General Certificate of Education (Advanced Level) Support Seminar -2013

Sample Paper :- Information & Communication Technology

Answer Sheet

MCQ

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

Part A

(1)

(a)   (i)   A system is a group of interrelated interacting resources forming a common goal.

        (ii)   Goal-→To protect food

             Resources→mortar, condenser, racks, electricity

             Interracting→When there is electricity all the parts are working together

        (iii)   Open System

             Interacts with the out side world.

        (iv) Functional requirement   →it's a service

             Non functional requirement-→It's a limitation

(b)   (i).   B2C

        (ii). B2B

        (iii). B2C

        (iv). C2C

(c)   (i).   Video conference

        (ii). Web cam , Speakers, Computer with internet facility.

(2) (a)   (i). Sender, Media, and Receiver

         (ii) Attenuation, Delay distortion, Noise, Dispersion

         (iii) Amplitude modulation, Phase modulation, Frequency modulation

         (iv) Amplitude modulation→This form of modulation involves modulating the amplitude.

               Phase modulation→ Phase modulation varies the phase of the carrier in line with the modulating signal.

               Frequency modulation - This form of modulation varies the frequency in line with the modulating signal. This modulation has been used for many applications including high quality analog sound broadcast

  (b)   (i) 00-23-AE-OC-2B-45

        (ii) 172.20.31.2

        (iii) It maps Domain name with it's IP addres

(3)

(a)
```
CREATE table Production
        (Pro_No  varchar(5)      NOT NULL,
        Pro_Type  varchar(20),
        Pro_Name varchar(15),
        Unit_Price decimal(12,2),
        Sale_Price  decimal(12,2));
        Primary Key(Pro_No ) );
```

(b)
```
INSERT INTO Production(Pro_No,Pro_Type,Pro_Name,Unit_Price,Sale _Price)

Values('MLK08','Butter','Lakspray',125.00,128.00);
```

(c)
```
SELECT Pro_Type,Pro_Name,Unit_Price

FROM Production

WHERE Pro_Name <>'Lakspray';
```
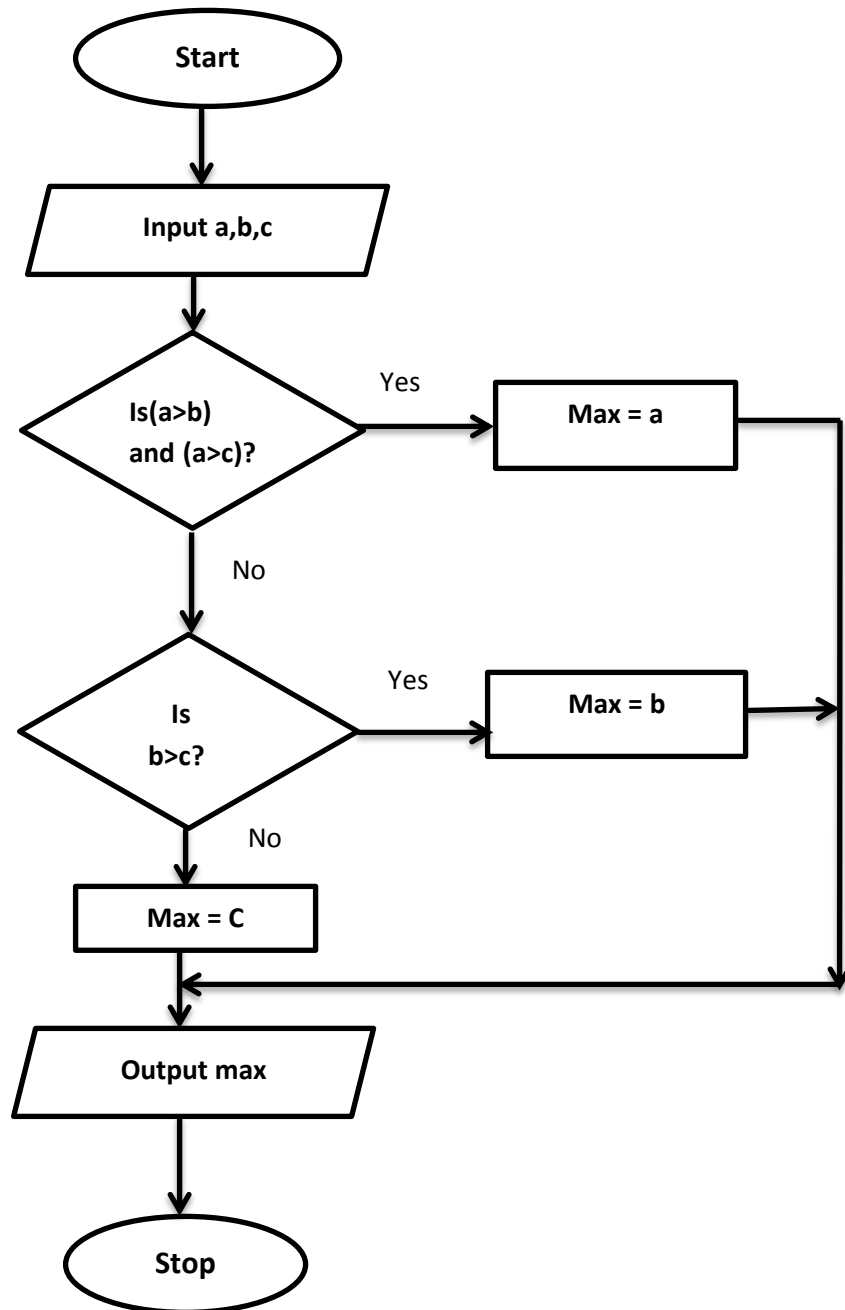
(d)   Displays Unit_Price value 335.00 in record Pro_No='MLK04' of Production table.

(e)   Displays Pro_Name and Sale_Price ,when the difference between unit price and sale price is greater than 3.

(4)   (a) (i). Compare 1st input value with 2nd and 3rd .If the 1st value is the largest ,it is the maximum number. Otherwise compare 2nd and 3rd value.

(ii).

```
                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           │
                    ┌──────▼──────┐
                    │ Input a,b,c │
                    └──────┬──────┘
                           │
                        ╱──▼──╲              Yes    ┌──────────┐
                      ╱ Is(a>b) ╲──────────────────▶│  Max = a │
                      ╲ and (a>c)?╱                 └──────────┘
                        ╲──┬──╱
                           │ No
                        ╱──▼──╲              Yes    ┌──────────┐
                      ╱   Is    ╲──────────────────▶│  Max = b │
                      ╲   b>c?  ╱                    └──────────┘
                        ╲──┬──╱
                           │ No
                    ┌──────▼──────┐
                    │   Max = C   │
                    └──────┬──────┘
                           │
                    ┌──────▼──────┐
                    │ Output max  │
                    └──────┬──────┘
                           │
                    ┌──────▼──────┐
                    │    Stop     │
                    └─────────────┘
```

Start

Input a,b,c

Is(a>b) and (a>c)?   Yes   Max = a

No

Is b>c?   Yes   Max = b

No

Max = C

Output max

Stop

(iii) Begin

     input a,b,c

     if (a>b) and (a>c) then

         max =a

     else

         if (b>c) then

            max=b

         else

            max=c

         endif

     endif

     output max

  end

(b)   14→ 00001110

     3→ 00000011

    -3→11111100+00000001

     →11111101

   14→ 00001110

+   (-3)→11111101

     1 00001011

Ignore the carry→ Answer→00001011

Part-B

(1)

(a). (i) Functions of an arithmetic & logic unit

ALU – Performs mathematical calculations

- Performs comparisons of data

- Mathematical operations(+,-,*,/)
- Logical operations (AND, OR,NOT)
- Comparison operations (>,>= ,< ,<=,= ,<>)

Function of a control unit

CU – performs all the functions of a computer system

-Decodes instructions to the memory.

-Sends signals to the relavent components.

(ii) High accuracy

High efficiency

Less data duplication.

Not need large physical space

Not need more people

(b).

(i)

A

B

C

$B + \bar{C}$

$A.(B + \bar{C})$
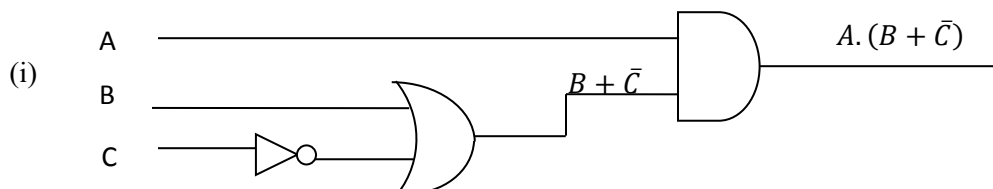
(ii)

A	B	C	NOT C $(\bar{C})$	B or Not C $B + \bar{C}$	A AND B OR NOT C $A.(B + \bar{C})$
0	0	0	1	1	0
0	0	1	0	0	0
0	1	0	1	1	0
0	1	1	0	1	0
1	0	0	1	1	1
1	0	1	0	0	0
1	1	0	1	1	1
1	1	1	0	1	1

(iii) $F = A\bar{B}\bar{C} + AB\bar{C} + ABC$

(iv)

$$F = A\bar{B}\bar{C} + AB\bar{C} + ABC$$

$$= A\bar{B}\bar{C} + AB\,(\bar{C} + C)$$

$$= A\bar{B}\bar{C} + AB * 1 \quad - (\bar{C} + C = 1 \text{ නිසා})$$

$$= A\bar{B}\bar{C} + AB$$

$$= A.(\bar{B}\bar{C} + B) \quad - (\bar{B}.\bar{C} + B = B + \bar{C} \text{නිසා}$$

$$= A.(B + \bar{C})$$

Using k-map

AB \ C	$\overline{A}\overline{B}$	$\overline{A}B$	AB	$A\overline{B}$
$\bar{C}$	0	0	1	1
C	0	0	1	0

AB

$$F = AB.A\bar{C} = A.(B + \bar{C})$$

❖   A.B

When internal temperature is above 400 ⁰C and internal pressure is above 1.5MPa.

❖ $A.\bar{C}$

When internal temperature is above 400 ⁰C and rotation speed of the shaft is less than 4000.

❖ $A.(B + \bar{C})$ or $AB + A.\bar{C}$

When internal temperature is above 400 ⁰C and internal pressure is above 1.5MPa and rotation speed of the shaft is less than 4000.

(2)   (a) <hr> is used for thematic change in the content(in HTML 5) or to separate content in the HTML Tag represent a horizontal rules(in HTML)

<p>The paragraph tag automatically inserts a blank line before or after the paragraph .

(b) Thiththawella Tank

Thiththawella tank is located in the North Western Province

_____

Birds
Forty two bird species were observed at the tank

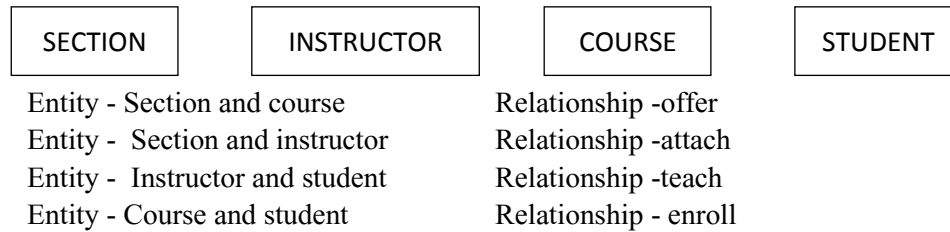(c)
```
<html>
<head>
<title>YZA</title>
</head>
<body>
<h1>Turtles are in danger!</h1>
<img src="turtle.jpg">
<p>Let's save turtles by refusing:</p>
<ul>
<li>Turtle eggs</li>
<li>Turtle soup</li>
<li>Ornamentals made by turtles</li>
</ul>
<p> More Details:</p>
<a href="http://www.yza.com">Young zoologists Association</a><br>
<a href="http://www.Kturtle.com">Kosgoda turtle hatchery</a>
</body>
<html>
```

(3)

(a)　　　Entity

| SECTION | INSTRUCTOR | COURSE | STUDENT |

Entity - Section and course　　　Relationship -offer
Entity - Section and instructor　　Relationship -attach
Entity - Instructor and student　　Relationship -teach
Entity - Course and student　　　Relationship - enroll

(b)　　　Section offer course-one to one
- A section offer a course while one course belongs to a section.

　　　Section attach Instructor -one to many
- A section has many instructors while one instructor belongs to a section.

　　　Course enroll student-many to many
- A course follows many students while a student can follow many courses.

　　　Instructor teach student -many to many
- An instructor teach many students while a student can learn by many instructors.

(c)　　　Multivalued attributes –TpNo in Student entity
There may be more than one value for multivalued attribute
　　　Eg. One student can have many TpNo s.

(d)　　　Sect Code-　　　SECTION Entity
　　　ID　　　-　　　INSTRUCTOR Entity
　　　Course ID -　　　COURSE Entity
　　　RegNo　　-　　　STUDENT Entity

(e)　　　INITIALS, SURNAME
　　　　　　　or
　　　FIRSTNAME, MIDNAME, LASTNAME

(f)　　　Create table COURSE
　　　(
　　　CourseID　　　VARCHAR (6)　　　NOT NULL,
　　　Title　　　VARCHAR (15),
　　　Fee　　　Decimal (12,2)
　　　);

(4). (a).   IP address in IT Department – 192.168.10.10
            Subnet mask – 255.255.255.0

   (i). No of bits for subnet ID - 3
         No of subnets - 2^3 - 8

         No of host (computers) per subnet = 2^5 -2 = 30

   (ii). Subnet mask – 255.255.255.224

(b).

   (i). Router

   (ii). Router – A router is a device that forwards data packets between computer networks.
            That join multiple networks together.

(iii).

Human resources Dept		Administration Dept
	Router	
192.1698.10.65		192.168.10.97
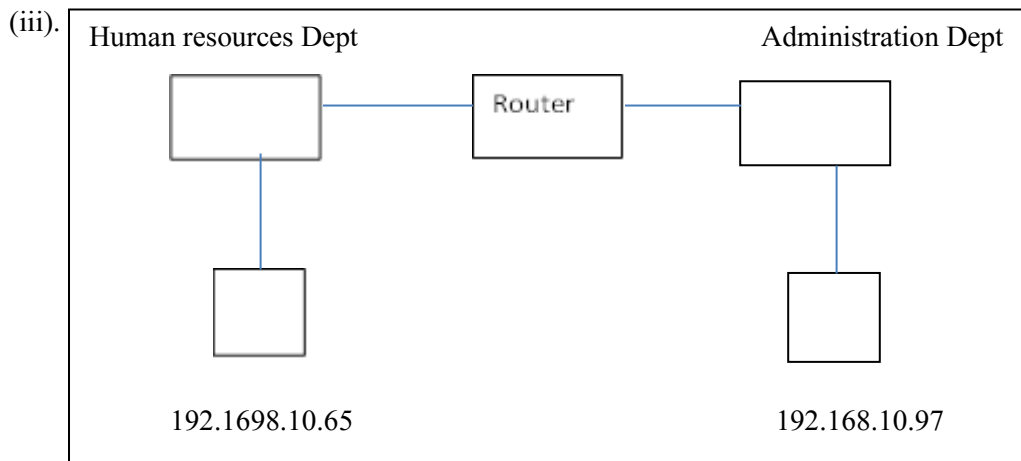
(5) (a)   **docstring or document String**

         It is an optional statement which shows the given description as a Tool Tip at the
         function is being called.

   (b)   i. The statement "**int(data[2])–amoutClac(data[0])** " is assigned into variable
         avb_amount
         ii. Data contained in the statement "**data[2])–amoutClac(data[0])**" is converted as
         Integer.
         iii. Call the Function **amoutClac**
         iv. Subtract the value which is given by the function **amoutClac** from element number
         2 in the List/variable **data**.

(c)   i .Get item number

   ii Open "**sales.txt"** file and create a data object called **fo3**

   iii. Read first line from **fo3** data object (or from file "sale.txt") and assigned into
      variable **data1**

   iv.Create a list as **data3** separating elements from tabs(\t) that are contained in
   data1 list

    v. Evaluate the value contained in **item_no** and zero element in **data3** List
       any three of tasks in the functions can be accepted

(d)

   (1) **Available only --> 0**

   (ii) Sorry... Unavailable Amount...!

   (ii) Successfully Updated a Record..!

(e)

```
def dailycollection():
    'Calculate sale amount of item'
    fo3=open('sales.txt')
    data1=fo3.readline()
    item_amount=[]
    while(data1):
        data3=data1.strip().split("\t")
        item_amount.append(float(data3[3]))
        data1=fo3.readline()
    fo3.close()
    print(sum(item_amount))
```

(6)

(a) (i)   Business to Business -Describe electronic commercial transaction between business using
            internet.

                        Any Eg: Both parties should be business entities.
     (ii) Business to consumer- Describes electronic commercial transaction from business to the
                        consumer using internet.
                         Any Eg: One party should be a business entity and other party
                        should be consumer.
    (iii) Government to consumer-Describe electronic commercial transaction from the government
                        and a consumer using internet .
                        Any Eg: One party should be the government and the other party
                        should be a consumer.

(b)   C2C- It is a person to person transaction using online payment system.

(C) (i) Multi Agent –Multiple interacting intelligent agents within an environment.

   (ii) Autonomy-The agents are at least partially autonomous.

      Local views-No agent has a global view of the system.

      Decentralization

   (ii) Any example used to solve problems that are difficult for an individual agent.