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13 ශ්‍රේණිය

**Third Term Test – 2018**

**Grade 13**

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**Information and Communication Technology II**

**Three hours**

Index no: ………………………………………………………………

## Part A

Answer all questions on this paper itself.

01. Complete following HTML Code



Consider the name of the photo as "sab.jpg".

```html
<html>
<head>
<title>Sabaragamuwa</title>
<......1......>
<.....2.....>
<h1><....3....>Sabaragamuwa Sri Lanka</b><....4....>
<img src="....5....." alt="sab.jpg" width = 100 height = 100>
<p> This is the official portal of the <....6....>Sabaragamuwa provincial council.</b><br> The objective behind the portal is to <br>provide one interface for citizens and other stake holders.<....7....>
<....8....>Districts in Sabaragamuwa<...9....>
<...10... border="1">
<tr><....11....>District<...12...><...11...>Population<...12...></tr>
<...13....><td><ol>
<li>Ratanapura</li>
<li>kegalle<lii>
</ol></td>
<td>
<li>....14.....<lli>
<li>9,37201</li>
</td>
</tr>
</table>
<....15.... width= 50% Align = left>
<form action="sb.php" name="form" ..16......="get">
User name <input type= ....17... name="txt1"><br>
....18..... <input type= ....19.....name="txt2"><br>
<input type = "button" value = "Log in">
<input type = "button" value = "....20....">
<input type = "button" value = "Clear">
</form>
</body>
</html>
```

| | |
|---|---|
| 1. ………………… | 11. ………………… |
| 2. ………………… | 12. ………………… |
| 3. ………………… | 13. ………………… |
| 4. ………………… | 14. ………………… |
| 5. ………………… | 15. ………………… |
| 6. ………………… | 16. ………………… |
| 7. ………………… | 17. ………………… |
| 8. ………………… | 18. ………………… |
| 9. ………………… | 19. ………………… |
| 10. ………………… | 20. ………………… |

02(a)  I. Briefly explain following e-business types

(a) Brick and click

(b) Pure click

II. Write three key conditions to be satisfied in order to classify a transaction/service between two persons as C2C in e-commerce.

(b)  I. Name A, B,C,D,E and F states of following seven state process transition diagram in process management carried out by operating system.
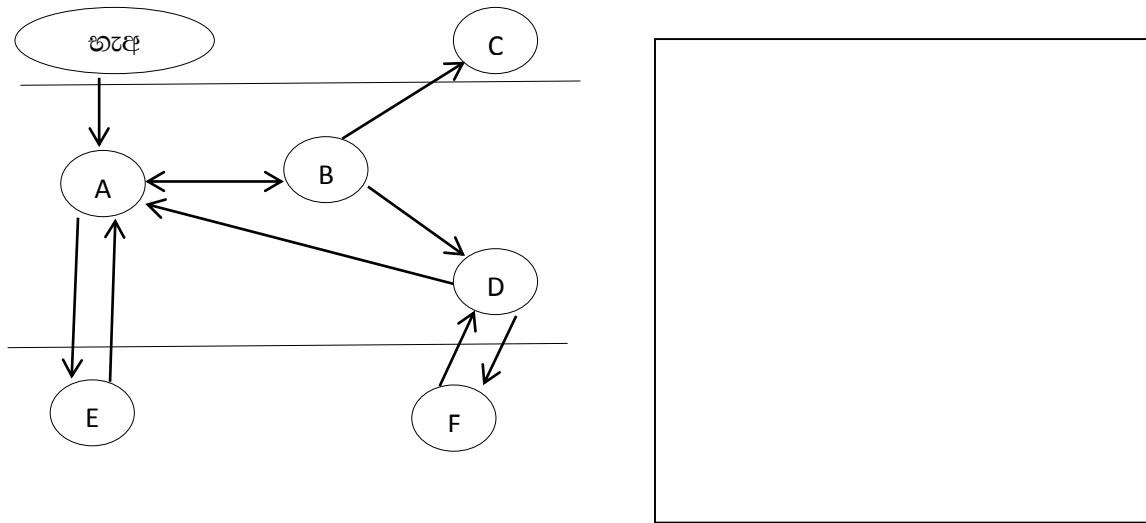


II. Explain the reasons to transit as B →A and B →D

III. Explain the term " Defragmentation"

03. A website called eshopping.com facilitates to companies which sell their products online by allowing customers to purchase online. Customers or buyers can place orders in this site. One buyer can place several orders and on one order always belong to a single customer.

a) Given below is a part of ERD diagram of above online system. Complete it.

I. Write the relational schema for above completed diagram

II. Write SQL code to create Buyer table.

b) Write a functional requirement and two non-functional requirements of this online system.

04. a)Compare compiler and Interpreter using two facts

|   | Compiler | Interpreter |
|---|----------|-------------|
| 1 |          |             |
| 2 |          |             |

b) Following python code has errors, rewrite the correct code.

```
def     sorting-list (x)
        for k in ranges (len(x)-1,0,1):
        for i in ranges(k):
          If x[i]>x[i+1]}:
        temp==x(i)
        x[i]=x[i+1]
        x[i+1]=emp
    print(x)
    sorting-list([3,5,4,1,2,-6])
```

# Part B

**Answer 04 questions only.**

01. Consider an automatic system which is designed for a university to destroy its garbage by burning. Its functionality can be described as follows;

The main functions of the system are operated on sensor inputs. Sensors are used to monitor the condition of garbage door (which used to insert garbage to the system), fuel supply and generating sufficient flame. The status of these inputs are given in two states. The open and close status of the garbage door is represented using Boolean values 0 and 1 respectively. The open and close status of the fuel valve is represented by 1 and 0 respectively. The temperature of the flame is measured by predefined value and if the flame temperature is high or low than the predefined value it will be represented using 1 and 0 respectively.

System will be automatically turned off if the garbage door is open as a safety precaution and doesn't turn on even though the other conditions are active. And also system will be automatically turned on or off if the fuel valve is open or close respectively. Also the system will be automatically turned on or off if the temperature of the flame is higher or lower than the predefined value. The active and inactive status of the system is represented using Boolean values 1 and 0 respectively. *Assume that the electricity is always supplied to the system.*

a) Construct the simplest logic circuit using only NAND gates to control the system. Clearly show truth table, Boolean expression and Boolean algebraic rules used for simplification.

b) One of the observers of the system had criticized it saying, "The system will be active even though there is no fuel to burn". Do you agree with this statement? Justify your answer.

02. A company has decided to modify its computer network to improve its efficiency by applying following conditions.

The main network has been assigned a public IP address range 192.168.1.0 with subnet mask 255.255.255.192. It contains a Mail Server, Web Server and another server to connect subnets to internet as well as reduce the traffic on internet connection. It has eight additional subnets for internal use having the private IP address range 172.16.0.0 with the subnet mask 255.255.0.0. Computers in each subnet can access resources in all other subnets. There is also an application server for the use of internal clients.

Identify device required to establish the network and draw a network diagram to show the logical arrangement of the organization's computer network. Show all parts of the network with appropriate IP addresses. Clearly show all calculations stating assumptions you made.

Further explain the necessity of a firewall for this type of network and mention where it should be connected.

03. Consider following description to answer questions.

An online system was introduced to manage polythene based waste in developing countries. This system use sensor network to identify polythene waste can locations, its filled limit and notify to the nearest employee to remove it. An online form is used to get public feedback about this system aiming to improve its quality. Biometrics are used to monitor the attendance of the employees and the Ministry of Environment maintain online services from ABC company to acquire information about polluted areas of the region through their survey.

a) What is the e-commerce transaction type of online public feedback process? Justify your answer.
b) Which e-commerce transaction type is described by the process of providing information about polluted areas? Justify your answer.
c) State a limitation which may arise in implementing this type of system in Sri Lanka.
d) One of the clients of the system commented that this system shows the characteristics of an Agent System. Do you agree with this comment? Justify your answer.
e) Name two biometric inputs for Employee monitoring sub system.

04. The management of an organization has decided to pay its employee's telephone bills. This process was easy because all of them get their communication services from the same telecommunication company. The company doesn't charge for first 100 units except the rental of Rs.320.00. And it charge Rs.2.75 to each unit for next 50 units. Every additional unit which exceed this limit will charge Rs.5.00 each. Assuming that the company provide information about used units of each and every employee answer following questions;

a) Construct an algorithm represented by a flowchart which may output the telephone bill of an employee. *Clearly state the assumptions (if any) made.*
b) Write the Python code for the solution represented in (a)
c) Write the python function to insert information of used units and telephone bill to the file named "bill.txt"

05. Construct an ER diagram for given scenario. Clearly represent entities, attributes and primary keys within the diagram.

Sabaragamuwa Provincial Department of Education is designing an Electronic Library System (ELS) aiming to improve knowledge and promote reading habit of students. To get e-books from ELS students should get its membership by registering with the system providing their name, grade and school. After this process a member is given a unique memberID, Username and a password to access. For the process of inputting an e-book is to the system details like unique ISBN, book name and author's name is required. One member can view three e-books at one instance on his web browser and a single e-book can be shared among multiple users at one instance.

The system take notes about the number of books viewed by each and every member and provide grades accordingly. The system will also facilitate to generate a report containing list of members which acquire each grade which has to be submitted to its management.

06. Consider the following description about a Sales System and draw a Level 1 DFD to represent its functionality. *Clearly state assumptions you have made (if any).*

This company consists of four sections named Sales, Warehouse, Finance and Dispatch which perform functions Managing customer inquiries, Stock management, Handling payments and delivering orders respectively. When a customer initially contact Sales department and place the order. The Sales department checks the availability of items using the Stock file and if items are not available, inform it and also provide options. If available it place the new order in orders file. New orders are taken from the order file by warehouse department to parcel required order and also save its details as a completed order in the completed order file. Then the warehouse balance the stock and send updated stock details in stock file. After this process the Dispatch department take the completed order details from relevant file and prepare a delivery note which should be sent to the customer and also drop a copy to delivery file. Finally Finance department create an invoice to the delivery note and send it to the customer. After the customer made the payment the finance will pass the receipt for the payment, delivery note and the parcel to the customer.