Preamble for Computer Studies (7010)

The Examinations Council of Zambia has made adjustments to the assessment of **Computer Studies** at Grade 12 level so as to be in line with the revised **Computer Studies** Senior Secondary School Syllabus of 2013 developed by Curriculum Development Centre (CDC) of the Ministry of General Education.

Purpose

The purpose of the Grade 12 Computer Studies examination is to measure a candidate's achievements against the set competencies as outlined in the Grade 10–12 Syllabus. The examination will also be used for certification and for progression to tertiary education.

Assessment Objectives·

Candidates will be tested against the following assessment objectives:

Knowledge and Comprehension

1. Recall and understanding of computer terminologies and the general theory of the basic computer system
2. Recall of facts on computer hardware and devices in everyday life
3. Understanding of generic application software available for computers and other microprocessor-controlled devices
4. Recall of facts on operating systems, networks and security
5. Understanding of the social, economic and environmental impact of computers

Application

1. Use a computer for intermediate to advanced practical purposes in word processing, spreadsheet, and database design and systems implementation
2. Apply an understanding and use of emails, the internet and social networks.
3. Determine an appropriate software solution to solve a given problem, e.g. of social, economic and environmental nature
4. Perform basic skills in algorithm design and problem analysis and solving
5. Apply project and research skills to develop programs or software using appropriate programming languages from a predefined set of algorithms

Analysis

1. Determine appropriate system tools (flowcharts, dataflow diagrams, entity relationship diagrams) and algorithms to solve problems
2. Plan, test and evaluate a solution
3. Choose an appropriate implementation method
4. Apply logical thinking and make connections between topics in Computer Studies and other learning areas

Synthesis

1. Code in a suitable programming language from a given set of algorithms
2. Identify and correct errors such as syntax, runtime and logical errors
3. Use appropriate logic gate routes used in systems (NAND, OR, AND gates, etc.)

Evaluation

1. Demonstrate practical skills to evaluate and appraise chosen solutions against the initial objectives, plans and designs
2. Assess and recommend computer systems for different sectors of society such as finance, education, health and government

Test Design

The examination will consist of two papers, Computer Studies Paper 1 (Theory) and Computer Studies Paper 2 (Practical), as shown below.

Paper Name	Code	Paper Type	No. of Questions	Total Marks	Duration	Weighting
Computer Studies Paper 1	7010/1	Theory	15	70	2 hours 30 minutes	70%
Computer Studies Paper 2	7010/2	Practical	2	30	1 hour 30 minutes	30%
Total				100		100%

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Computer Studies   7010/1
Paper 1

2016

Candidates answer on the question paper
No additional materials are required

Time: 2 hours 30 minutes

Instructions to Candidates

Write your name, centre number and candidate number in the spaces at the top
of this page.

There are 13 questions in this paper, 12 in Section A and 1 in Section B.

Answer **all** Questions.

Write your answers in the spaces on the question paper.

Information for Candidates

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

The total number of marks for this paper is 70.

Cell phones are not allowed in the Examination Room.

For Examiner's Use

Section A

1 **(a)** Explain the meaning of the term Data-capture.

....

.... [1]

(b) Fill in the output devices for the applications given in the table.

	Application	Output Device
(i)	Alerting user of an error by a beep	
(ii)	Producing a large plan of a house	

[2]

(c) Give **one** advantage of using a touch screen as an input device by the general public at a train station when buying tickets rather than using keyboard and mouse.

....

.... [1]

2 **(a)** The diagram below shows how a user interacts with the computer when creating a document. Fill in the missing parts to complete the sequence.
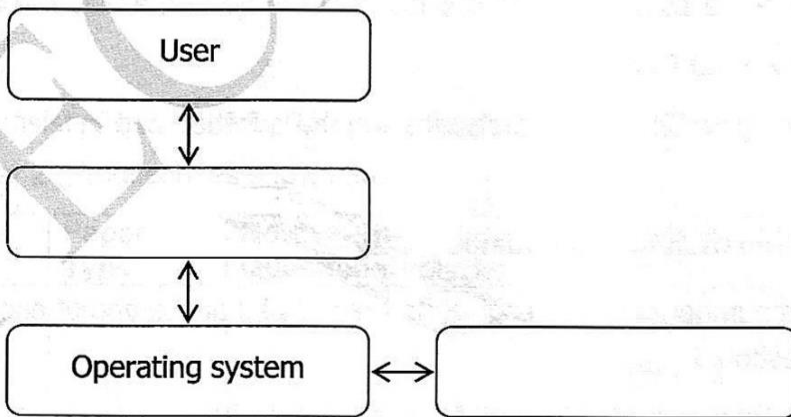
[2]

(b) Give **one** advantage of using graphical user interface as opposed to the command line interface.
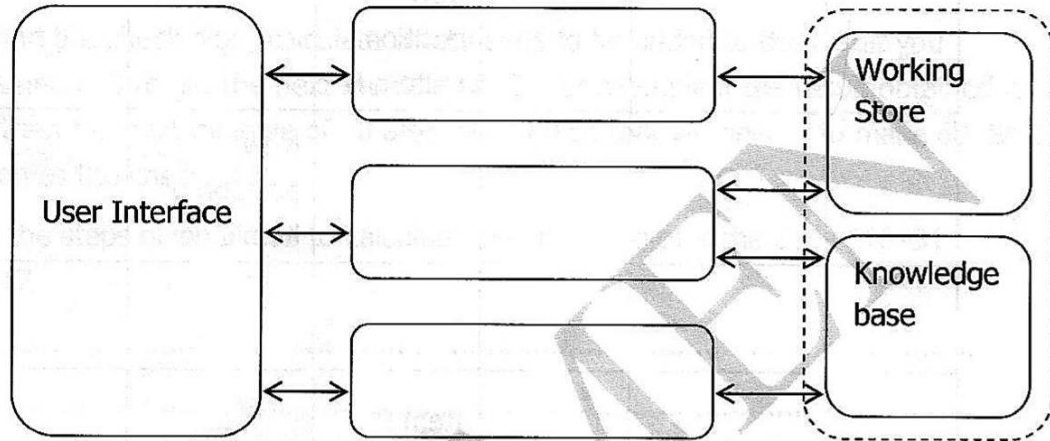
....

.... [1]

3 **(a)** What is an Expert system?

....

.... [1]

(b) The diagram below shows the outline of an expert system used in diagnosing diseases. Complete the diagram below by filling in the blanks.

[3]

(c) **(i)** Give **one** benefit to the patient in using an expert system.

.... [1]

(ii) Give **one** other field where an expert system is used apart from diagnosing diseases.

.... [1]

[Turnover

4 Pupils of Chilundu School JETS Club have written a control program for a homemade robot. The job of the robot is to lift items in a store room and place them in correct positions.

	New Position of item A			
		New position of item B		
	O		New position of item C	
		Item B		
Lifting robot		Item A		
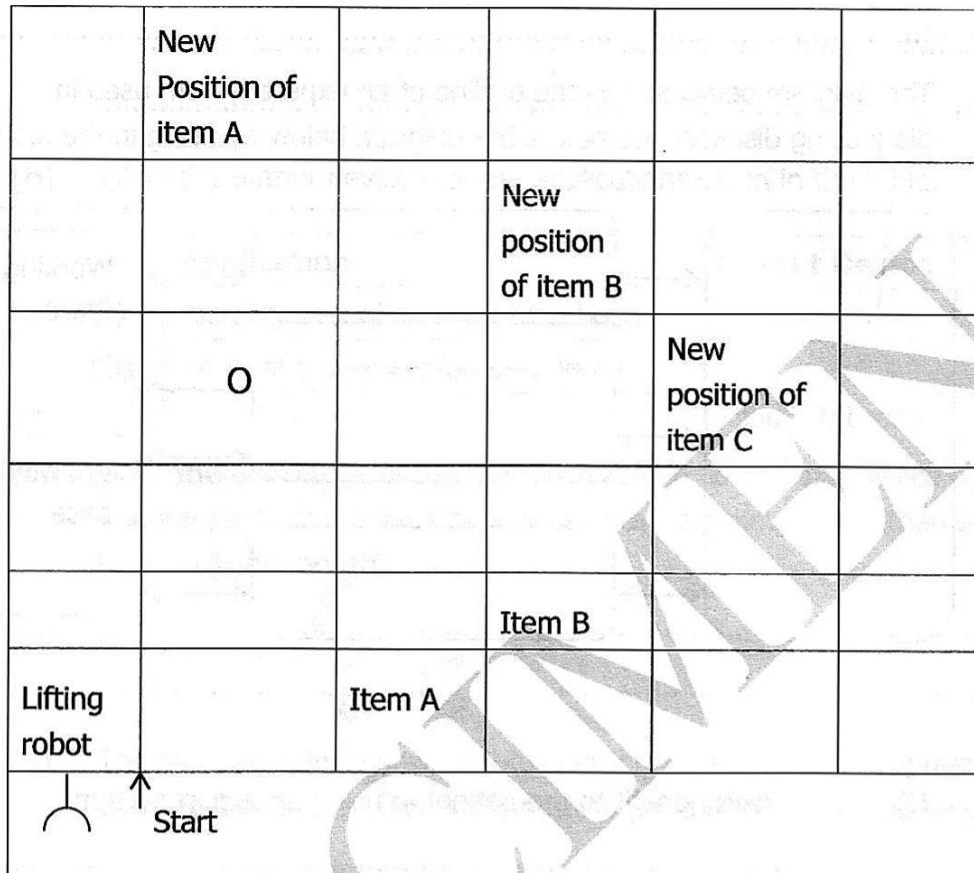
↑ Start

The following are the commands used:

H – Home – robot moves items to the original position

L – left, robot move item to the left

R – Right, robot move item to the right

U – Up, move grab item

D – Down, move grab item

O – Open and grab item

C – Open and drop item

S – Start

For example to move item A to position O, the commands are S L F1 O F3 L C.

(a) Write the instruction to move item A to its new position.

.... [1]

(b) Write instructions to move item B to its new position with Robot returning to its start position.

.... [1]

5 Barcodes are widely used on most products sold in shops. A barcode has a check digit used for validation when scanning. It is calculated using the following instructions.

Step 1. Add together the digits in the odd positions and multiply them by 3.

Step 2. Add together the digits in the even positions.

Step 3. Add the two results (from 1 and 2) together.

To find the check digit, calculate what needs to be added to the result you obtained in 3 to get the next multiple of 10. For example if the result obtained is 58, then the next multiple of 10 after 58 is 60 so that we need 2 to make 60. So 2 becomes the check digit.

Use the steps given above to calculate the check digit for the code 510431 12017

....

....

....

....

.... [5]

6 Cell phones are now commonly used as a means of communication.

(a) Give **one** feature found on a cell phone apart from voice calling and texting.

.... [1]

(b) Give **one** reason why you may sometimes be diverted to your friends voice mail when you make a call.

....

.... [1]

[Turnover

7 The diagram shows an example of a network that does not use cables to transmit data for communication.
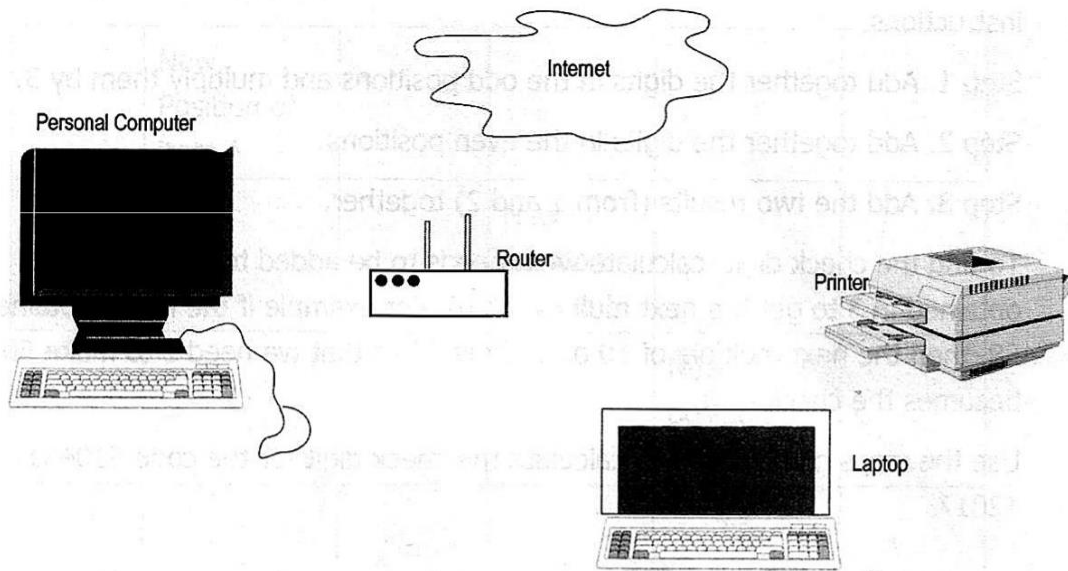
(a) The network shown uses radio waves to transmit data. What term refers to this type of Local Area Network?

.... [1]

(b) Give **one** advantage and **one** disadvantage of this type of network.

Advantage: ....

.... [1]

Disadvantage: ....

.... [1]

(c) Give **one** example of a type of Local Area Network (LAN) that can be formed using cell phones.

.... [2]

8   An organisation has decided to create a flyer using Desktop Publishing software to advertise its products.

   (a)   Give **one** feature of Desktop Publishing software that could be used to improve the presentation of the flyer.

   .... [1]

   (b)   Give **one** other document apart from a flyer which you can create using Desktop Publishing software.

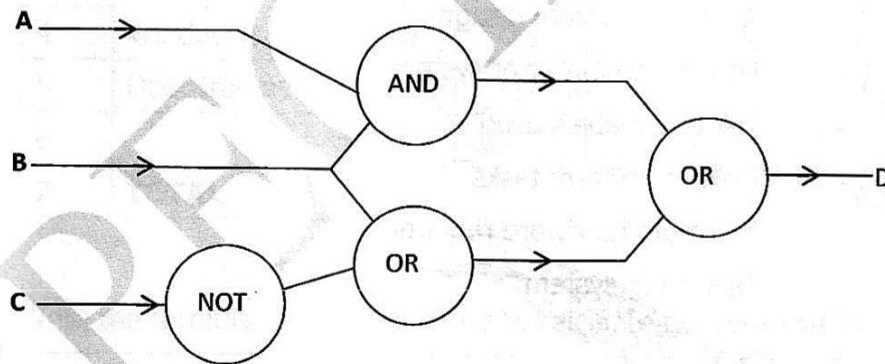   .... [1]

   (c)   If the flyer is to contain some pictures, describe how you would include pictures.

   ....

   ....

   .... [2]

9   Construct the truth table for the logic network shown. The first one has been done for you.

A	B	C	D (output)
1	0	0	1
0	1	0	
0	1	1	
1	1	1	

[3]

10 In order to change from one system to another, a systems analyst at a company was given four types of changeover methods. Name the changeover method using the guides given. One method has been done for you.

(a)   **Guide**   **Method**

(i) | Old system | New system | ----------------------------- [1]

(ii)   Old system

New system   Parallel

(iii)   Old system / New system   ----------------------------- [1]

(iv)   Old — New ▷ Old — New ▷ Old — New   ----------------------------- [1]

        Branch A   Branch B   Rest of Branch

(b) The following contents of the technical and user documentation are in mixed order. List them under the correct column.

– A copy of system design

– How to log in/out of system

– List of variables used

– How to perform tasks

– Minimum hardware requirement

– Operating system

User Documentation	Technical Documentation

[3]

11 Mr Banda uses a spreadsheet to keep track of his small welding business. He used a spreadsheet to generate a pie chart of the stock value of the 4 types of merchandise he deals in.
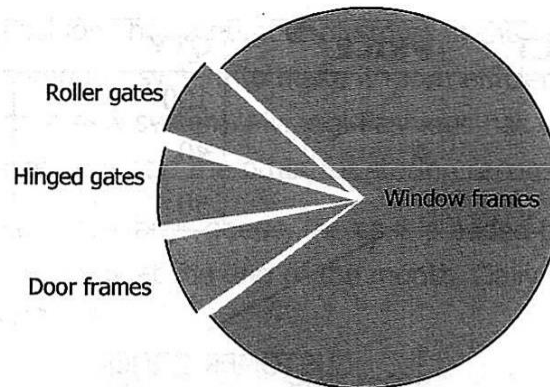
(a) On the spreadsheet below, shade the cells that must be used to create the pie chart.

	A	B	C	D	E	F
1		Stock	Amount Sold	Stock left	Price(Z MW)	Total price (ZMW)
2	Roler gates	25	20	05	150.00	750.00
3	Hinged gates	10	03	07	100.00	700.00
4	Window frames	70	28	42	90.00	3,780.00
5	Door frames	15	02	13	100.00	1,300.00
6						
7	TOTAL					6,530.00

[2]

(b) Write the formula in F7 that is used to calculate the total "stock value".

.... [1]

(c) Explain how Mr Banda can sort column A in ascending order.

....

.... [1]

[Turnover

12 The diagram below shows a query called ORDER created from two tables called PRODUCT DETAILS and CUSTOMER ORDERS.

ORDER QUERY

CUSTOMER	PRODUCT	PRICE	QTY	AMOUNT
TEMBO	X		100	C
MWALA	Y	A	40	2400
NAMWINGA			50	

PRODUCT DETAILS

PRODUCT	PRICE
SUGAR	300
C-OIL	150
MAIZE	60

CUSTOMER ORDER

CUSTOMER	PRODUCT	QTY
INONGE	MAIZE	40
NAMWINGA	SUGAR	50
TEMBO	C-OIL	100

(a) State the field that facilitates this table relationship.

.... [1]

(b) Give the result obtained from the letters marked.

A .... [1]

X .... [1]

Y .... [1]

(c) State **one** major reason why table relationship usage is encouraged in databases.

.... [1]

(d) Give the formula for field Amount in **C**.

.... [1]

Section B

13 **Read the following scenario and use it to answer the questions that follow.**

Mwangi Fashions has a number of stores in the capital city. It is converting its existing computer system to make it more efficient. A systems analyst will analyse and design a new system. Mwangi Fashions has two separate files one for storing customer records and the other for storing record of sales.

When a customer buys goods, the cost is added to their account in a cumulative fashion. They pay at the end of the month. Daily transaction files are generated and added.

The analyst has decided that sales records and customer records be combined into a relational Database.

(a) Draw the file updating that takes place at the end of the month.

....

....

....

....

.... [4]

(b) Fixed magnetic hard disks are used to store the transaction and master files in the current system. Evaluate the current system of storage of Mwangi Fashion on **three** points.

....

....

....

.... [6]

(c) Write an outline of the structure of the relational database that would need to be created to store the sales records and customer records.

....

....

....

.... [7]

[Turnover

(d) Give **three** reasons why the systems analyst would recommend a relational database for Mwangi fashions.

Reason 1: ....

.... [1]

Reason 2: ....

.... [1]

Reason 3: ....

.... [1]