නව නිර්දේශයපුතිය පාடத්තිட්டம்/New Syllabus

NEW **ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව** ... Department of Examinations, Sri Lanka ... **80 E I, II**
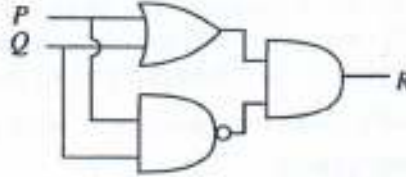
අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2016 දෙසැම්බර්

கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2016 டிசெம்பர்

General Certificate of Education (Ord. Level) Examination, December 2016

තොරතුරු හා සන්නිවේදන තාක්ෂණය	I, II
தகவல் தொடர்பாடல் தொழினுட்பவியல்	I, II
Information & Communication Technology	**I, II**

Information & Communication Technology II

* *Answer five questions only, selecting the first question and four others.*
* *First question carries 20 marks and each of the other questions carries 10 marks.*

1. (i) Convert the Hexadecimal number E9 to the equivalent octal number. Show the relevant steps.

   (ii) Consider the following logic circuit diagram:

   Present the equivalent Boolean expression for the above logic circuit.

   (iii) A company uses its own file server to store electronic documents, spreadsheets and images. In order to reduce the cost it decides to store these files in a cloud based (online) drive.

   (a) Write down **one** benefit of using a cloud based (online) drive in addition to reducing the cost.
   (b) Write down **one** disadvantage of using the cloud based (online) drive.

   (iv) Geetha uses an Automated Teller Machine (ATM) to withdraw money from her bank account. First she inserts the ATM card into the machine and enters the secret pin code. Then she enters the amount of money she wants to withdraw. The system checks the balance available in her account and dispenses money as the balance available in her account is more than the amount of money Geetha wants to withdraw. At the same time the system updates the balance available by deducting the amount of money dispensed from the previous balance.
   From the above scenario, write down an example each for input, processing and output.

   (v) The first column in the following table shows activities related to different devices indicated by letters Ⓐ to Ⓓ. The second column shows the Ports required to connect these devices to a computer. However, activities and ports are not in the correct order.

Activity	Port
Ⓐ - Selecting a menu option using an optical mouse	RJ 45
Ⓑ - Listening to a song using a headphone	HDMI
Ⓒ - Accessing the Internet through a Local Area Network (LAN)	Audio port
Ⓓ - Show a video clip with a multimedia projector	USB

   Identify the correct port from the second column to connect each of the devices indicated in the first column.
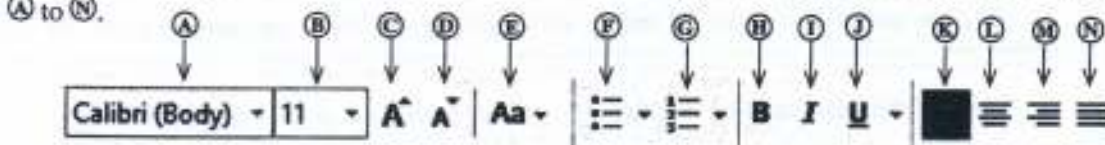   Write down the letter for the activity and the relevant port in your answer book.

(vi) A document was created with a word processing software and it was formatted as indicated by numbers ① to ④ below.

Before formatting	After formatting	
Green IT	Green IT ←	① ②
Green IT is the study and practice of environmentally sustainable computing or IT.	**Green IT** is the study and practice of environmentally sustainable computing or IT.	
Some of the green IT approaches include:	Some of the green IT approaches include:	
Product longevity	• Product longevity ←	③
Materials recycling	• Materials recycling	
Source: https://en.wikipedia.org/wiki/Green_computing	Source: *https://en.wikipedia.org/wiki/Green_computing* ←	④

Some formatting tools available in a Word Processing software are shown below with labels Ⓐ to Ⓝ.

Ⓐ   Ⓑ   Ⓒ Ⓓ Ⓔ   Ⓕ   Ⓖ   Ⓗ Ⓘ Ⓙ   Ⓚ Ⓛ Ⓜ Ⓝ

Calibri (Body) ▾ | 11 ▾ | A A | Aa ▾ | ☰ ▾ ☰ ▾ | B *I* U ▾ | ■ ≡ ≡ ≡

Identify the tool(s) used for the formatting tasks indicated by the numbers ① to ④. Write down the number assigned to the formatting task and the relevant label(s) of the tool(s).
(**Note:** No marks will be given if more formatting tools than necessary are given in your answer.)

(vii) Consider the following table with four statements relating to the Internet indicated by letters Ⓟ to Ⓢ given in the first column.

Ⓟ - Large collection of electronic documents	HTTP
Ⓠ - Transfer large files from one computer to another over the Internet	DNS
Ⓡ - Translates a URL to an IP address	FTP
Ⓢ - A protocol to access web pages	WWW

Match the statements given in the first column to the correct term from the second column. Write down the letter for the statement and the correct term in your answer book.
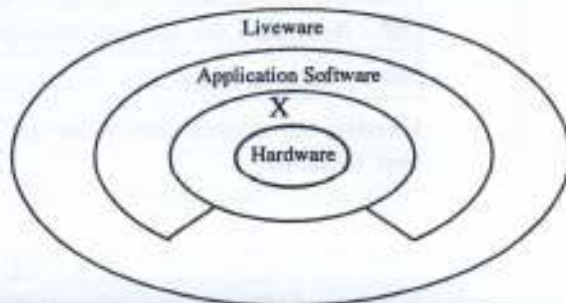
(viii) Consider the following table with tasks related to editing an image indicated by letters Ⓦ to Ⓩ given in the first column. Tools available in a typical image editing software indicated by numbers ① to ④ are given in the second column. However, formatting tasks and tools are not in the correct order.

Ⓦ - Selecting a part of the image based on its colour	① - ✢
Ⓧ - Moving a selected part of the image	② - ▱
Ⓨ - Erase part of the image	③ - ✍
Ⓩ - Change the colour of a selected part of the image	④ - ✨

Match the tasks given in the first column to the correct tool in the second column. Write down the letter of the task and the number of the correct tool in your answer book.

(ix) Consider the given diagram.
(a) Give an example each for Hardware, Application Software and Liveware.
(b) Identify and write down **one** component represented by X.

Liveware
Application Software
X
Hardware

(x) Consider the following program segment in Pascal.

```
var num:array[0..4] of integer;
        begin
            num[0]:=15;
            num[2]:=18;
            num[4]:=50;
            num[1]:=num[4]+10;
            num[3]:=num[0]+num[2];
            for i:=1 to 4 do
                writteln(num[i]);
        end.
```

Write the output of the above program.

2. (i) Description of different malware (malicious software) labelled with letters Ⓐ to Ⓓ and, a list of different malware are given in the first and second columns of the following label respectively. However, description and malware are not in the correct order.

	Description	Malware
Ⓐ	Presents itself as harmless and enters without the knowledge of users and then could steal and/or delete data	Spam
Ⓑ	Collects information about bank accounts or electronic accounts using emails and steals cash deposits by deceiving the user.	Spyware (Trojan horse)
Ⓒ	Unauthorized email either relate to advertisements about a product or from an unknown person. Collects email addresses and they are used unlawfully.	Computer Worm
Ⓓ	Are capable of acting and spreading alone using email attachments, false websites and instant messages.	Phishing

Match the correct malware from the second column to the description given in the first column. Write down the letter of the description and correct malware in your answer book.

(ii) (a) Write down **two** methods for the proper disposal of electronic waste (e-waste).

(b) Write down any **three** recommended correct postures a user should adopt in order to minimize the adverse effects such as Computer Vision Syndrome (CVS), Carpel Tunnel Syndrome (CTS) and Repetitive Stress Injury (RSI) related to the ICT.

(c) Consider the following scenario:

"An Information Technology Manager (IT Manager) of a company is also an active member of a voluntary organization which supports families of low income for education, health care etc. Without the knowledge of the authorities of the company he provides a list of email addresses of leading businessmen who are customers of his company to the voluntary organization in order to contact them for fund raising." Briefly explain why the act of the IT Manager is unethical.

(d) The computer hardware in an office are completely destroyed by a fire and as a result some important data in the storage devices have been lost forever.
Briefly explain the precautionary steps that could have been taken to avoid this loss of data.

3. (i) Each of the following statements has a blank space. Identify the most suitable term(s) to fill in the blank space from the three options given within brackets at the end of the statement.
Write down the question number and the relevant term(s) in your answer book.

(a) In addition to an Internet connection a .... is an essential component to publish a website. {content management software, web host, web user group}

(b) A .... is used in creating a dynamic website. {content management software, file transfer protocol, web user group}

(c) Text, images and sound are components of .... {web content, web host, domain name}

(d) Regular updating of a website is an important part of .... {content management software, maintenance, protocols}

(ii) Consider the sample web page given in **Figure 1** which is to be prepared using the source code shown in **Figure 2**.

Human Elephant Conflict in Sri Lanka

Elephants in their natural environment

Elephant population in Sri Lanka is dwindling at an alarming rate due to the conflict between the humans and the elephants. Number of deaths of humans and elephants during the last three years are given in the following table. It has been revealed that, humans are responsible for most of the deaths of elephants.

Records of Deaths

Year	Humans	Elephants
2013	71	207
2014	67	232
2015*	33	112

* - During the first five months

More information about the conflict between the humans and the elephants can be found in *The Conflict*

Figure 1 (source : The Internet)

```
<html>
<head><❶>Human Elephant Conflict</❶></head>
<body><❷>
<❸><❹ face = "arial" color ="black">Human Elephant Conflict in Sri Lanka </❹></❸></❷>
<center><img ❺="Elephants-02.jpg" width="300" height="200"></center>
<center><❹ face ="arial" size = "2">Elephants in their natural environment</❹></center>
<❻ align = "❼"> Elephant population in Sri Lanka is dwindling at an alarming rate due to the conflict
between the humans and the elephants. Number of deaths of humans and elephants during the last three
years are given in the following table. It has been revealed that, humans are responsible for most of the
deaths of elephants. </❻>
<center>
<table border="1">
<caption >Records of Deaths </caption>
<tr><th>Year</th><th>Humans</th><th>Elephants</th></tr>
<center>
<tr><td>2013</td><td align="center">71</td><td align="center">207</td></tr>
<tr><td>2014</td><td align="center">67</td><td align="center">232</td></tr>
<tr><td>2015*</td><td align="center">33</td><td align="center">112</td></tr>
</center>
</table>
<center><❹ size = "1"> * - During the first five months</❹></center>
<❻ align = "❼"> More information about the conflict between the humans and the elephants can be
found in <a ❽="https://elephantconservation.org/"> <i>The Conflict</i></a></❻>
</body>
</html>
```

Figure 2

The code in **Figure 2** has eight missing HTML tags or terms indicated by labels ① to ⑧. Select the correct tags/terms for the labels from the list : src, justify, title, caption, h2, href, p, font

Write down the label number and the corresponding HTML tag/term.

4. The given spreadsheet segment shows the distribution of monthly tea prices for the year 2015.
(source: www.indexmundi.com)

	A	B	C
1	Average Monthly Price of 1 Kg of Tea		
2	Month	Price(Rs)	Price Difference
3	2014 December	318.79	
4	2015 January	354.79	
5	2015 February	393.33	
14	2015 November	502.04	
15	2015 December	492.71	
16	2015 Average Price		

Use the above spreadsheet segment to answer the following questions.

(i) A formula of the form =function1(cell1:cell2) is written in cell B16 to calculate and display the average price of tea for the year 2015. Write down the relevant terms for function1, cell1 and cell2.

(ii) Price difference of average monthly price for the month of December is calculated as follows.

$$\text{Price Difference}_{December} = \text{Price}_{December} - \text{Price}_{November}$$

A formula of the form =function2(cell3:cell4) is written in cell C15 to display the price difference for December, 2015.

Write down the relevant terms for function2, cell3 and cell4.

(iii) What would be the formula displayed in cell C4 if the formula in C15 is copied to cell C4?

(iv) Name **two** appropriate chart types available in spreadsheet software to show the variation in the average monthly price of tea for the year 2015.

(v) What cell range would you use for the horizontal axis to draw the charts in your answer to (iv) above?

5. A school band has a collection of instruments and they are lent to students who do not have instruments but want to be part of the school band. The school band maintains a database to manage the lending of instruments to the students. The database contains tables as given below.

Instrument Table

I_ID	Instrument	Received_on
1001	Trumpet	01/01/2015
1002	Clarinet	01/01/2015
1003	Trumpet	01/06/2015

Student Table

S_ID	Name	Grade
S004	Nuwan	8
S005	Kumara	9

Borrowing Table

Date	I_ID	S_ID
01/01/2016	1003	S004
01/03/2016	1002	S005
01/03/2016	1003	S004

(i) List **two** primary key fields and their respective table names in the above database.

(ii) The school band received a donation of two new Drums on 2nd of December 2016.
   (a) What table(s) need(s) to be updated in the database?
   (b) Write down the updated row(s) of the table(s) in the database.

(iii) Saman joins the band on the 8th of December 2016 and borrows a Trumpet on the same day.
   (a) What table(s) need(s) to be updated in the database?
   (b) Write down the updated row(s) of the table(s) in the database.

6. (i) Assume that the principal of your school requests you to develop a computer based system for generating report cards to replace the current manual system. As the accuracy of the report card is a very important factor, your IT Teacher advises you to determine a suitable deployment approach.

   (a) State **one** method that can be used to gather the requirements of the system.

   (b) You have decided to use the waterfall model to develop the new new system.
       (1) Point out **one** limitation of the waterfall model.
       (2) Write down an alternative deployment approach to the waterfall model.

   (c) (1) What would be the most appropriate deployment method for this system?
       (2) State **one** reason for the recommendation you made in (c) (1) above.

(ii) A company with the head office in Colombo and three branches in Kandy, Matara and Jaffna decides to conduct monthly branch managers' meetings using the video conferencing technology.

   (a) Write down **one** advantage of using the video conferencing technology for the campany.

   (b) Write down **one** problem the company may face when using the video conferencing technology.

   (c) Currently the above company uses printed letters and memos to communicate with its employees. It decides to use modern technology to replace the current method of communicating with employees. Racommend a suitable messaging technology for this propose.

   (d) In addition to the video conferencing and your recommendation in above (c) state **two** other methods the company can use to communicate with its employees using modern technology.

7. (i) The pseudocode given below reads two numbers and displays the larger number.
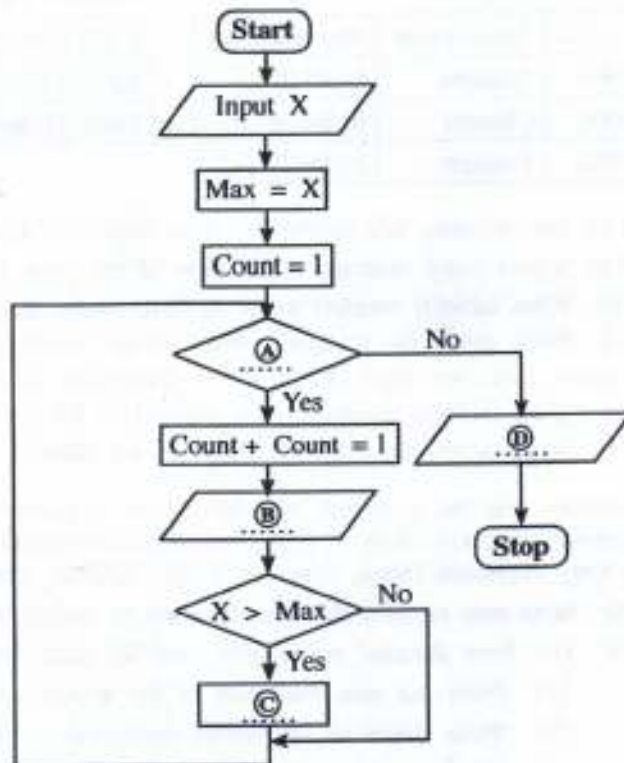
        start
          get A, B
          if A>B then
              display A
          else
              display B
          endif
        stop

   Draw a flow chart to represent the above pseduocode.

   (ii) Suppose a school has conducted an examination of a particular subject for 100 students and recorded the marks scored. The given flowchart with blank spaces indicated by labels Ⓐ to Ⓓ is designed to read these marks and display the highest.

   Identify and write down the appropriate statements for labels Ⓐ, Ⓑ, Ⓒ and Ⓓ.

   (You are **not** required to copy the flowchart to your answer book)

* * *