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 Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය, 2012 අගෝස්තු
 கல்விப் பொதுத் தராதரப் பத்திர(உயர் தர)ப் பரீட்சை, 2012. ஒகஸ்தர்
 General Certificate of Education (Adv. Level) Examination, August 2012

නව නිර්දේශය
 புதிய பாடத்திட்டம்
 New Syllabus

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

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පැය තුනයි
 மூன்று மணித்தியாலம்
 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 - 07)

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 08 - 11)

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	

Part A - Structured Essay

Answer all the four questions on this paper itself.

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1. (a) Give **two** techniques used in operating systems to optimize processor utilization.

(b) The following shows a part of the result obtained by executing the "ping" command to check the network connectivity to a host connected to a computer network.

```
PING www.cam.ac.uk (131.111.8.46) 56(84) bytes of data.  
64 bytes from ipv4.www.cam.ac.uk (131.111.8.46) : icmp_seq=1 ttl=242 time=201 ms  
64 bytes from ipv4.www.cam.ac.uk (131.111.8.46) : icmp_seq=2 ttl=242 time=204 ms  
64 bytes from ipv4.www.cam.ac.uk (131.111.8.46) : icmp_seq=3 ttl=242 time=196 ms  
64 bytes from ipv4.www.cam.ac.uk (131.111.8.46) : icmp_seq=4 ttl=242 time=203 ms  
64 bytes from ipv4.www.cam.ac.uk (131.111.8.46) : icmp_seq=5 ttl=242 time=195 ms  
--- www.cam.ac.uk ping statistics ---  
5 packets transmitted, 5 received,
```

Using the above information, answer the parts (i), (ii), (iii) and (iv) given below.

(i) What is meant by **time** in the above result?

(ii) What is the IP address of the server that hosts the website **www.cam.ac.uk**?

(iii) Identify the class of the IP address obtained in (ii) above.

(iv) What is the percentage of packet loss?

(c) In an operating system, a process can be in one of the states, namely, **created/new**, **waiting**, **running**, **terminated**, **blocked**, **swapped out and waiting**, or **swapped out and blocked**. From which of the above states can a process be directly moved into the **blocked** state?

2. (a) Provide a suitable definition for a system.

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(b) Using the definition suggested in (a) above, show that a mobile phone is a system.

(c) State whether a mobile phone is a close system or an open system. Justify your answer.

(d) State whether the following requirements of a mobile phone are functional or non functional. Justify your answers.

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(i) A user shall be able to make a call using the mobile phone.

(ii) It shall not harm the user by emitting radiations.

3. (a) (i) Describe how you would determine whether a given positive integer is odd or even.

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(ii) Develop a flowchart to represent an algorithm, based on the method suggested in (i) above, to decide whether a given positive integer is odd or even.

(iii) Convert the flowchart you have obtained for the above (ii) into a pseudo code.

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(b) Show how the computation $15+(-5)$ is done in 8-bit two's complement arithmetic.
Explain how you deal with the carry generated in the most significant bit.

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4. (a) What do you mean by the terms “privacy” and “software piracy”?

(b) Describe the term “mobile computing”.

(c) Consider the following scenario :

A semi conductor manufacturing company has branches in Japan and USA. At present, representatives of the development team should visit other branches of the company frequently to discuss their technical issues. Over the years, the company has realized this mechanism is costly and time consuming.

(i) As an ICT student, suggest an *ICT based method* to conduct these technical review meetings without visiting the other branches.

(ii) Name **three** essential ICT devices required for the method suggested in (i) above.

* *

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