Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Ex
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கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2010 டிசெம்பர்
General Certificate of Education (Ord. Level) Examination, December 2010

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தகவல், தொடர்பாடல் தொழினுட்பவியல்	I, II	மூன்று மணித்தியாலம்
Information & Communication Technology I, II		*Three hours*

Information and Communication Technology I

Note: (i) *Answer all questions.*
(ii) *In each of the questions 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider as correct or most appropriate.*
(iii) **Mark a cross (✗) on the number corresponding to your choice in the answer sheet provided.**
(iv) *Further instructions are given on the back of the answer sheet. Follow them carefully.*

1. "As vacuum tubes were replaced by transistors and transistors were subsequently replaced by micro processors, the ....(A)...... of the computers reduced."
Which of the following terms is appropriate for (A) ?
   (1) capability   (2) size   (3) reliability   (4) efficiency

2. "...(B)..... is processed into ...(C)........ by information systems."
Which of the following pairs of terms is appropriate for (B) and (C), respectively?
   (1) Information, data   (2) Data, information   (3) Data, instructions   (4) Instructions, information

3. Consider the following computer devices:
   A - Keyboard   B - Scanner   C - Printer   D - Speaker
   Which of the above could be used as input devices of a computer?
   (1) A and B only   (2) A and C only   (3) C and D only   (4) All A, B, C and D

4. Consider the following statements:
   A - Random Access Memory (RAM) is a volatile memory.
   B - Hard disk is an auxiliary storage device.
   C - A floppy disk can store more data than a compact disk (CD).
   Which of the above is/are correct?
   (1) A only   (2) C only
   (3) A and B only   (4) B and C only

5. Identify A, B and C from Figure 1.
   (1) A = power socket,   B = PS/2 port,   C = USB port
   (2) A = power socket,   B = serial port,   C = PS/2 port
   (3) A = power socket,   B = parallel port, C = serial port
   (4) A = parallel port, B = serial port,   C = USB port

6. 2GB of memory is equivalent to
   (1) 2048 KB.   (2) 2^{11} MB.
   (3) 2^{10} MB.   (4) 1024 MB.

7. The **octal** equivalent of **binary** 11001 is
   (1) 21.   (2) 31.
   (3) 37.   (4) 41.

8. Which of the following is the largest?
   (1) 1001100_2 (2) 1001010_2
   (3) 1010101_2 (4) 1100000_2

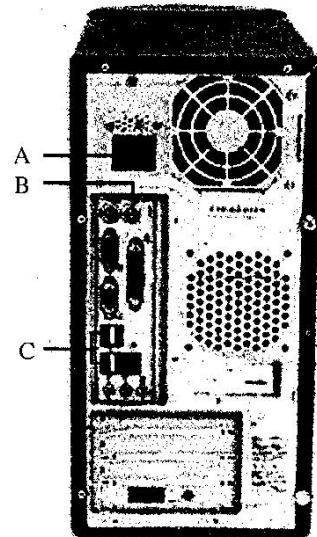Figure 1

9. If the character 'C' is represented as 1000011_2 in the ASCII code, what is the equivalent ASCII code for character 'A'?

    (1) 1000001_2 (2) 1000010_2 (3) 1000000_2 (4) 1000100_2

10. A teacher enters the number of students in the class as 35 to the computer using the keyboard. This number is represented in the Random Access Memory (RAM) of the computer in binary form. The number of students stored in the RAM is

    (1) 100010_2 (2) 100110_2 (3) 100111_2 (4) 100011_2

11. If the output of the logic circuit in Figure 2 is 1, what should be the values of A and B, respectively? ·
    (1) 0 and 0   (2) 1 and 0
    (3) 0 and 1   (4) 1 and 1

Figure 2

12. A student could select either string hoppers or bread to eat with dhal curry for his breakfast. Which of the following logical operations correctly represents this scenario?

    (1) AND followed by OR   (2) OR followed by AND
    (3) OR followed by OR   (4) AND followed by AND

13. Consider the following tasks:
    A - Protecting data against viruses
    B - Keeping track of files and directories (folders) in storage devices
    C - Controlling peripheral devices such as disk drives and printers
    D - Providing facilities for graphic design

    Which of the above are tasks of an Operating System?

    (1) A and B only   (2) B and C only   (3) A, B and C only (4) All A, B, C and D

14. Consider the following statements about word processing software:
    A - It allows to format characters into different sizes and colours.
    B - It allows to draw shapes and diagrams in a document.
    C - It allows to edit digital video and audio files.

    Which of the above is/are correct?

    (1) A only   (2) A and B only   (3) All A, B and C   (4) None of them

15. Consider the following statements about word processing software:
    A - It can replace all occurrences of the single word 'Ceylon' with the two words 'Sri Lanka' in an existing document.
    B - It can justify text along the right margin of a document.
    C - It can insert page numbers only at the bottom of a document.

    Which of the above is/are correct?

    (1) A only   (2) B only   (3) A and B only   (4) All A, B and C

16. Consider the following:
    A - E5 B - E5   C - $5E$ D - E$5
    Which of the above is/are correct forms of cell addresses in a spreadsheet?

    (1) B only   (2) A and C only   (3) B and D only   (4) None of them

17. Intersection of a row and a column of a spreadsheet is known as a

    (1) worksheet.   (2) label.   (3) cell.   (4) formula.

18. In Figure 3, if the formula in the cell D2 is =B2+C2 and it is copied into the cell D3, what would be the output?
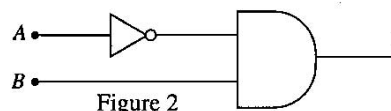   (1) 9   (2) 10
    (3) 11   (4) 12

Figure 3

19. Imagine that you are preparing a presentation about Sri Lanka. Which of the following could be included in your presentation using presentation software?
    A - A map of Sri Lanka
    B - An audio clip of the National Anthem
    C - A hyperlink directing users to www.gov.lk
    (1) A and B only   (2) B and C only   (3) All A, B and C   (4) None of them

20. A database includes a table that contains data about students in a school. Data relating to one student in the table is a
    (1) field.   (2) record.   (3) form.   (4) query.

21. Which of the following can be used as a primary key of a database table in storing data about students?
    (1) Date of birth   (2) Surname
    (3) Class   (4) Student admission number

22. Consider the following statements about relational databases:
    A - A relationship is an association between two or more databases.
    B - The types of relationships in a relational database include one-to-one, one-to-many and many-to-many.
    C - A relational database can consist of multiple tables.
    Which of the above is/are correct?
    (1) A only   (2) C only   (3) B and C only   (4) All A, B and C

● Answer the questions No. 23 to 25 using the flowchart in Figure 4.

23. What are the outputs of the flowchart, if the current temperature is 28 °C, 27 °C, and 26 °C, respectively?
    (1) Cold, Cold, Cold
    (2) Hot, Cold, Cold
    (3) Hot, Hot, Cold
    (4) Hot, Hot, Hot

24. Which of the following control structures are required to convert the flowchart into a computer program?
    A - If-Then construct   B - If-Then-Else construct
    C - For loop   D - Do-While loop
    (1) A only   (2) B only
    (3) A and C only   (4) B and D only

25. Which of the following data types is suitable for the variables C and R in the above flowchart?
    (1) String   (2) Real
    (3) Boolean   (4) Currency

26. Which of the following statements is **incorrect** regarding a variable used in a computer program?
    (1) A variable has a name (identifier).
    (2) A variable refers to one or more memory locations.
    (3) A variable has a data type.
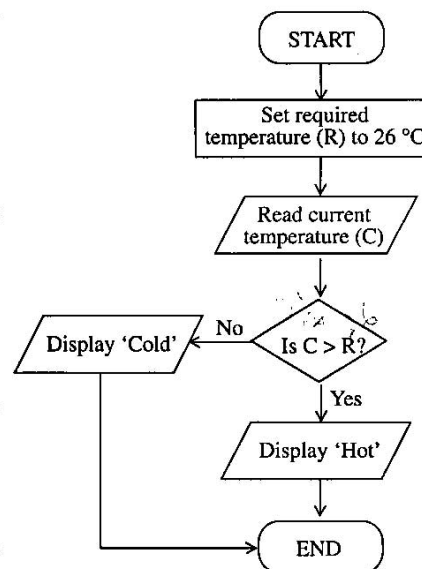   (4) The value of a variable remains unchanged.

Figure 4 .

27. Which of the following represents the correct order of precedence of the arithmetic operators from left to right?
    (1) +, *, =   (2) +, *, –   (3) *, +, /   (4) *, /, +

28. Consider the following pseudo code:

```
Begin
        Input numberOne
        Input numberTwo
        Result = numberOne / numberTwo
        Output Result
        Output numberTwo
        Output numberOne
End
```

Which of the following is a possible output of the above pseudo code?
(1) 4, 12, 3   (2) 5, 2, 10   (3) 5, 10, 2   (4) 4, 8, 2

29. Which of the following is the correct sequence of activities from left to right in developing an information system using the System Development Life Cycle (SDLC)?
(1) Feasibility Study → System Design → System Analysis → System Implementation
(2) System Analysis → System Implementation → System Design → Feasibility Study
(3) Feasibility Study → System Design → System Implementation → System Analysis
(4) Feasibility Study → System Analysis → System Design → System Implementation

30. Which of the following is **not** suitable for computerization?
(1) Student admissions in a school
(2) School library
(3) Marking essay type answers in an examination
(4) Computing student averages and grades after marking of papers

31. Consider the following activities:
A - Interviewing the teacher-in-charge of the library.
B - Studying a magazine article (document) that describes the history of the library and how it was established 20 years ago.
C - Observing how the library is being used by students.

Which of the above can be used for gathering requirements in developing a library management system for a school?
(1) A only   (2) C only   (3) A and C only   (4) All A, B and C

32. Identify the most appropriate statement relating to the Internet and the World Wide Web (WWW).
(1) The Internet is a service of the WWW.
(2) There is no relationship between the Internet and the WWW.
(3) The Internet and the WWW are the same.
(4) The WWW is a service of the Internet.

33. Which of the following is essential in establishing a session for chatting, video chatting and video conferencing?
(1) A web cam   (2) E-mail address
(3) Connection to the Internet   (4) A domain name

34. Consider the following:
A - Adding echo
B - Changing the speed of audio track
C - Editing video clips
Which of the above effects are available in a specialized audio/sound editing tool used in multimedia applications?
(1) A and B only   (2) A and C only   (3) B and C only   (4) All A, B and C

35. Consider the following:
A - web browser   B - web server   C - IP address   D - website content
Which of the above are essential in hosting a website?

(1) A, B and C only   (2) B, C and D only
(3) A, B and D only   (4) All A, B, C and D

36. What is the correct HTML code for setting the background colour as yellow?
    (1) \<body background-'yellow'\>
    (2) \<background\>yellow\</background\>
    (3) \<body background="yellow"\>
    (4) \<body style="background-color:yellow"\>

37. What is the correct HTML code for creating a hyperlink?
    (1) \<a url="http://DOEweb.com"\>DOEweb\</a\>
    (2) \<a\>http://DOEweb.com\</a\>
    (3) \<a href="http://DOEweb.com"\>DOEweb\</a\>
    (4) \<a name="http://DOEweb.com"\>DOEweb\</a\>

38. What is the effect of the \<br/\> tag in HTML?
    (1) Inserts a line break.
    (2) Inserts a page break.
    (3) Inserts a bracket.
    (4) Inserts a section break.

39. Consider the following statements regarding malware:
    A - Trojan Horses at first glance will appear to be useful software but will actually do damage once installed or run on the computer.
    B - A worm can replicate itself over a network and has the capability to travel without any human action.
    C - A computer virus attaches itself to a program or file enabling it to spread from one computer to another, leaving infections as it travels.

    Which of the above is/are correct?
    (1) A only
    (2) B only
    (3) A and B only
    (4) All A, B and C

40. Consider the following:
    A - A person using a commercial software without the license.
    B - A person using another person's login details.
    C - A business reveals information about customers to others without the consent from the customers.
    D - A person creating viruses and spreading to others' computers.

    Which of the above can be considered as unethical?
    (1) A and B only
    (2) A, B and D only
    (3) B, C and D only
    (4) All A, B, C and D

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Information & Communication Technology II

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

1.　(i)　Write **two** advantages of removable storage.

　(ii)　Classify the following scenarios as either Simplex, Half-Duplex, or Duplex data transmission modes.
　　　(a) Watching a TV program　　　　(b) A telephone conversation

　(iii)　Imagine that you have purchased a few items from a shop. The cashier has issued the bill. You have found that the amount mentioned in the bill is incorrect and you have informed the cashier. By considering yourself as a system, identify the input, process, and the output in the above scenario.

　(iv)　Write **two** advantages of using Information and Communication Technology in processing and releasing G.C.E. (Ordinary Level) Examination results.

　(v)　Convert the binary number 11001110 into the hexadecimal equivalent.

　(vi)　Convert the number of bytes in 1 KB into the octal equivalent.

　(vii)　Prove the following De Morgan's laws using a truth table.
　　　(a) $(A \cdot B)' = A' + B'$　　　　(b) $(A + B)' = A' \cdot B'$

　(viii)　Table 1 below consists of a set of tools available in a graphic software. Identify the corresponding tasks in Table 2 and draw lines connecting the matching pairs.

Tool Box
Layers
Key Frame
Color Mixer

Table 1 : Tools

Animation
Gradient Fill
Draw and Edit Objects
Create, Place, and Modify Text and Graphics

Table 2 : Tasks

　(ix)　A father gave Rs. 100 to his son and asked him to buy a loaf of bread from a nearby shop and give it to his mother. Provide a suitable algorithm in pseudo code for this task.

　(x)　Assume that you are given the task of developing an information system for a school library, using the System Development Life Cycle (SDLC). Briefly describe the first **two** phases of the SDLC used in this task.

2.　The library of Vidyaloka Vidyala has many books. Some books have multiple copies. Students can borrow two books at a time for two weeks.
　(i)　Write **two** items of data the library should store about a book.

　(ii)　Write **three** essential items of data recorded by the library staff when a student borrows a book.

　(iii)　Explain the difference between **data** and **information** using the library system. Provide one example for each.

　(iv)　Assuming that the library system is manual at present, provide **two** advantages of using ICT for computerizing the library.

3. The sample spreadsheet in Figure 5 shows the marks obtained by four students Amila, Kapila, Fathima and Raj for four subjects Commerce, English, Mathematics and Science.

	A	B	C	D	E	F	G
1							
2							
3			Amila	Kapila	Fathima	Raj	Average marks per subject
4		Commerce	85	75	75	80	
5	Subject	English	75	75	70	70	
6		Mathematics	65	70	85	65	
7		Science	70	65	75	60	
8		Total Marks per student	.				
9							

Figure 5

(i) Write the required formula in cell C8 **without** using functions to calculate the total marks obtained by Amila.

(ii) If the formula entered in cell C8 to calculate Amila's total marks is copied to calculate Kapila's total marks in D8, how would the formula appear in D8?

(iii) Write the formula to calculate the total marks received by Raj using the function "SUM" in cell F8.

(iv) Using the functions available in spreadsheet software to calculate average, write the formula to calculate the average marks of students for Commerce in cell G4.

(v) The class teacher wants to compare the performance of two students in four subjects in a single chart. Provide **two** appropriate chart types available in spreadsheet software for this purpose.

4. (i) In a cycle race, the participating cyclists are required to **qualify** from the preliminary stage into the final stage, by passing a medical test and then by completing **ten** rounds in a circular track. Those who do not pass the medical test will not be allowed to attempt **ten** rounds in the track. Those who complete **ten** rounds in the track are eligible to participate in the final stage. Others who get tired and are unable to complete **ten** rounds in the track are eliminated from the contest.

Write down respectively the appropriate terms derived from the above scenario to fill in the blanks in (a), (b), (c), (d), (e) and (f) in the flowchart in Figure 6.
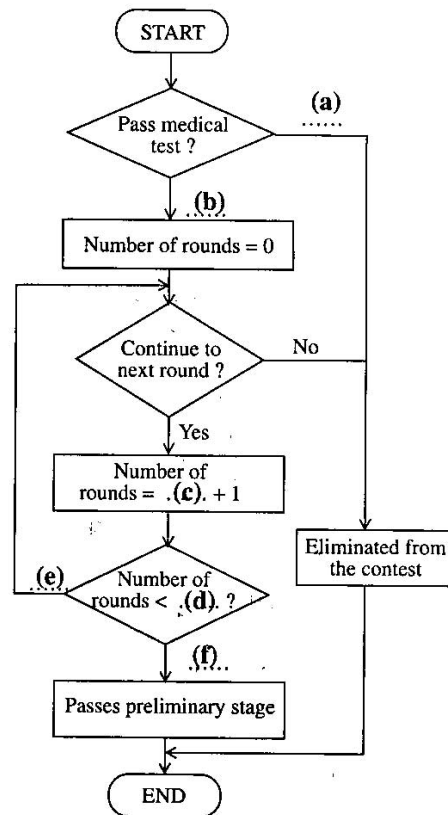

Figure 6

(ii) The flowchart in Figure 7 represents the algorithm for reading the student marks in a class and displaying average, maximum and minimum.

Write a pseudo code for the logic in the flowchart for the above scenario.

```
            ( START )
               |
        / Input No. of students /
        /   as n,  (n > 0)      /
               |
        | i = 0,  sum = 0      |
        | max = 0,  min = 100  |
               |
        < Is i < n ? > ———No———→
               |Yes                |
        / Input student mark m /   |
               |                   |
        | i = i + 1        |       |
        | sum = sum + m    |       |
               |                   |
        < Is m < min? > —Yes→ | min = m |
               |No                 |
        < Is m > max? > —Yes→ | max = m |
               |No                 |
                            | average = sum/n |
                                   |
                            / Print           /
                            / average, max, min /
                                   |
                                ( END )
```
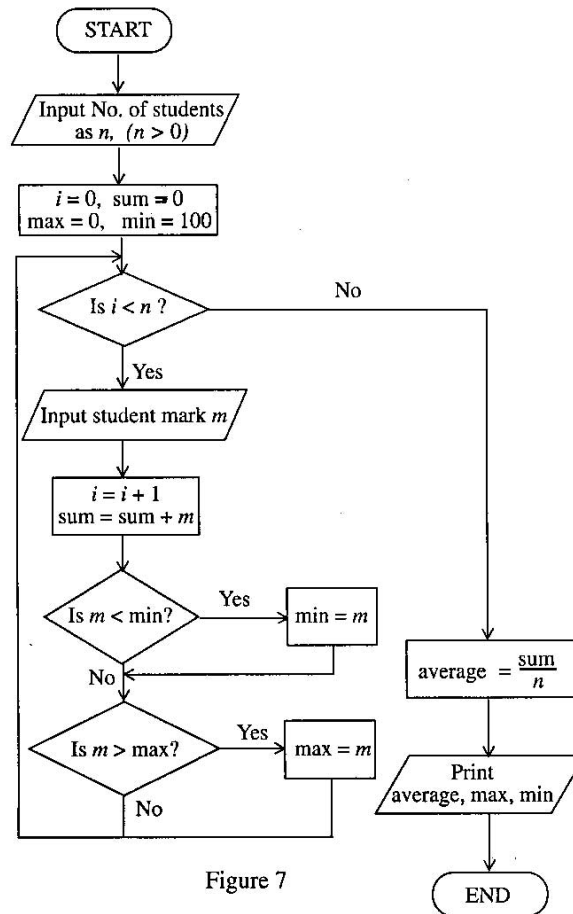
Figure 7

5. Imagine that your parents have provided you with a new desktop computer. The parents have also decided to provide the Internet connectivity to your computer.

(i) Briefly describe **two** potential threats that you may face when your computer is connected to the Internet.

(ii) Describe **two** methods of protecting the computer from such threats.

(iii) Briefly explain **three** factors you would consider in order to avoid health issues that may arise in using this computer.

(iv) Imagine that your friend gave you a copy of computer gaming software which has been bought for his personal use. Do you think it is suitable to install and use the software in your new computer? Explain the reasons for your answer.

6. (i) Explain how the Health Sector has benefited from Information and Communication Technology (ICT), using **two** example applications.

(ii) Describe how ICT can be used in teaching and learning process. Your answer should include **two** examples of educational applications.

(iii) Explain how farming in Sri Lanka could be improved by using ICT. Provide **three** examples.

(iv) Explain **three** barriers Sri Lankan general public may face in reaping the benefits of the Internet.

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