

## 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 address

(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)

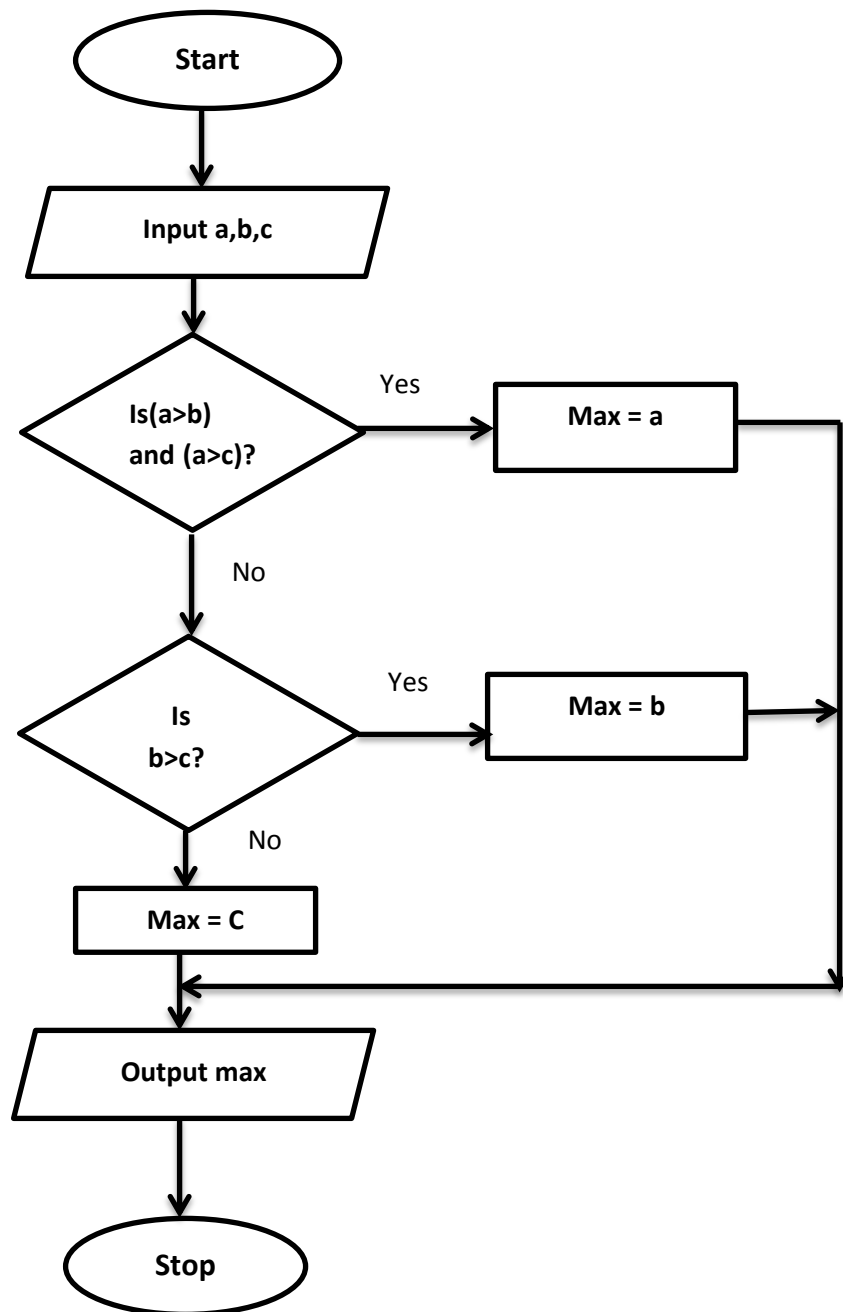
Displays Unit\_Price value 335.00 in record Pro\_No='MLK04' of Production table.

(e)

Displays Pro\_Name and Sale\_Price ,when the difference between unit price and sale price is greater than 3.

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

(ii).



(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 relevant components.

(ii) High accuracy

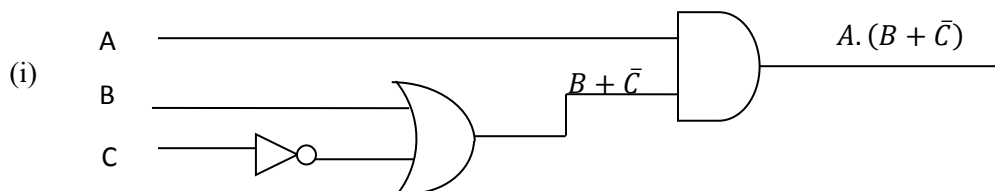
High efficiency

Less data duplication.

Not need large physical space

Not need more people

(b).



(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

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

AB

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

❖ A.B  
When internal temperature is above 400 °C and internal pressure is above 1.5MPa.

❖ A.C̄  
When internal temperature is above 400 °C and rotation speed of the shaft is less than 4000.

❖ A.(B + C̄) or AB + A.C̄  
When internal temperature is above 400 °C 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) Thithhawella Tank

Thithhawella tank is located in the North Western Province

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Birds

Forty two bird species were observed at the tank

(c)

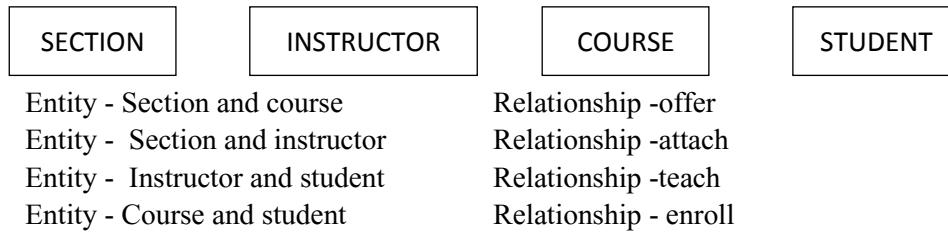
```
<html>
<head>
<title>YZA</title>
</head>
<body>
<h1>Turtles are in danger!</h1>

<p>Let's save turtles by refusing:</p>
<ul>
<li>Turtle eggs</li>
<li>Turtle soup</li>
<li>Ornaments 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



(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 -  $2^3 = 8$

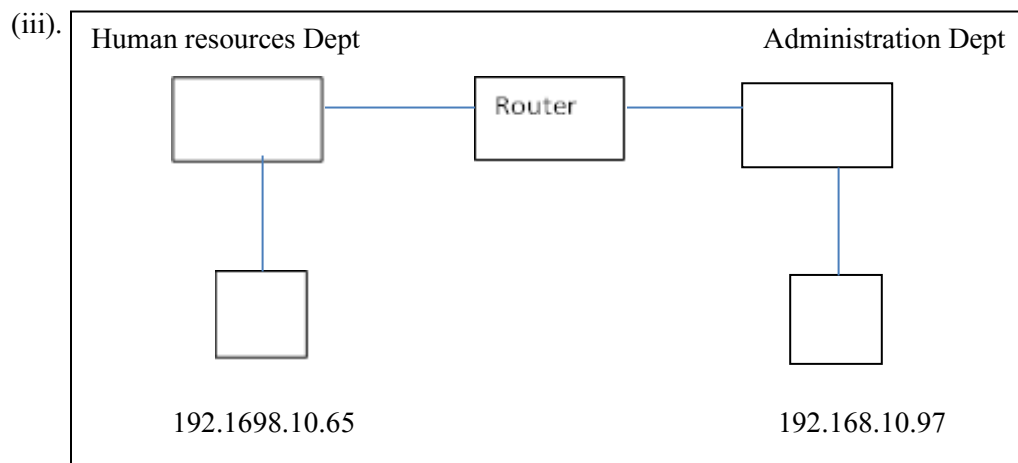
No of host (computers) per subnet =  $2^5 - 2 = 30$

(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.



(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)
- The statement `int(data[2])-amountClac(data[0])` is assigned into variable **avb\_amount**
  - Data contained in the statement `data[2]-amountClac(data[0])` is converted as Integer.
  - Call the Function **amountClac**
  - Subtract the value which is given by the function **amountClac** 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.