

Cambridge
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AS & A Level

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APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/13

Paper 1

May/June 2015

1 hour 15 minutes

Candidates answer on the Question Paper.

No additional materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

Do not use staples, paper clips, glue or correction fluid.

You may use an HB pencil for any diagrams, graphs or rough working.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

The number of marks is given in brackets [] at the end of each question or part question.

The businesses described in this paper are entirely fictitious.

This document consists of **15** printed pages and **1** blank page.

Scenario 1**Questions 1, 2, 3 and 4**

East African Media Ltd, based in Nairobi, owns the African Times newspaper. It has built a new printing plant in Mombasa, many kilometres away. The company also has a factory which manufactures rolls of paper (newsprint) which are used to produce the newspaper.

The printing plant needs a constant room temperature for the printing presses to operate in.

To keep the temperature constant a microprocessor controlled air conditioning system is used.

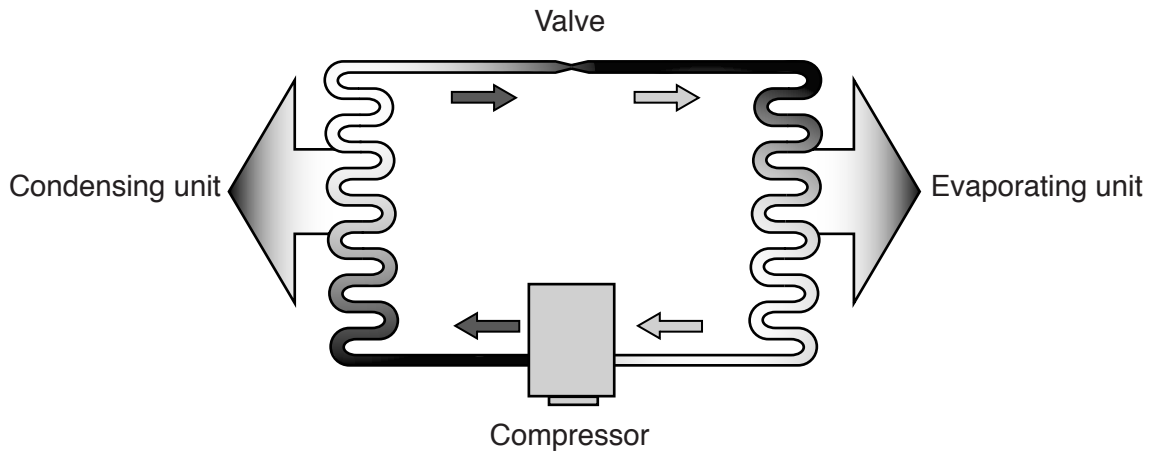
Many of its reporters work in towns which are far away from the editor's office in Nairobi.

They type up their stories and send them with any photographs by email to their editor.

The editor then sets the layout of the story using typesetting techniques on a computer.

East African Media Ltd uses the latest technology to print the newspaper. In order to print the paper in Mombasa it requires the use of facsimile transmission. The company uses satellite communications to fax a newspaper for printing.

1 Below is a diagram of a simple air conditioning system.



For each statement below, tick the most appropriate answer.

(a) The compressor:

	✓
converts cool low-pressure gas into hot high-pressure gas.	
causes the liquid to evaporate into cold low-pressure gas.	
monitors the pressure of the refrigerant.	
is essentially situated outside the building.	
monitors the temperature of the refrigerant.	

[1]

(b) The valve:

	✓
converts cool low-pressure gas into hot high-pressure gas.	
causes the liquid to evaporate into cold low-pressure gas.	
monitors the pressure of the refrigerant.	
is essentially situated outside the building.	
monitors the temperature of the refrigerant.	

[1]

(c) The Condensing unit:

	✓
converts cool low-pressure gas into hot high-pressure gas.	
causes the liquid to evaporate into cold low-pressure gas.	
monitors the pressure of the refrigerant.	
is essentially situated outside the building.	
monitors the temperature of the refrigerant.	

[1]

2 Tick the **four** statements referring to process control in this scenario which are true.

	True ✓
Keeping a constant temperature for the printing presses is an example of batch process control.	
Batch process control is used to produce extremely large amounts of product per year.	
Discrete process control is like an on/off or stop/start process.	
The production of the rolls of paper is an example of continuous process control.	
Continuous process control is used to produce relatively small amounts of product per year.	
There are four types of process control.	
A PLC could be used to control the temperature for the printing presses.	
Microprocessors are not involved in any aspect of process control.	
Continuous process control is used in processes which appear to be unending.	
Discrete process control is when the process is hidden.	

[4]

3 (a) Describe what is meant by the term PLC.

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..... [3]

(b) Describe what is meant by the term PID.

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..... [3]

4 (a) Describe how the reporters would use ICT to produce their stories ready for emailing to the editor's office.

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..... [3]

(b) Describe the features of typesetting that the editor would use.

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..... [3]

(c) Describe how a completed page would be transmitted from the editor's office to the printing presses in Mombasa.

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..... [2]

Scenario 2
Questions 5, 6 and 7

The WIMBA car company is producing a new model of car.

It wishes to advertise:

- all aspects of the company
- the car insurance it sells
- the new model of car.

It is planning to create its own advertising website.

Some workers in the advertising department work compressed hours whilst others work flexible hours.

Maria is the manager of the car assembly plant. She uses time management software in her work.

- 5 (a) For each example below name and describe the type of advertising that would be used. For each type of advertising named, describe an example other than those used in the scenario.

WIMBA
.....
.....

Insurance
.....
.....

New car model
.....
..... [6]

- (b) A number of input devices are used to import information about the company and its cars for inclusion in the website.

Describe, in detail, examples of multimedia information that would be imported using **two** different input devices for inclusion in the website.

1
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2
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..... [2]

(c) Describe **four** benefits to the company of creating their own advertising website.

1

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2

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..... [4]

(d) Describe the differences between pop ups and pop unders.

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..... [4]

6 (a) Describe the differences between working flexible hours and working compressed hours.

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..... [4]

(b) Describe **two** benefits to the worker of working flexible hours.

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..... [2]

(c) Describe **two** benefits to the company of workers working flexible hours.

1
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..... [2]

7 Maria uses a Gantt chart similar to the one below to plan the assembly of a car.

Activity	0600–1200	1200–1800	1800–2400	0000–0600	0600–1200	1200–1300
Assembling of car body						
Assembling the chassis						
Assembling of car engine						
Painting of car body						
Fitting of chassis						
Quality control						
Road testing the finished car						

(a) Identify **two** sequential activities in the Gantt chart shown.

.....
 [1]

(b) Identify **two** parallel activities in the Gantt chart shown.

.....
 [1]

(c) The stage of assembling the car body has been delayed by six hours. Describe, in detail, the effects on each of the other activities in the Gantt chart.

.....

 [4]

Scenario 3**Questions 8, 9, 10 and 11**

Mendoza Electricity Group (MEG) is a company in Argentina which sells electricity to its customers.

The company operates a call centre for customers who have questions about their bill or wish to pay their bills by phone using a credit or debit card. The call centre uses third party control.

Each customer has been given a twelve digit account number by MEG.

The company has a computerised system for producing bills. The company likes to update its master file every week in terms of amendments, addition and deletion of records.

Every three months (quarter) the bills are produced using the batch processing of the master and transaction files. No customer pays more than 16000 pesos.

The company has employed Andrew, a systems analyst, to update the existing system. He will design validation rules to ensure the account numbers entered and the bill calculated are valid.

8 Describe **four** features of third party control.

- 1
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- 2
-
- 3
-
- 4
- [4]

9 (a) Identify **four** items of information, apart from the account number that a customer would be asked for if they were paying their bill by credit card.

- 1
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- 2
-
- 3
-
- 4
- [4]

(b) Describe the processing that would take place to produce the customer's quarterly bill.

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-
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-
-
-
-
- [4]

10 (a) MEG stores the master file and transaction file on magnetic tape.
Explain why the company uses magnetic tape.

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..... [2]

(b) For each of these updating activities give **one** example related to the scenario.

Amendment

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Addition

.....

Deletion

..... [3]

11 (a) After information has been collected about the existing system, Andrew will need to record it. He could use Data Flow Diagrams or Systems Flowcharts. Describe **these** methods.

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..... [3]

(b) Any validation rule used will need to be tested.
Using either the customer’s account number or the amount on their bill, as appropriate, describe **three** testing strategies that could be used to test these validation rules. (You do **not** have to name the validation rules).

1

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..... [6]

(c) Improvements may need to be made if the results of testing shows that the validation rules still allow invalid data to be input.
Describe with examples **three** such improvements.

1

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2

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..... [3]

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