



FWC

தொண்டைமானாறு வெளிக்கள நிலையம் நடாத்தும்

ஆறாம் தவணைப் பரீட்சை - 2022

Conducted by Field Work Centre, Thondaimanaru.

6th Term Examination - 2022

தகவல், தொடர்பாடல் தொழினுட்பவியல் I
Information & Communication Technology I

Two hours

20

E

I

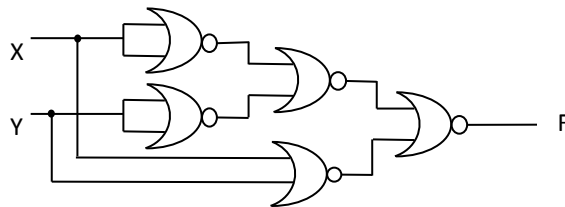
Gr -13 (2022)

Instructions:

- Answer **all** the questions.
- Write your **Index Number** in the space provided in the answer sheet.
- In each of the questions 1 to 50, pick one of the alternatives from (1), (2), (3), (4), (5) which is **correct or most appropriate** and mark your response on the answer sheet with a cross (×) in accordance with the instructions given on the back of the answer sheet.
- Use of calculators is **not allowed**.

- Which of the followings is the first digital computer that can store program?
(1) ENIAC (2) EDVAC (3) UNIVAC
(4) Mark 1 (5) ABC
- Which of the followings is correct regarding SRAM and DRAM?
(1) DRAM is faster than SRAM.
(2) DRAM is used in cache memory.
(3) SRAM is found in motherboard and DRAM is found either in processor or found between processor and main memory.
(4) Many transistors are used per bit in the SRAM memory rather than DRAM.
(5) SRAM is cheaper than DRAM.
- Which one is correct regarding the steps of a fetch execute cycle?
(1) Instructions are decoded by ALU.
(2) Instructions are executed by CU.
(3) Program counter is increased by ALU.
(4) Program counter indicates the instruction for the next execute.
(5) Instructions are encoded by CU.
- Consider the following statements regarding firmware?
A – Firmware is the program required to boot up computer.
B - Air condition machines use firmware.
C – Firmware can be easily altered after a specific time.
Which of the above statement/s is/are true?
(1) A only (2) B only (3) A and B only (4) A and C only
(5) All of the above
- An item code should have two alphabetic characters and continue with six numeric characters. Which validation type used here?
(1) Format check (2) Presence check (3) Range check
(4) Data type check (5) Consistency check

6. Which of the followings is **not** an automatic data collecting method?
 (1) MICR (2) OMR (3) Sensors (4) Barcode reader (5) Questionnaires
7. What is the system in which there are one or more programs loaded in main memory which are ready to execute, only one program gets the CPU for executing its instructions while all the others are awaiting their turn?
 (1) Multiprogramming (2) Multiprocessing (3) Multithreading (4) Multitasking
 (5) Multiuser
8. Which of the followings is the next stage of the process that is blocked stage in the process state transition diagram?
 (1) Swapped out and waiting (2) Ready / waiting (3) Running (4) Terminated
 (5) New / created
9. Which of the statements is correct regarding schedulers?
 (1) Short term scheduler is used to swap the process between memories.
 (2) Long term scheduler sends the selected processes from the ready state processes through dispatch.
 (3) Short term scheduler is faster than other two schedulers.
 (4) Long term scheduler speed is seen as the speed between the other two schedulers.
 (5) Midterm scheduler loads the selected processes to execute into memory from a portion of the processes.
10. Which of the following hexadecimal numbers is equivalent to decimal number 100?
 (1) 144 (2) E1 (3) 64 (4) A0 (5) 54
11. $2C1_{16} + 107_8 =$
 (1) 701_{16} (2) 768_{16} (3) 308_{16} (4) 300_{10} (5) 1100000010_2
12. $6_8 * 7_8 =$
 (1) 100010_2 (2) 110111_2 (3) 101010_2 (4) 110010_2 (5) 100011_2
13. Which of the followings is the logic gate that denotes the logic circuit?
 (1) AND
 (2) OR
 (3) NAND
 (4) XOR
 (5) XNOR



14. Which is the Boolean expression from the given truth table?

- (1) $\bar{y}(x+\bar{z})(\bar{x}+z)$
 (2) $y(x+z)(\bar{x}+\bar{z})$
 (3) $\bar{y}(x+z)(\bar{x}+\bar{z})$
 (4) $y(x+\bar{z})(\bar{x}+z)$
 (5) $y(\bar{x}+\bar{z})(\bar{x}+z)$

x	y	z	f
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

15. Which is the correct syntax used to insert a comment in CSS code?

- (1) # This is a comment (2) <!-- This is a comment --> (3) // This is a comment
 (4) /* This
 is a
 comment */
 (5) #This is a comment #

16. Which of the following PHP code is syntactically correct?

- 1 `<?php
echo "Hello";
>` 2 `<php
echo "Hello";
?>` 3 `<?php
EcHo "Hello";
?>` 4 `<?php
ECHO "Hello"
?>` 5 `<?php
"echo Hello";
?>`

17. Consider the following HTML code.

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="mystyle.css"/>
<style type="text/css">
p{color:red; text-align:center; font-family:'Courier New';}
</style>
</head>
<body>
<p style="color:blue;">CSS cascading order</p>
</body>
</html>
```

mystyle.css file contains the following.

```
p{color:green;text-align:left;font-family:Arial;}
```

Which are the styles from the followings applied to the phrase 'CSS Cascading order' given in the paragraph?

- (1) Font color - green
Text alignment- left
Font style - Arial
- (2) Font color - red
Text alignment- center
Font style - Courier New
- (3) Font color - blue
Text alignment- center
Font style - Courier New
- (4) Font color - green
Text alignment- center
Font style - Courier New
- (5) Font color - blue
Text alignment- center
Font style - Arial

18. Which of the followings is the correct HTML code to form the following table?

Details		
Name		
Stream	ET	Kumar
	BT	Latha

(1)

```
<caption>Details</caption>
<table border="1">
<tr><th colspan="3">Name</th></tr>
<tr><td>Stream</td>
<td>ET</td>
<td>Kumar</td></tr>
<tr rowspan="3"><td>BT</td>
<td>Latha</td></tr>
</table>
```

(2)

```
<table border="1">
<caption>Details</caption>
<tr><td colspan="3">Name</td></tr>
<tr><td rowspan="2">Stream</td>
<td>ET</td>
<td>Kumar</td></tr>
<tr><td>BT</td><td>Latha</td></tr>
</table>
```

(3)

```
<table border="1">
<caption>Details</caption>
<tr><th colspan="3">Name</th></tr>
<tr><td rowspan="2">Stream</td>
<td>ET</td>
<td>Kumar</td></tr>
<tr><td>BT</td><td>Latha</td></tr>
</table>
```

(4)

```
<caption>Details</caption>
<table border="1">
<tr><th colspan="3">Name</th></tr>
<tr rowspan="2"><td>Stream</td>
<td>ET</td>
<td>Kumar</td></tr>
<tr><td>BT</td><td>Latha</td></tr>
</table>
```

(5)

```
<caption>Details</caption>
<table border="1">
<tr><th rowspan="3">Name</th></tr>
<tr><td colspan="2">Stream</td>
<td>ET</td>
<td>Kumar</td></tr>
<tr><td>BT</td><td>Latha</td></tr>
</table>
```

19. Which of the followings is the network command that for the secure file transfer?

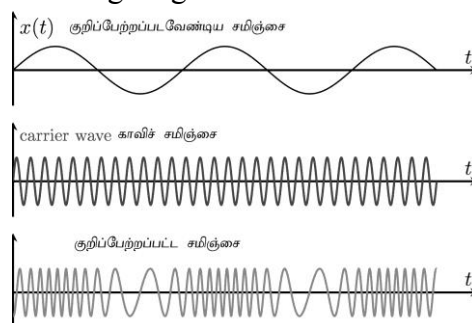
- (1) ping (2) ipconfig (3) ftp (4) ssh (5) telnet

20. Which is the correct statement among the followings regarding addresses?

- (1) MAC address is 128 bits long.
(2) Logical address is found in NIC.
(3) IPV6 address is 48 bits long.
(4) IPV4 addresses are represented by hexadecimal number.
(5) Physical address is 48 bits long.

21. Which modulation type is shown through the following diagram?

- (1) AM (Amplitude Modulation)
(2) FM (Frequency Modulation)
(3) PM (Phase Modulation)
(4) ASK (Amplitude Shift Keying)
(5) FSK (Frequency Shift Keying)



22. Which of the followings protocols is suitable for data link layer?

- (1) TFTP(Trivial File Transfer Protocol)
- (2) Telnet
- (3) ICMP(Internet control Message Protocol)
- (4) IMAPV4(Internet Message Access Protocol)
- (5) ARP(Address Resolution Protocol)

23. In which of the layer the data can travel as frames?

- (1) Physical layer
- (2) Data link layer
- (3) Network layer
- (4) Transport layer
- (5) Application layer

24. A computer in a network is configured with the IP address 192.168.31.55 and the subnet mask 255.255.255.192. Which of the following IP addresses cannot be assigned to a computer in the same network?

- (1) 192.168.31.61
- (2) 192.168.31.64
- (3) 192.168.31.10
- (4) 192.168.31.12
- (5) 192.168.31.60

25. The first and the last IP addresses of a subnet are 192.168.96.0 and 192.168.127.255 respectively. Which of the followings is the subnet mask of this subnet?

- (1) 255.255.224.0
- (2) 255.255.255.0
- (3) 255.255.192.0
- (4) 255.255.255.224
- (5) 255.255.255.192

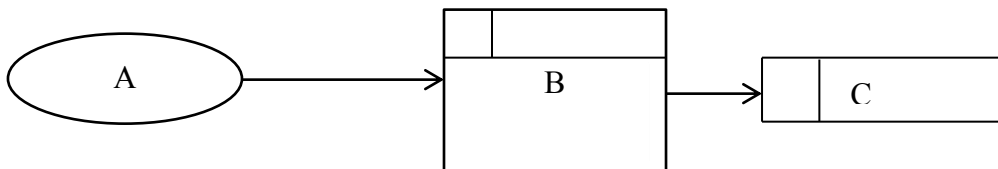
26. A needs to send a secret data to B. Further the A should confirm that the data is readable by only B. For this purpose,

- (1) A should encrypt the data using B's private key.
- (2) A should encrypt the data using his own private key.
- (3) B should decrypt the data using B's public key.
- (4) B should decrypt the data using B's private key.
- (5) B should decrypt the data using A's public key.

27. An individual / a program appears to be of another individual /program and gets benefits illegally is called..... . Which of the followings is the correct concepts for the blank?

- (1) Espionage
- (2) Eaves dropping
- (3) Port Scan
- (4) Spoofing
- (5) Phishing

28. Consider the following incomplete data flow diagram:



The above data flow diagram shows the addition of a new video to a library. What are the labels for A, B and C?

- | | | |
|------------------------------|--------------------------|---------------------------|
| (1) A – Record video details | B – New video | C – Videos |
| (2) A - New video | B – Record video details | C - Videos |
| (3) A- Videos | B – Record video details | C – New video |
| (4) A – Videos | B- New videos | C – Record videos details |
| (5) A – New video | B – Videos | C – Record video details |

29. Consider the following statements.

Statement A: It can be only used for the system with many modules.

Statement B: It can be only used when there are many system designers.

Statement C: It can be used only when there is more money as the automatic code generating tools are used.

Which of the followings is the software process model which has the above characteristics in the given in the statements?

- (1) Waterfall model
- (2) Prototype model
- (3) Spiral model
- (4) RAD
- (5) Object oriented model

30. Which of the followings is the example for natural open system?

- (1) Blood circulatory system
- (2) Nervous system
- (3) Respiratory system
- (4) Computer system
- (5) Bicycle system

31. Giving one year warranty to the battery of mobile phone is,

- (1) Essential functional requirement.
- (2) Nice to have functional requirement.
- (3) Essential nonfunctional requirement.
- (4) Nice to have nonfunctional requirement.
- (5) Essential or nice to have functional requirement.

32. Consider the following trade methods:

- A – Reverse auction
B – Group purchasing
C – E-market place

Among the above trade methods what is/are the trade method/methods found in digital economy?

- (1) A only
- (2) B only
- (3) C only
- (4) A, C only
- (5) All A, B, C are correct

33. Consider the following benefits received from e-commerce:

A: Can popularize their products globally in fast and efficient way.

B: Remove barriers and no need of a place.

C: Can select the best with cheap price among the many options.

Among the above benefits which can a trade institution get?

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

34. The system that can produce machines which have abilities in rendering goods and services according to the likes and dislikes of the customer is,

- (1) Man machine co – existence.
- (2) Kansei.
- (3) Agent.
- (4) Multi agent system.
- (5) Intelligent agent.

35. Which is not the application of Ubiquitous computing?

- (1) Methods of guiding the disabled.
- (2) Sharing of resources in cloud computing.
- (3) Smart home
- (4) Customization of national environment.
- (5) Customization of automobiles.

- Consider the following relations to answer questions from 36 – 39.

Student (Stu_ID,Stu_Name,Sex,Address,DOB,Class)

Subject (Sub_ID,Sub_Name)

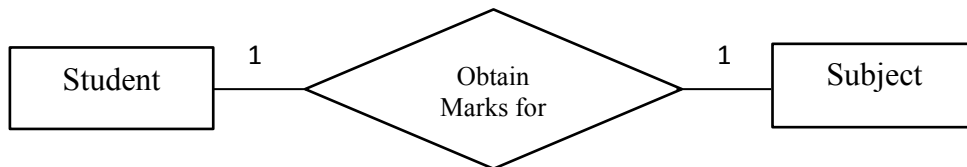
Result (Stu_ID,Sub_ID,Mark)

36. Which of the followings can be considered as the candidate key regarding the student relation?

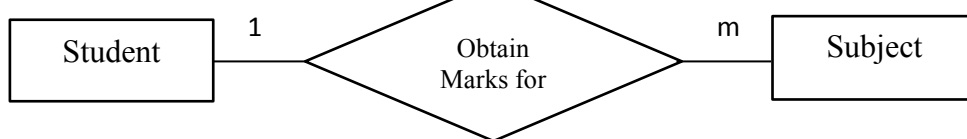
(1) Stu_ID (2) Stu_Name (3) Sex (4) Address (5) DOB

37. Which of the following ER diagram that correctly denotes the relationship between entities through the above relations?

(1)



(2)



(3)



(4)



(5)



38. Which of the SQL commands is used to display the number of the male students in the field of No_Of_Male_Students?

(1) COUNT(Stu_ID) No_Of_Male_Students FROM Student WHERE Sex='Male';
 (2) SELECT COUNT(Sex) No_Of_Male_Students FROM student WHERE Sex='Male';
 (3) SELECT COUNT(Stu_ID) FROM Student WHERE Sex='Male';
 (4) COUNT (Sex) No_Of_Male_Students FROM Student WHERE Sex='Male';
 (5) COUNT (Stu_ID) FROM Student WHERE Sex='Male';

39. Which of the SQL commands is used to display the names of subjects that the candidates sat for?

(1) SELECT Sub_Name FROM Subject;
 (2) SELECT Sub_Name FROM Subject and Result WHERE Subject.Sub_ID=Result.Sub_ID;
 (3) SELECT DISTINCT Sub_Name FROM Subject,Result
 WHERE Subject.Sub_ID=Result.Sub_ID;
 (4) SELECT Sub_Name FROM Subject,Result WHERE s.Sub_ID=r.Sub_ID;
 (5) SELECT DISTINCT(Sub_Name) FROM Subject,Result WHERE s.Sub_ID=r.Sub_ID;

(All Rights Reserved/ முழுப்பதிப்புரிமை உடையது)

- Consider the following relations to answer the questions **40 and 41**.

Student(StudNo,Surname,Forename,Address,Sex)Enrolment(StudNo,CrseCode,CrseTitle,TutNo,TutName)

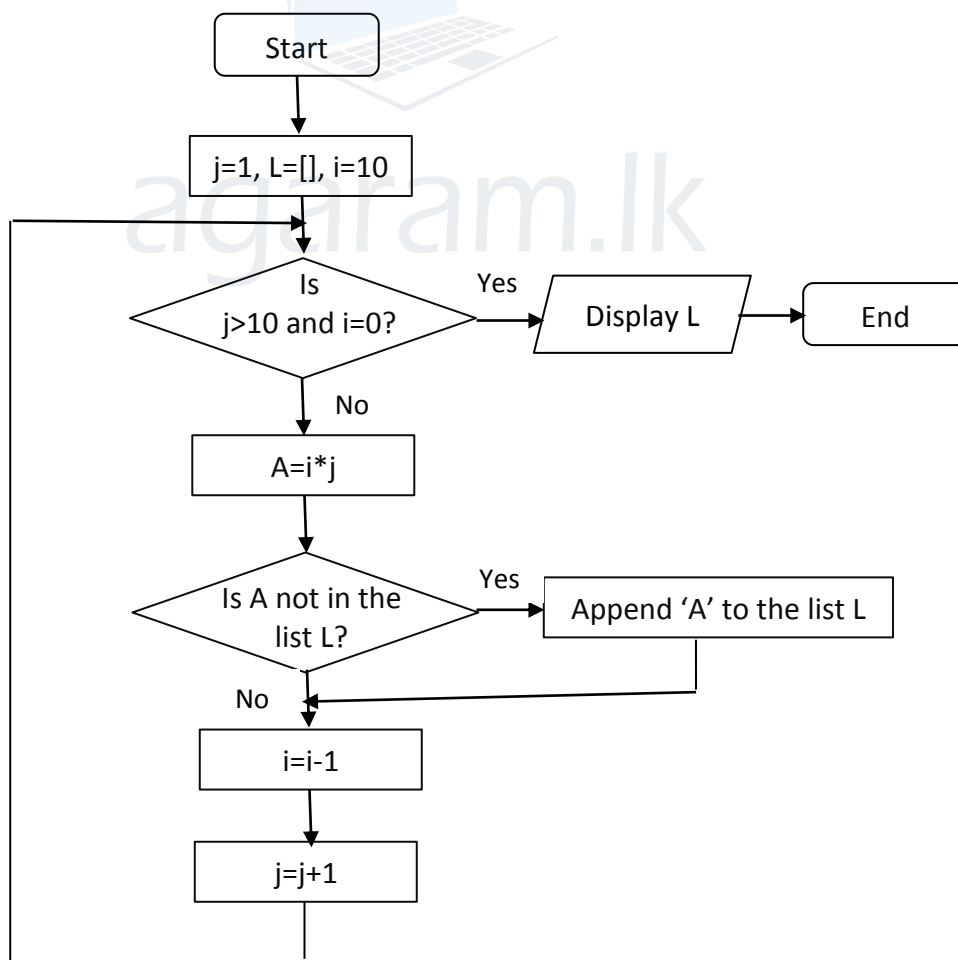
40. Which is the correct statement regarding Enrolment?

- (1) It is in the zero normal form.
- (2) It is in the first normal form.
- (3) It is in the second normal form.
- (4) It is in the third normal form.
- (5) The normal form cannot be decided.

41. Which of the followings is included in the schema form when the above relations are transferred to 3NF?

- (1) Student(StudNo,Surname,Forename)
- (2) Enrolment(StudNo,CrseCode,TutNo,TutName)
- (3) Course(StudNo,CrseCode,CrseTitle)
- (4) Tute(TutNo,TutName)
- (5) Answers 3rd and 4th are correct.

- Use the following flowchart to answer the questions **42, 43 and 44**.



42. Which of the following statement is true about the flowchart given above?

- (1) This flowchart consists of a never ending loop
- (2) Loop will run for ten times and when it stops the values of i and j will be 0 and 11
- (3) Loop will stop when $i \leq 0$ and $j = 10$
- (4) This loop will not start because the conditions given become false at the beginning of the loop
- (5) This flowchart indicates a repetition inside a selection

43. Which of the below python code correctly gives the output of above flowchart?

(A)

```
def display(i,j):
    L=[]
    while (j>0 and i==0):
        x=i*j
        if x not in L:
            L.append(x)
        i=i-1
        j=j+1
    return L
print(display(1,10))
```

(B)

```
def display(i,j):
    L=[]
    while (j<=10 and i>0):
        x=i*j
        if x not in L:
            L.append(x)
        i=i-1
        j=j+1
    print(L)
display(10,1)
```

(C)

```
def display():
    L=[]
    for i in range(10,0,-1):
        for j in range(1,10):
            x=i*j
            if x not in L:
                L.append(x)
    print(L)
display()
```

- (1) A only
- (2) B only
- (3) C only
- (4) A and C only
- (5) All A, B and C

44. The length of this list (L) will be,

- (1) 10
- (2) 0
- (3) 20
- (4) 5
- (5) 4

45. What is the final value of the following python expression?

$0**0+2**-3$

- (1) 1.125
- (2) 0.25
- (3) 0.125
- (4) 1
- (5) 2/3

46. Which one is the final output after the execution of the following python statements?

```
datalist=['a','Hello World',10.5,[1,2,3],4]
print(datalist[-5:-1:2])
```

- (1) ['a',10.5,4]
- (2) [4,10.5, 'a']
- (3) [4,10.5]
- (4) ['a',10.5]
- (5) There will not be any output.

47. Consider the following python program:

```
def display(x):
    a=max(x)
    while 1:
        b=float(input('Enter a number:'))
        if b>a:
            break
        else:
            continue
    return b
print(display([50,60,10,60,90]))
```

Which of the following statement(s) is/are true regarding above program?

- A - A tuple can be passed to this function as a parameter and it returns a value
- B - It has designed to get a number from the user which is greater than the values in the passing list
- C - The condition of this loop will not become false in any instance

- (1) A only
- (2) B only
- (3) A and B only
- (4) A and C only
- (5) B and C only



48. Consider the following python code:

```
def abc(n):
    j=1
    k=1
    for i in range(1,n+1):
        print(k,end=' ')
        j=j+1
        k=k+j
n=6
abc(5)
```

What is the output of the above program?

- (1) 1 2 3 4 5 6
- (2) 1 4 9 16 25
- (3) 21 15 10 6 3 1
- (4) 15 10 6 3 1
- (5) 1 3 6 10 15

49. Which is the output of following python program?

```
a=[10,20,4,30,8]
i=0
x=[100]
for i in range(len(a)-1):
    if (a[i]>a[i+1]):
        temp=a[i]
        x.insert(0,temp)
print(x)
```

- (1) [100,30]
- (2) [100,20]
- (3) [30, 20, 100]
- (4) [100,20,30]
- (5) [20,30]

50. Consider the following python codes:

```
#program:varscope.py
i=5
def varscope():
    i=50
    print(i+1,end=',')
    i=i+1
print(i,end=',')
varscope()
print(i)
```



agaram.lk

What is the output of the above python code when execute?

- (1) 5,51,5
- (2) 50,51,52
- (3) 5,51,51
- (4) 5,end=51,end=5
- (5) end=5,end=51,5



**தொண்டைமானாறு வெளிக்கள நிலையம் நடாத்தும்
ஆறாம் தவணைப் பரீட்சை - 2022
Conducted by Field Work Centre, Thondaimanaru.
6th Term Examination - 2022**

தகவல், தொடர்பாடல் தொழினுட்பவியல் IIA
Information & Communication Technology IIA

Three hours

20

E

IIA

Gr -13 (2022)

Part A – Structured Essay

Answer all four questions on this paper itself.

01.

(a) Write the output of the following PHP codes?

i.

```
<html>
<body>
<?php
$x=5/*+15*/+5;
echo $x;
?>
</body>
</html>
```

Output:

ii.

```
<html>
<body>
<?php
$y=5985;
var_dump($y);
?>
</body>
</html>
```

Output:

iii.

```
<html>
<body>
<?php
$txt1="Hello";
$txt2="How are you!";
echo "$txt1.$txt2";
?>
</body>
</html>
```

Output:

iv.

```
<html>
<body>
<?php
$txt1="Hello";
$txt2="";
echo $txt1.$txt2;
?>
</body>
</html>
```

Output:

(All Rights Reserved/ முழுப்பதிப்புரிமை உடையது)

(b) Convert the decimal number 16.125_{10} into octal number?

.....
.....
.....
.....

(c) Show that, the negative value of 00011011_2 is 11100101_2 . Here, both two numbers are represented in two's complement.

.....
.....
.....
.....

(d) State four advantages of using two's complement representation for data in internal operations of a computer.

.....
.....
.....
.....

02.

(a) Operating system has been designed according to the particular CPU family.” Do you agree with this statement? Give reason?

.....
.....
.....
.....

(b) The virtual memory address space of a computer which uses virtual memory is related to the following address.

0110101111011001

(i) Write memory space in KB? (Consider 'byte addressable')

.....
.....
.....
.....

(ii) If a page size is 4KB (Kilo Byte). Write the necessary bits used to denote a page?

.....
.....
.....
.....

(All Rights Reserved/ முழுப்பதிப்புரிமை உடையது)

(iii) Write the address range?

.....

(c) According to the process scheduling algorithm of Round Robin, calculate the average waiting time to execute the following processes.

Process	P1	P2	P3	P4
Arrival time	0	1	2	3
CPU Burst time/Process time	20	4	3	6

Consider, Quantum time = 3ms

.....

03.

(a) Consider the following table "EMPLOYEE".

empNo	empName	Designation	Department	basicSalary
E001	Rajah	Manager	FIN	51000
E002	Kumar	Clerk	FIN	33000
E003	Mala	Clerk	ACC	30000
E004	Ravi	Engineer	PROD	50000

Write the SQL query for the following each needs?

(i) Insert the details of the new employee as E007, Vimal, System Engineering, IT, 50000.

.....

(ii) Get the all details of the employees who gain basic salary greater than or equal 40000?

.....

(All Rights Reserved/ முழுப்பதிப்புரிமை உடையது)

(iii) Get the details of the employee numbers of each department and total basic salary?

.....

.....

.....

(b) Explain briefly the following terms related to database.

(i) Partial dependency

.....

.....

.....

.....

(ii) Transitive dependency

.....

.....

.....

.....

(c) Given below table describes the details of the Medical Institute.

PatientID	PatientName	MedicalTest	MedicalTest Value (Rs)	Date
1005	Nimal	Blood test	200.00	2015.02.10
1210	Theebiga	Urine test	300.00	2015.02.11
1403	Alwis	X-ray	450.00	2015.02.11
1005	Nimal	X-ray	450.00	2015.02.12
1005	Nimal	Urine test	300.00	2015.02.12
1005	Nimal	Physical test	500.00	2015.02.12

(i) What is the current normal form of the above table?

.....

.....

.....

.....

(ii) Covert the table into 3NF in schema form.

.....

.....

.....

.....

04.

(a)

(i) Provide a suitable definition for a system.

.....
.....
.....
.....
.....

(ii) Using the definition suggested in (i) above, show that a radio is a system.

.....
.....
.....
.....
.....

(iii) “Radio is a closed system.” Do you agree? Justify your answer.

.....
.....
.....
.....

(iv) State whether following requirements are essential functional / nice to have functional / essential nonfunctional / nice to have nonfunctional.

1. Connect the flash drive into radio and then listen the song from flash drive.

.....
.....

2. Radio has two speakers.

.....
.....

(b)

Select and write the correct terms given in the list to match the sentences from (i) to (vi) related to e-commerce

List = {Pure Brick, Back end process, e-Business, Group purchasing, Front end process, B2B, Brick and Click, B2C, Web portal, e-Commerce, Web Content }

- (i) This type of companies integrated both type of online and offline methods.
- (ii) Shopping cart, payment gateway and electronic catalogs are considered as:
- (iii) The collective buying power of its members to secure discounted prices on the goods and services they need to run their businesses
- (iv) This is a specially designed website that brings information from diverse sources.
- (v) Online version of traditional retail seller.
- (vi) Buying and Selling goods and services through the electronic system.

- (i)
- (ii)
- (iii)
- (iv)
- (v)
- (vi)



agaram.lk



தொண்டைமானாறு வெளிக்கள நிலையம் நடாத்தும்
ஆறாம் தவணைப் பரீட்சை - 2022
Conducted by Field Work Centre, Thondaimanaru.
6th Term Examination - 2022

தகவல், தொடர்பாடல் தொழினுட்பவியல் IIB
 Information & Communication Technology IIB

Gr -13 (2022)

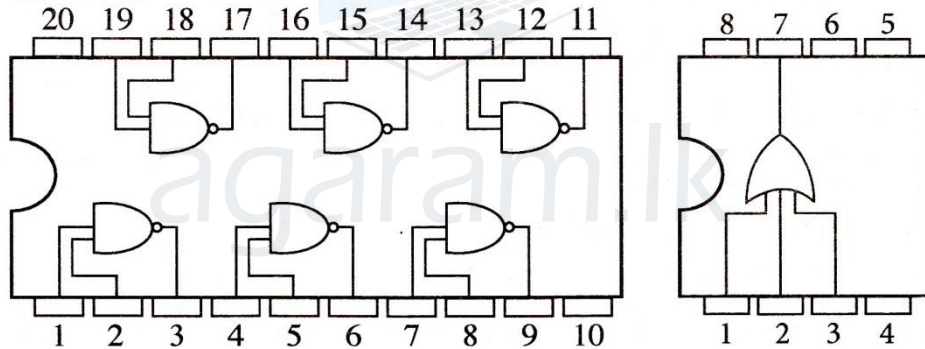
20

E

IIB

Part B*Answer any four questions only.*

1. There is an Automatic voting machine. Assume there are 2 candidates and 3 voters. Each voter can vote only once. One who gets more votes will be the winner.
 Consider the following Boolean values:
 Candidate A: Boolean value 1
 Candidate B: Boolean value 0
- Construct the truth table on the basis of above situation?
 - Give the Boolean expression for the candidate A to win?
 - Simplify the Boolean expression got in (ii) by using the Boolean algebraic laws?
 - Draw the logic circuit for the expression got by simplifying in (iii) using the gates only given in the diagram?



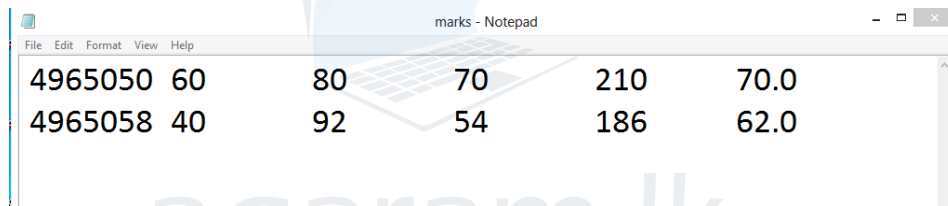
- Give the Boolean expression for the candidate B to win?
- 2.
- What is STAR connectivity in the computer network? Give two advantages and disadvantages of STAR connectivity.
 - Write down the relevant network address and the subnet mask for a host with the IP address 194.168.0.1/26?
 - Assume that we need to make four subnets from the above address block (194.168.0.1/26) for four buildings.
 Write down relevant network address, subnet mask, and the allocation range of IP addresses for each building using the following table format to present your answer.

Building	Network Address	Subnet Mask	IP address Range
A			
B			
C			
D			

- iv. Draw the network diagram to fulfil the below requirements with describe the situation in the above part (iii).
- ✓ Building A, get the internet connection from the Internet Service Provider.
 - ✓ Other buildings are connected to Building A. Building A, separated 500m distance from other buildings.
 - ✓ Proper servers connected to the network in building A, in order to reduce the network traffic among computers in the network and mapping domain name into IP address.
 - ✓ IP addresses are assign automatically for each computer in every buildings.
 - ✓ You have 4 network switches and required wires.
 - ✓ Computer network is protected by honeypot to prevent unauthorized access.

3.

- (a)
- (i) Define the term 'algorithm' in programming?
 - (ii) Write down two methods to represent algorithms?
- (b) Your teacher has requested you to write a Python program to record the marks obtained by students at the term test. Each student has sat for the same three papers and each mark was given as an integer value out of 100 marks. Each student is identified by a unique index number which is also an integer. You should record the **index number, marks1, marks2, marks3, total marks and average marks** of student in a text file named 'marks.txt' as shown in the Fig: 1.



Index Number	Marks1	Marks2	Marks3	Total Marks	Average Marks
4965050	60	80	70	210	70.0
4965058	40	92	54	186	62.0

Fig: 1

Index numbers and marks of the students should be entered through the keyboard, one item at a time and the program should be terminated when -1 is entered as the index number.

- (i) Propose an algorithm by using flowchart for the program.
- (ii) Write a Python program to implement your flowchart.

4. Construct the EER Diagram for the given scenario:

The software development organization database keeps track of its employees, departments and projects. The organization is arranged by departments. Each department has a Department name and ID number. A department controls a number of projects. Each project has a project name, PID to identify the project and project type. Each project is using zero or more parts supplied by any number of suppliers. One supplier can supply many parts to many projects, but must supply at least one part to a project. The projects are subdivided into internal and external funded projects. Funded projects are subdivided by foundation and corporation. Each foundation and corporation associated with the organization and is tracked by account department. Each account department stores a name, number, contract and account type. The employee's name, social security number and employee type are stored. An employee may be assigned to a department and may work on several projects, controlled by more than one department. The dependent's name and sex are stored for each employee. Most of the employees are subdivided into three major employee types – research, technical and testing.

5. (a) Consider website should be created to get the details of students. Home page of the website and login form of the website is shown in the figure 5.1 and 5.2.

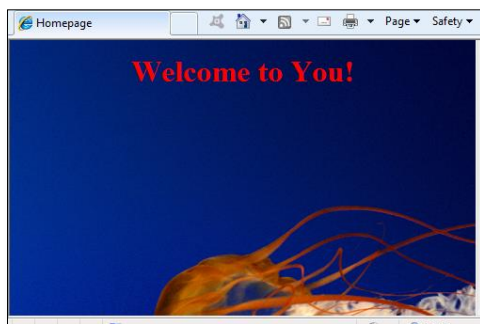


Figure 5.1: Home page

- i) backimage.jpg is shown in the background of website. Write the internal CSS code to create it. (homepage.htm and the backimage.jpg are in the same folder.)
ii) Write the inline CSS code and html code by using following format to create the heading.

Colour:- Red
Font:- Times New Roman
Alignment:- Centre aligned

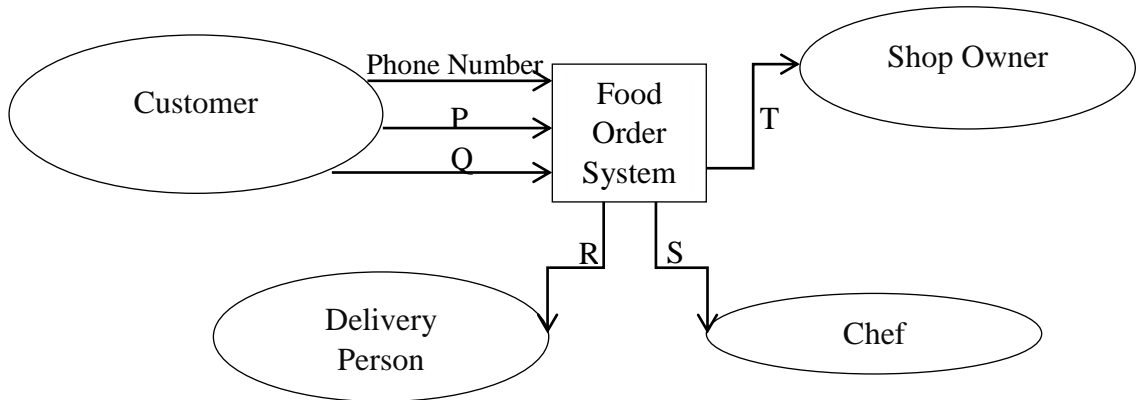
(b)

Figure 5.2: Login form

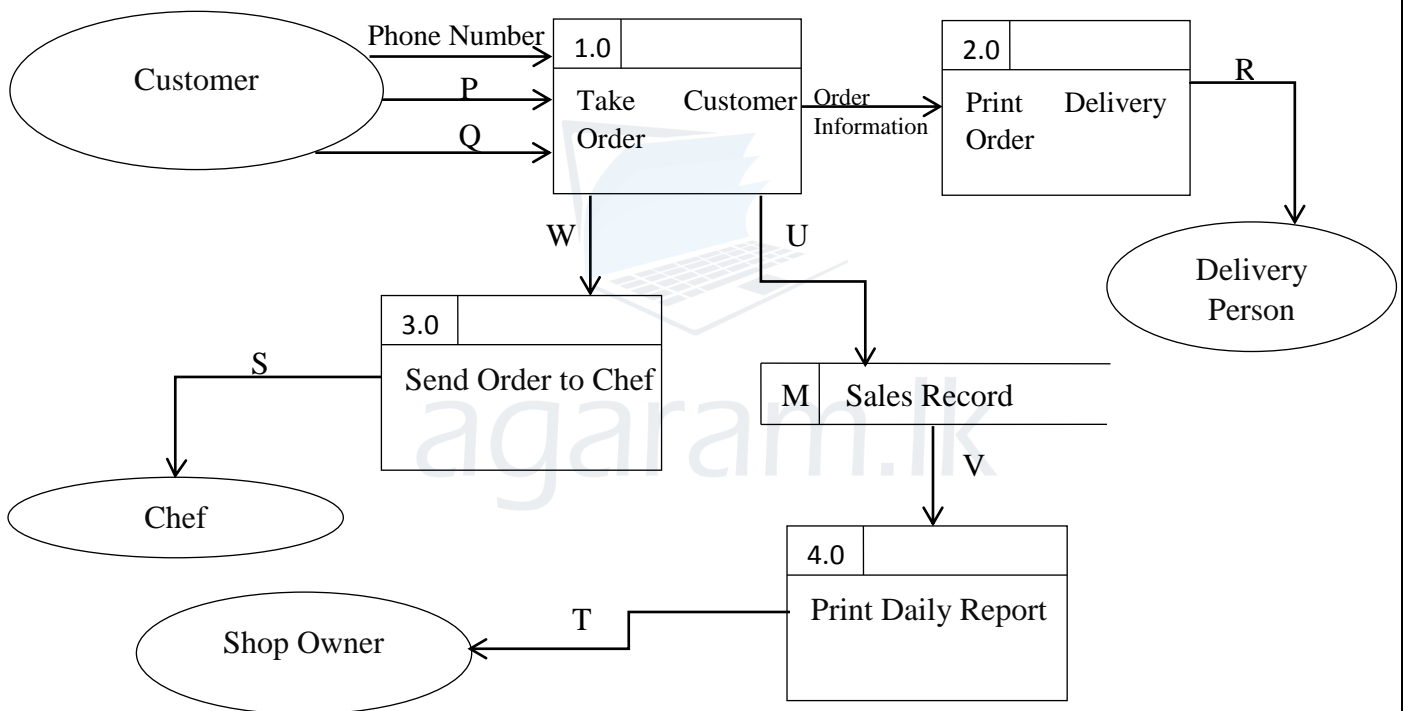
- i) Write the HTML code to create the part which is identified by label A?
ii) Write the HTML code to create the part which is identified by label B?
iii) Write the HTML code to create the part which is identified by label C? (It is enough to include what is shown in the diagram.)
iv) Write the HTML code to create the part which is identified by label D?
v) If you click Button E, the form's information will be sent the file of html_form.asp. Write the HTML code to create Button E?
vi) If you click Button E, the form's information will be deleted. Write the HTML code to create button F.
6. In Covid-19 pandemic period "Ammachi" started accepting orders for Jaffna traditional foods via phone calls and doorstep delivery. When customers call "Ammachi" on the phone, and the telephone operator records phone number, address, and customer order, once the order is taken, the total, including tax and delivery, is calculated. Then the order is given to the chef. Drivers who make deliveries give customers a

copy of the receipt and coupon (if any). Daily totals are kept for the shop owner to check gross profit of the day.

(a) (i) The context diagram of the above activities, with missing information P, Q, R, S and T is given below. Identify P, Q, R, S and T labels.



(ii) Level 1 of the DFD for the context diagram is shown below. Identify U, V and W Labels.



(b)

- (i) Briefly explain the key difference between functional and non-functional requirements as used in system development life cycle.
- (ii) The following list includes some functional and non-functional requirements of a proposed Library Management System.
 - A. Enable to add new books to library book collection.
 - B. The system should work on any operating system.
 - C. Admin should be able to delete members due to some specific rules.
 - D. Admin should confirm returns of books borrowed by users.
 - E. The system should have different language versions.
 - F. System will have different type of users and every user have access constraints.
 - G. The system have user friendly interfaces.

Identify and write down the labels of the non-functional requirements in A to G relevant to library system.