After entering the Registration Number and the User Name into Virgo, the ordered item list with the prices can be viewed. After the required items are selected, the total price for them is calculated and given to the customer. The online payments are processed after the credit card information is entered into Virgo. The Payment Details and Item List are given to the cashier by the system and after checking the Payment Details the cashier hands over the Item List to the Sales Officer. The Sales Officer gives the relevant items and the Item Description to the customer and after taking the signature of the customer into the Delivery Note the Sales Officer finally hands over it to the Cashier. The Cashier enters the Delivery Verification Description into the System. At the end of the day the Daily Sales Summery is sent to the Manager by a SMS. When the organization requires selling new items, the manager updates the new items list.

(a) Write two functional requirements and two nonfunctional requirements of this system.

(b) Draw the context diagram (DFD level0) related to this description

05. The following incomplete function arranges the items of a given list in an ascending order.

(a) Fill in the blanks A and B.

```
def f1(a):
    for i in range(1,len(a)):
        for j in range(0,len(a)-i):
            if …….A……..
                a[j],a[j+1]=……..B……..
        print("step",i,a)
    print("final list  ",a)
x=[5,8,9,2,6]
f1(x)
```

(b) Find the output of the above code after it is executed.

(c) When a list is input it is required to find the maximum number of it.

(i) Draw a flowchart suitable for that.

(ii) Write the python code for the above flowchart naming as a function called f2.

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06. (a) Following is a timetable prepared to give 10 Multiple Choice Questions(MCQs)for selected units online for grade 13 Information and Communication Technology students of a certain school in order to revise the subject.

Unit	**Quiz Open**		**Deadline**	
	Date	**Time**	**Date**	**Time**
1. Operating Systems	Feb 01, 2021	8.00 a.m.	Feb 08, 2021	11.00 p.m.
2. Networking	Feb 10, 2021	8.00 a.m.	Feb 17, 2021	11.00 p.m.
3. SSADM	Feb 20, 2021	8.00 a.m.	Feb 27, 2021	11.00 p.m.
4. HTML	March 01, 2021	8.00 a.m.	March 08, 2021	11.00 p.m.
• Maximum 03 attempts are allowed for each unit quiz set. Maximum marks for all your attempts are added for you.				

Write a suitable HTML code to render the above table.

(b) The following list shows the relevant competency levels with the respective units used to prepare the online Multiple Choice Questions mentioned in the above question (a).

1. Operating Systems
   - Competency Level 5.3 & 5.4
2. Networking
   - Competency Level 6.7,7.8 & 6.9
3. SSADM
   - Competency Level 7.1, 7.2 & 7.3
4. HTML
   - Competency Level 10.1 10.2 & 10.3

Write a suitable HTML code to render the above list.

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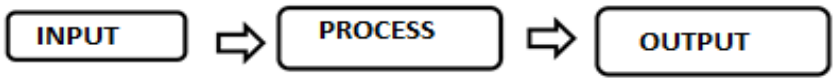
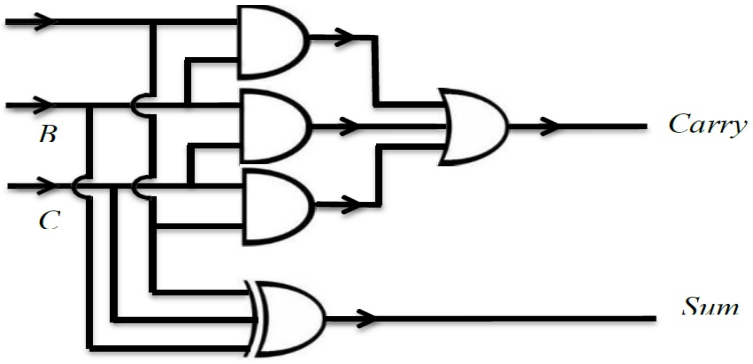
First Term Test - 2020
Information Communication Technology - Grade 13

Answer Script - MCQ

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

Q No		Answer Part A	Marks
1	a)	Data creation, Data Management, Removal of obsolete data	2 Marks
	b)		2 Marks
	c)		4 Marks
	d)	Direct Data Input, Online Data Input, Remorte Access	2 Marks
2	a)		6 Marks

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	b)	A raqndom memory type can be designed by using this logic circuit diagram that consists logic gates. **S R Q Q'** 1 0 0 1 0 0 0 1 0 1 1 0 0 0 1 0 1 1 - -	4 Marks
3	a)		3 Marks
	b)	INSERT INTO BOOK VALUES ('B0010','Upan daa sita','A005','Rs.550/=','2015'); INSERT INTO BOOK (BookID,BookName,AuthorID,Price,PublishedYear) VALUES ('B0010','Upan daa sita','A005','Rs.550/=','2015');	2 Marks
	c)	SELECT BookName FROM BOOK where AuthorID = 'A005';	3 Marks
	d)	There must not be Partial dependency.(There must be Full dependency.)	2 Marks
4	a)	`	6 Marks
	b)	Capacity of a Frame = Capacity of Memory / Number of frames = 8GB / 225 frames = 8x2^10x2^10x2^10/225 = 256 bytes	4 Marks

Essay

1	a)	**S1 S2 C Q** 0 0 0 0 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	04 Marks
	b)	Q=S1' S2 C' + S1 S2 C' + S1 S2 C	Marks 2
	c)	Q=(S1+S2+C)(S1+S2+C') (S1+S2'+C') (S1'+S2+C) (S1'+S2+C')	Marks 2
	d)	Q =S1' S2 C' + S1 S2 C' + S1 S2 C	

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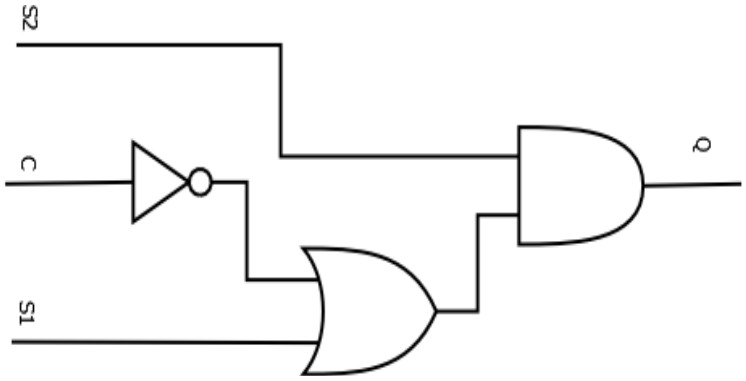
= S1′ S2 C′ + S1 S2(C′ + C) (Distributive law)
= S1′ S2 C′ + S1 S2 (Complement law)
S2 (S1′ C′ + S1) (Distributive law)
= S2 (C′ + S1) (Redundancy law)

Marks 3

e)



04 Marks

Department	Subnet Mask	Network Address	Broadcast Address	Host IP Range	Number Of Computers To Be Established In The Network.
PRODUCTION	255.255.255.0	172.40.0.0	172.40.0.255	172.40.0.1-172.40.0.254	54
SUPPLY	255.255.255.128	172.40.1.0	172.40.1.127	172.40.1.1-172.40.1.255	06
HUMAN RESOURCE	255.255.255.192	172.40.1.128	172.40.1.191	172.40.1.129-172.40.1.190	12
SALES	255.255.255.254	172.40.1.192	172.40.1.223	172.40.1.193-172.40.1.222	5

2 Marks for each correct row.

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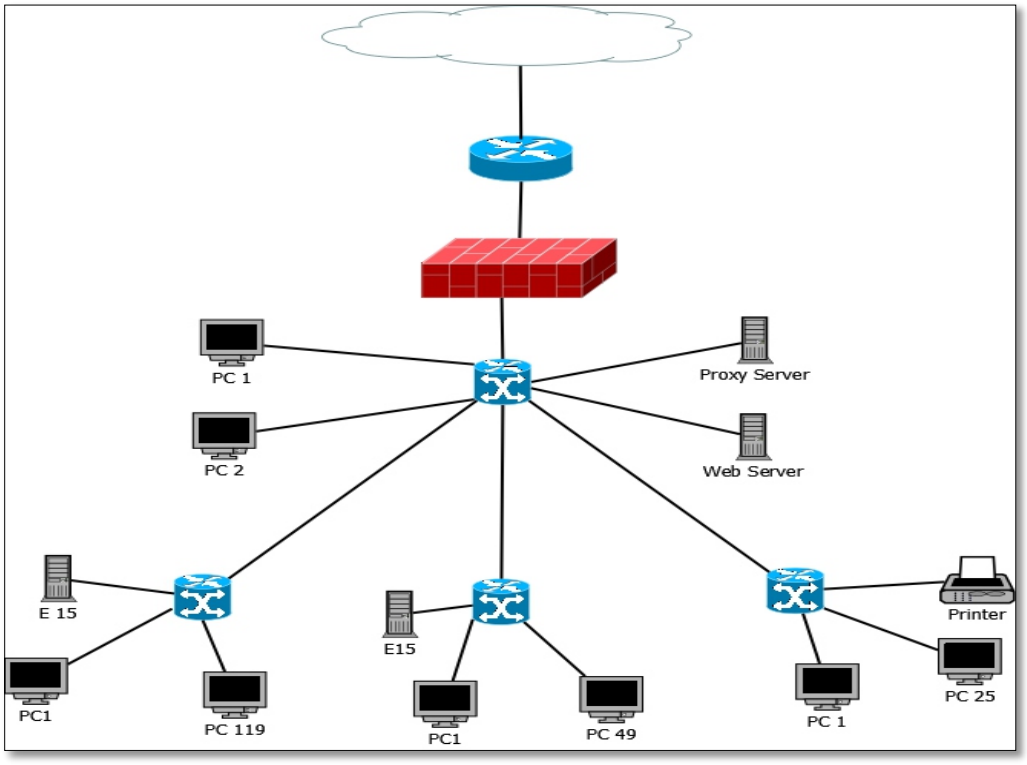
2		 For correct connection of internet,router and firewall 1 Mark. For internet connection of PRODUCTION section 1 mark. Correctly conection of proxy server and web server 2 marks. Connecting the remaining 3 subnets correctly with devices 3 marks.	
3	a)	issue	
	b)	passenger - season_ticket -> 1:1 (One to One) Railway_department - season_ticket 1:m (One to Many) Railway_department - driver 1:m (One to Many) Railway_department -> timetable 1:1 (One to One) driver - train -> 1:1 (One to One) train - journey ->1:m (One to Many)	
	c)	passenger season_ticket driver journey train	

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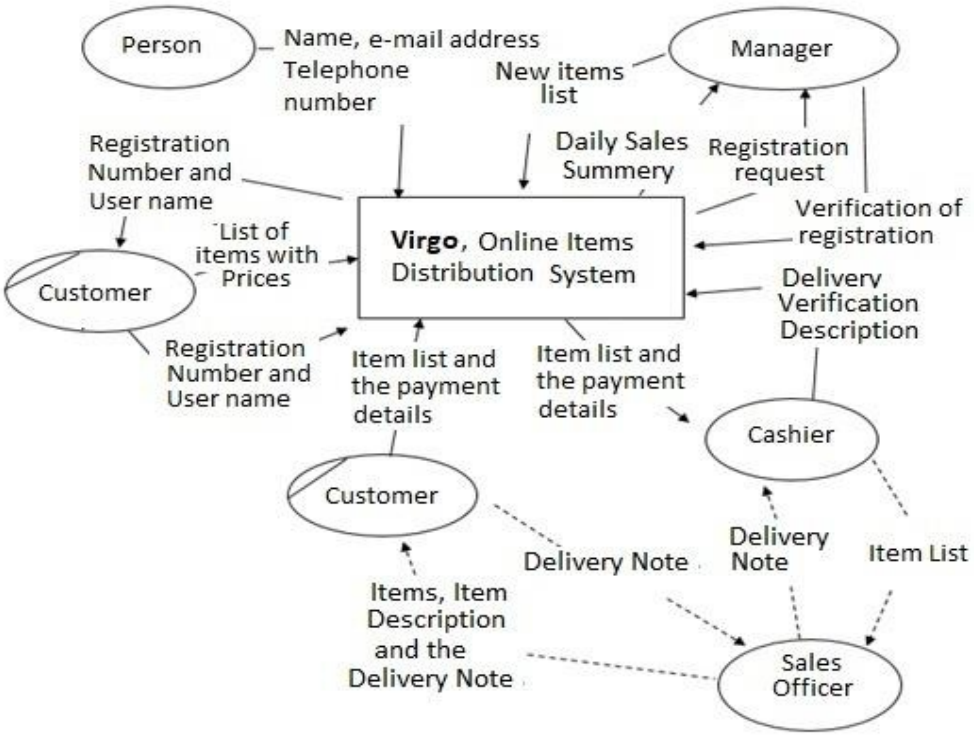
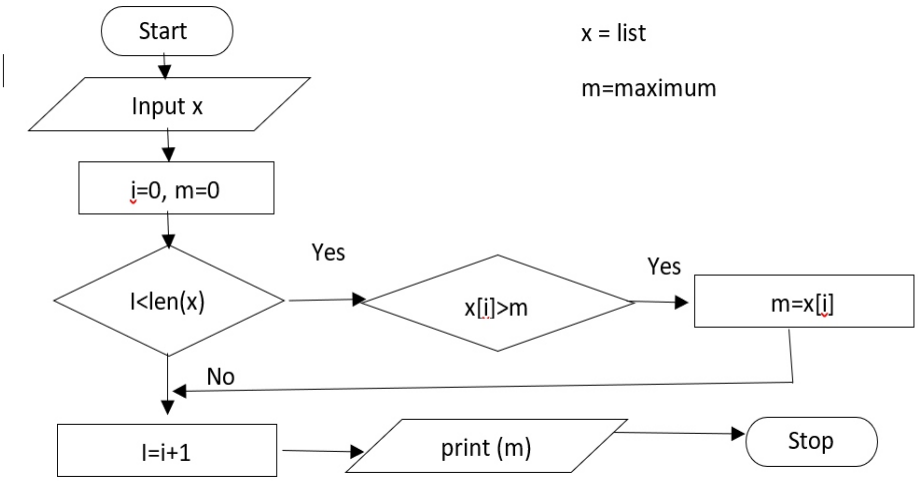
4	a)		For Data flows 0.5 X15 = 7.5 External Entities 1X 5 = 5 System 1X 2.5 = 2.5

5	a)	A = a[j]>a[j+1]: B = a[j+1],a[j]	
	b)	step 1 [5, 8, 2, 6, 9]	3 Marks
		step 2 [5, 2, 6, 8, 9]	
		step 3 [2, 5, 6, 8, 9]	
		step 4 [2, 5, 6, 8, 9]	
		final list [2, 5, 6, 8, 9]	
	c) i)		Marks -> (For input 1 , for process 2 , for print 1 , for Condition 2)

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	ii)	def f2(x):
		  i=0
		  m=0
		  while(i<len(x)):
		  if(x[i]>m):
		  m=x[i]
		  i+=1
		  return m
		x=[5,7,9,2,4]
		print(f2(x))
			Marks : (For the funtion 1 , for while with incrementer 1 , for if statement 1 , if the code is correct extra 1 mark)

6	a)	<table border="1" cellpadding="10" align="center">	
		• (if suitable values for table **border** and **cellpadding** attributes are given)	2 marks
		<tr> <th rowspan="2">Unit</th><th colspan="2">Quiz Open</th><th colspan="2">Deadline</th></tr>	2 marks
		• (if all the 3 values 1xrowspan=”2”,2xcolspan=”2” are given)	
		<tr align="center"> <td>Date</td><td>Time</td><td>Date</td><td>Time</td></tr>	
		<tr align="right"><td align="left">1. Operating Systems</td><td>Feb 01, 2021</td><td>8.00 a.m.</td>	
		<tr align="right"><td align="left">2. Networking</td><td>Feb 10, 2021</td><td>8.00 a.m.</td>	
		<tr align="right"><td align="left">3. SSADM</td><td>Feb 20, 2021</td><td>8.00 a.m.</td>	
		<tr align="right"><td align="left">4. HTML</td><td>March 01, 2021</td><td>8.00 a.m.</td>	
		<tr><td colspan="5"> Maximum 03 attempts are allowed for each unit quiz set.	
		Maximum marks for all your attempts are added for you. </td></tr>	
		</table>	
		• If all the cell contents are correct,	1 Mark
		• If all the rows are formatted with correct **alignments,**	2 Mark
		• If all the required data to show the last row of the table (formatting and content) is given,	2 mark
		• If correct **table open** tag and **table close** tags are given,	1 mark
		Total	(10 mark)
6	b)		
		Operating Systems	
		<ul type="circle"> Competency Level 5.3 & 5.4	
		Networking	
		<ul type="circle"> Competency Level 6.7,7.8 & 6.9	
		SSADM	
		<ul type="circle"> Competency Level 7.1, 7.2 & 7.3	
		HTML	
		<ul type="circle"> Competency Level 10.1 10.2 & 10.3	
		• Open tag and close tag of	2 Marks
		• All the **ul** tags with type attribute correct	2Marks
		• Correct list contents	1Mark
		Total	(5Marks)

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