

ශ්‍රී ලංකා විශාල දෙපාර්තමේන්තු සියලු ම කිත්ම ඇවරන් ප්‍රජා පත්‍රප්‍රමාණයෙන් යතු / ප්‍රජා පත්‍රප්‍රමාණයෙන් යතු / Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka

අධ්‍යාපන පොදු සහතික පත්‍ර (උද්‍ය පෙළ) විභාගය, 2013 අගෝස්තු කළුවිප් පොතුත් තරාතරප් පත්තිරු(වයර් තර)ප් පරිශෑෂා, 2013 ඉකෑලරු  
General Certificate of Education (Adv. Level) Examination, August 2013

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New Syllabus

තොරතුරු හා සන්නිවේදන තාක්ෂණය  
තකවල්, තොටර්පාංසල තොழිනුප්පාවියල්  
Information & Communication Technology

II  
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20 E II

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මුන්තු මණිත්තියාලම  
Three hours

Index No. :

#### Important :

- \* This question paper comprises of two parts, Part A and Part B. The time allotted for both parts is three hours.
- \* Use of calculators is not allowed.

#### PART A — Structured Essay :

( pages 02 - 06 )

Answer all the questions on this paper itself. Write your answers in the space provided for each question. Note that the space provided is sufficient for your answers and that extensive answers are not expected.

#### PART B — Essay :

( pages 07 - 09 )

This part contains six questions, of which, four are to be answered. Use the papers supplied for this purpose.

- \* At the end of the time allotted for this paper, tie the two parts together so that Part A is on top of Part B before handing them over to the Supervisor.
- \* You are permitted to remove only Part B of the question paper from the Examination Hall.

#### For Examiner's Use Only

For the second paper		
Part	Question Nos.	Marks Awarded
A	1	
	2	
	3	
	4	
B	1	
	2	
	3	
	4	
	5	
	6	
Total		

#### Final Marks

In numbers	
In words	

#### Code Numbers

Marking Examiner 1	
Marking Examiner 2	
Marks checked by	
Supervised by	

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### Part A - Structured Essay

Answer all the four questions on this paper itself.

1. Consider the section of a web page on the Sri Lankan Test Cricket team, given in the Figure:

The Sri Lankan national cricket team played their first Test match on 17 February 1982 against England.

**Record Groups**

- Team records
- Individual records
- Partnership records

**Partnership records**



Sri Lanka holds the most number of partnership records in Test cricket, with the records for the second, third, fourth, and sixth wickets. South Africa and Pakistan are ranked second with two records each.

**Highest wicket partnerships**

Runs	Wicket	Partners
335	1st wicket	Marvan Atapattu   Sanath Jayasuriya
576	2nd wicket	Sanath Jayasuriya   Roshan Mahanama

Figure : Web page

A partial HTML document of the file "cricket.html" which generates the above web page is given below.  
Fill in the blanks of the HTML document with the appropriate tags to render the web page.

Notes:

1. When the user clicks on the phrase "Sri Lankan national cricket team" it should display the document named "team.html".
2. Name of the source file of the image displayed on the above webpage is "cricket.jpg".
3. The link to the image "cricket.jpg" should have an alternative description "cricket".

<html>  
<head>  
    <.....>Test Cricket<.....>  
</head>  
<body>  
    <.....>Sri Lankan Test cricket records<.....>  
    <.....>  
    <p>The<.....>  
        Sri Lankan national cricket team <.....>  
        played their first Test match on 17 February 1982 against England.  
    </p>  
    <p><.....>Record Groups<.....></p>  
    <.....>  
        <li>Team records</li>  
        <li>Individual records</li>  
        <li>Partnership records</li>  
    <.....>  
    <.....>Partnership records<.....>  
    <p><.....>Sri Lanka holds the most  
        number of partnership records in Test cricket,  
        with the records for the second, third, fourth, and sixth wickets.  
        South Africa and Pakistan are ranked second with two records each.  
    </p>  
    <.....>  
        <.....>Highest wicket partnerships<.....>  
        <tr>  
            <th>Runs</th>  
            <th>Wicket</th>  
            <th colspan = "2">Partners</th>  
        </tr>  
        <tr>  
            <td>335</td>  
            <td>1st wicket</td>  
            <td>Marvan Atapattu</td>  
            <td>Sanath Jayasuriya</td>  
        </tr>  
        <tr>  
            <td>576</td>  
            <td>2nd wicket</td>  
            <td>Sanath Jayasuriya</td>  
            <td>Roshan Mahanama</td>  
        </tr>  
    </table>  
  </body>  
</html>

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2. (a) If a computer system is byte addressable and uses 32-bit addresses to access any byte in its memory, what is the maximum usable size of its memory in Giga Bytes (GB)? Show all your workings clearly.

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(b) What is the relationship between a program and a process in an operating system?

(c) What is the need of having “swapped out and waiting” and “swapped out and blocked” states in the seven state process model of an operating system?



3. (a) (i) Convert  $13_{10}$  and  $-19_{10}$  into two's complement numbers. Use 8-bits to represent a number.

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(ii) Compute  $13_{10} - 19_{10}$  by using two's complement numbers obtained in section (i) above and give the answer in two's complement form.

(iii) Explain how the positive and negative numbers in two's complement can be converted into decimal numbers.

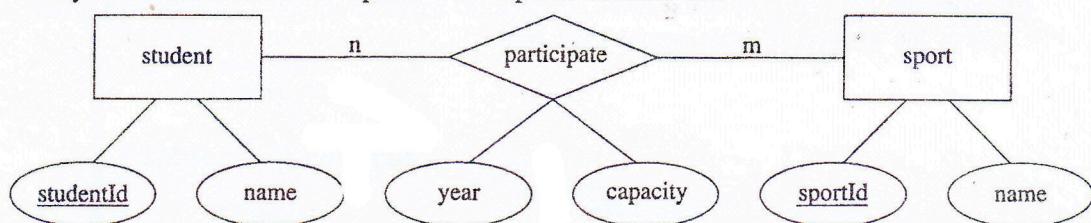
(b) Give four (4) different examples for the following electronic business types:

Type	Example
B2B	
B2C	
C2C	
C2B	

4. (a) Describe the relationship between a primary key and a foreign key in relational databases.

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- (b) Convert the following ER diagram to table structures in a relational database. The attribute capacity may have values such as captain, vice captain, member etc.



- (c) Based on the table structures obtained in section 4(b) above answer the following questions.

(i) Write an SQL statement to get a list of sports that do not have captains.

(ii) Write an SQL statement to obtain a list of students (studentId and name) who participate in any sport as a captain.