Practice Test

2016

| Information & Communication Technology | **Part II** | **2 hours** |

Answer five questions. The first question is compulsory.

1. **Follow the given instructions and answer all the questions.**

    a. Express the octal number 562 using the BCD representation

    b. Compare RAM and ROM giving two features.

    c. A storage device has a capacity of 2400 GB. Express that amount in bits.

    d. Compare first generation and third generation computers giving two features of them.

    e. Write two demerits of ICT.

    f. What is a universal gate? Name a universal gate.

    g. Briefly explain two features of a good quality electronic presentation.

    h. Prove $p.\bar{p}$ using a logic circuit with a two-input AND gate and a NOT gate. Draw the relevant logic circuit diagram.

    i. Name two types of utility software.

    j. State two reasons to select a solid state drive over a hard disk drive.

2. A shop keeper uses a relational database to record details of items he sell, supplier details and stock. The tables are shown below.

    item table

ItemID	Item	Unitprice
I001	White sugar	95
I002	Brown sugar	125
I005	Wheat flour no 1	120
I065	Nadu rice	67.50
I074	Wheat flour no 3	100

    stock table

supNum	ItemID	Currentstock
s009	I001	75
s456	I005	90
s009	I002	35
s089	I001	70
s001	I074	100

    Supplier table

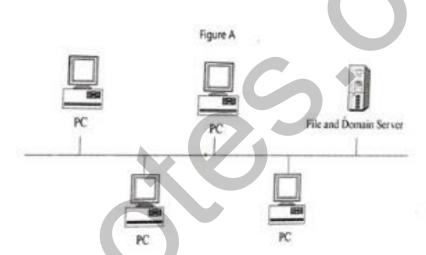 | supNum | Surname | Initials | Address |
    |--------|---------|----------|---------|
    | s009 | Perera | W.T. | No.45,Temple lane, Kandy |
    | s456 | Silva | A.K.D | Park Lane, Nugegoda |
    | s234 | Wijesinghe | S.G. | No.22.Cross Street, Matale |
    | s089 | Perera | C.F. | 6/15,University Quarters, Peradeniya |
    | s001 | Silva | A.K.D | No.45/A, Temple lane, Kandy |

    a. Give a suitable data type for the following fields:

       i. supNum   iii. stock

       ii. Initials   iv. Unitprice

b. Name the primary key fields with corresponding tables.

c. Explain the term 'foreign key' using the given tables.

d. When someone buys 3 Kgs of Wheat flour no 3 , which table(s) need(s) updating?

e. Write down the relevant updated record when Mr. W.T. Perera changed his address to No.4, School road, Katugastota.

3. DiriSisu Vidyalaya is going to set up a computerized system which will monitor who is in the computer lab at any given time and which computers they use. The system should prevent any unauthorized person from entering the lab. Currently they use an ID card with a photograph of the student with his or her name. It may be necessary to modify the ID cards.

   a. Name two hardware devices you would propose for the above system.

   b. Justify one different possible use for each hardware you have suggested in a.

   c. Figure A displays a sketch of the arrangement of computers in the computer lab.

Figure A

   i. Name the network topology shown here.

   ii. Name the data transmission method of the cable shown here.

   iii. What is a server with regard to computer networks?

   iv. Name the type of network this belongs, if this network is categorized according to its geographical distribution.

4. Gayan needs to draw a graph for the quadratic function y=a2-3a+5 using a spreadsheet. But he needs your help to complete the data table given below. Answer his questions.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
15		$y=a^2-3a+5$												
16														
17			-4	-3	-2	-1	0	1	2	3	4	5	6	7
18		a^2	16	9	4	1	0	1	4	9	16	25	36	49
19		3a	-12										18	21
20									3				23	33

a. Write the formula you would type in cell C18 to calculate a^2.

b. Write the steps you would use to copy the above formula to calculate a^2 for other relevant cells.

c. Write the formula you would type in cell C19 to calculate 3a.

d. Write the formula you would type in cell M20 to calculate y.

e. What should be typed in the cells B17 and B20 respectively?

f. Write a type of chart most suitable for a quadratic function.

5. The following advertisement is created using word processing software.

   a. What is the tool used to insert A?

   b. Write the steps to insert B into the advertisement.

   c. Identify the formatting in C.

   d. What is D? Write the keyboard shortcut to insert D.

e. The word imediately is underlined in red colour when viewed as a soft copy. Write a way to remove it.

6. A greenhouse uses a logic circuit to water the plants inside it. The plants should be watered

- When the plants become dry or
- When it is dark.

If someone needs to water the plants at any other time there is also a manual switch.

You are assigned the task of implementing the above logic circuit using AND, OR, NOT gates only.

    a. Construct a truth table to represent the functionality of the above system.
    b. Write the Boolean expression(no need to simplify) to represents logic circuit of above system
    c. Draw the logic circuit using AND, OR, NOT gates only.