

G12 ECZ COMPUTER STUDIES P1 2020 SPEC

Grade 12 ECZ Computer Studies Paper 1 (7010/1), 2020 Specimen

Section A (12 structured questions) + Section B (Q1 compulsory, all three solved)

- 10 (a) Explain the difference between a web browser and a search engine.

.....

.....

.....

.....

[2]

- (b) State **one** feature of a web browser.

.....

[1]

- (c) State **one** disadvantage of a search engine.

.....

[1]

- 11 An estate agent keeps information concerning the property sales on a database as shown in the table below.

Code number	Type of property	Class	Price	Number of rooms
PP22	House	D	280,000	3
PZ72	Flat	D	120,000	3
PX68	House	S	420,000	4
PA40	Flat	D	90,000	3
PC80	House	S	450,000	4
PA48	Flat	D	95,000	3

- (a) (i) State the number of records in a database.

.....

[1]

- (ii) State the number of fields in each record.

.....

[1]

- (b) The class field uses a single letter;
D is a detached property;
S is for the semi-detached property.
Suggest a code that could be used for a terraced property.

.....

[1]

- (c) Name the appropriate key field and give a reason for the choice.

Keyfield

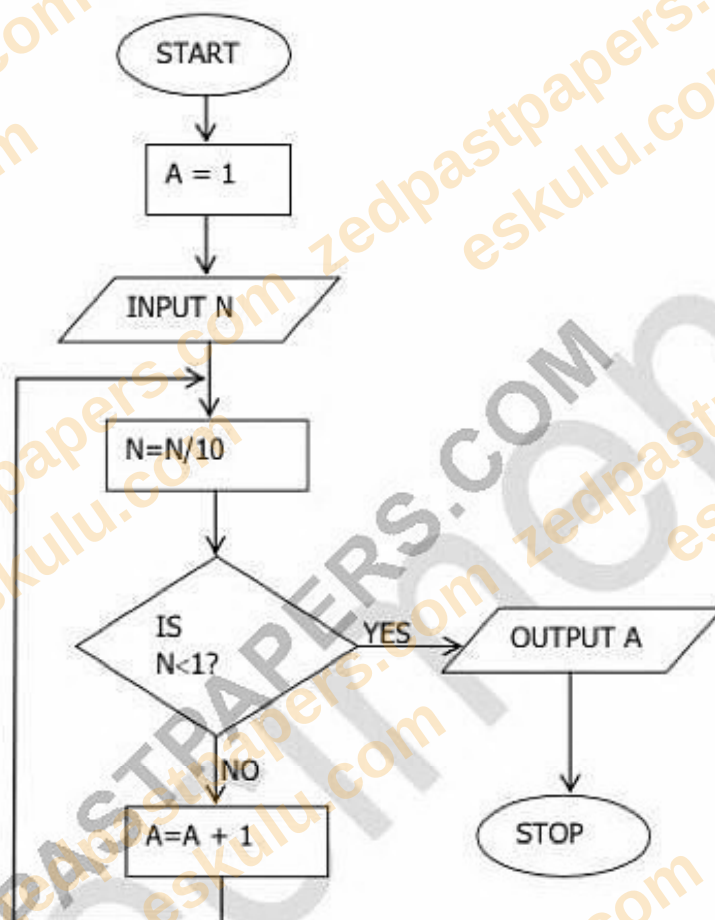
[1]

Reason

.....

[1]

- 12 Study the flowchart below and answer the questions that follow.



What are the expected output from the flowchart when three sets of data are input.

Input N

Output A

(a) 48

[1]

(b) 9170

[1]

(c) -800

[1]

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SECTION B [20 Marks]

There are **three (3)** questions in this section. Question **one (1)** is compulsory. Choose one from the other two questions.

1 Read the following scenario and answer the questions that follow.

The owner of a supermarket wants to install a computerised stock control system.

All stock control processes have been paper based.

The first thing the Systems Analyst has to do is to collect all necessary information about the existing system.

(a) Name **two** methods that the Systems Analyst could use to collect information.

1 [1]

2 [1]

(b) Describe **three** features of the structure of the database that the systems analyst could design for the supermarket.

1 [1]

2 [1]

3 [1]

(c) Describe **one** method that could be suitable for implementing the system that has been proposed.

.....
.....

(d) Give **two** reasons for the method of implementation you have chosen in C.

1 zedpastpapers.com

2 [1]

- 2 (a) Write an algorithm to determine a student's average grade and indicate whether the student passed or failed. The average grade is calculated as the average of four (4) marks in different subjects.
Student will only pass if the average grade is greater or equals to 60.

.....

.....

.....

.....

.....

.....

.....

.....

- (b) State the difference between a variable and a constant.

.....

.....

.....

.....

[2]

- (c) Explain the purpose of a **DO ...WHILE**...Loop in a program.

.....

.....

[1]

- (d) Explain why arrays are used when writing a computer program.

.....

.....

[1]

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- 3 (a) Explain the purpose of Hypertext markup language (HTML).

.....
..... [1]

- (b) Consider the following HTML code fragment.

```
<!DOCTYPE html>
<html xmlns = "http://www.w3.org/1999/xhtml"
  <head>
    <title> this is an example of a website</title>
  </head>
  </body>
  <h1>welcome to the school webpage</h1>
  <p>This is a basic HTML document </p>
</body>
</html>
```

Identify each of the elements in the code fragment above. Explain the purpose of each element and state the code fragment.

- (i) Document type declaration

.....
..... [1]

- (ii) Root element

.....
..... [1]

- (iii) Head element

.....
..... [1]

- (iv) Body element

.....
..... [1]

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Candidate Name _____

Centre Number			Candidate Number			

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Computer Studies

7010/1

Paper 1

Specimen

Candidates answer on the question paper
No additional materials are required

Time: 2 hours 40 minutes

Instructions to Candidates

- 1 Write your name, centre number and candidate number in the spaces at the top of this page.
- 2 There are two (2) Sections in this paper. **Section A** and **B**.
Section A: There are twelve (12) questions. Answer all.
Section B: There are three (3) questions. Question one (1) is compulsory.
Choose any other question from either question two (2) or three (3).
- 3 Write your answers in the spaces on the question paper.
- 4 Tick (✓) the question you have attempted in **Section B** in the grid provided below.

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. **Section A** with 50 marks and **Section B** 20 marks.

Cell phones are not allowed in the Examination Room.

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For Examiner's Use Only		
		Mark
Section A		
Section B	Q1	
Tick (✓)	Q2	
	Q3	
Total		

Section A [50 Marks]

1 (a) State **two** features commonly found in application programs.

1 [1]

2 [1]

(b) Explain the difference between importing a file and exporting a file.

.....
.....
..... [1]

2 (a) Explain the meaning of the term Integrated Software.

.....
..... [1]

(b) State **two** advantages of using Integrated Software.

1 [1]

2 [1]

(c) Give **one** major drawback of Integrated Software.

.....
..... [1]

3 A newly built hospital uses the state of the art computer controlled monitoring system.

(a) Name **two** physical variables that could be monitored in a patient.

1 [1]

2 zedpastpapers.com [1]

(b) Give a reason why a computer cannot directly read physical variables in a patient.

.....
..... [1]

- (c) State **two** advantages of using a computer controlled system in monitoring a patient's condition.

Advantage 1: [1]

Advantage 2: [1]

- (d) Explain why the medical personnel may decide to use a graph plotter to print the computer readings of a patient's condition.

..... [1]

- 4 Give **three** tasks done by an operating system.

1 [1]

2 [1]

3 [1]

- 5 Makani Advertising Company uses information systems to prepare text and graphics for newsletters, brochures and other advertising material.

- (a) State the application package that would be used for this. [1]

- (b) The information system uses CD-ROM and RAM as storage devices.

- (i) Explain why each of the following types of storage devices is necessary.

CD-ROM [1]

RAM [1]

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(c) Name **two** output devices that are suitable in this system.

1 [1]

2 [1]

6 (a) Draw and label a diagram which shows a star network.

[3]

(b) State **one** device that will be needed to connect the star network to a wide area network (WAN).

[1]

7 (a) State **two** problems which can be caused by illegally accessing computers.

1 [1]

2 [1]

(b) Give **two** ways of preventing such problems.

1 zedpastpapers.com [1]

2 [1]

..... [1]

8 Shopping from home using the internet is now gaining popularity.

(a) Give **two** advantages to the customer of buying items on the internet.

Advantage 1: [1]
.....

Advantage 2: [1]
.....

(b) State **two** advantages to the shop owner of selling items on the internet.

Advantage 1: [1]

Advantage 2: [1]

(c) Shopping through internet may not be as successful as predicted.
Give **one** reason for this.

..... [1]
.....

9 (a) Describe a typical input interface you would find on a diagnostic expert system.

..... [1]

(b) State **two** parts of an expert system.

1 [1]

2 [1]

(c) Give an example of an expert system.

..... zedpastpapers.com [1]
.....

Question 1. SECTION A, Q1-2 [7 marks]: application programs and integrated software.

Q1(a) Two features common in application programs

Answer: 1. A USER INTERFACE with menus, toolbars and icons for giving commands.

Answer: 2. THE ABILITY TO SAVE, OPEN AND PRINT files/documents created in the program.

Q1(b) Importing vs exporting a file

Answer: IMPORTING a file means **BRINGING DATA INTO** the current application from another program or file format. **EXPORTING** a file means **SAVING/SENDING DATA OUT** of the current application into another program or file format for use elsewhere.

Q2(a) Meaning of Integrated Software

Answer: Integrated software is a single package that **COMBINES SEVERAL APPLICATIONS** (e.g. word processor, spreadsheet, database) into **ONE PROGRAM** with a common, consistent interface.

Q2(b) Two advantages of Integrated Software

Answer: 1. Data can be EASILY SHARED/TRANSFERRED between the different tools within the package.

Answer: 2. ONLY ONE INTERFACE TO LEARN, since all the tools share a similar look and feel, making the whole package quicker to learn and use.

Q2(c) One major drawback

Answer: Integrated packages usually have **FEWER/LESS POWERFUL FEATURES** in each tool than a dedicated, specialist standalone application for that one task.

Question 2. SECTION A, Q3-4 [8 marks]: hospital monitoring system and operating system tasks.

Q3(a) Two physical variables that could be monitored

Answer: 1. Body/BLOOD TEMPERATURE.

Answer: 2. BLOOD PRESSURE (heart rate/pulse is also accepted).

Q3(b) Why a computer cannot directly read physical variables

Answer: A computer can only process **DIGITAL** (electrical) **SIGNALS**, while physical variables such as temperature and blood pressure are **ANALOGUE** quantities -- a **SENSOR** and an **ANALOGUE-TO-DIGITAL CONVERTER (ADC)** are needed first to convert the reading into a digital signal the computer can process.

Q3(c) Two advantages of computer-controlled patient monitoring

Answer: Advantage 1: CONTINUOUS, REAL-TIME MONITORING of the patient, without a nurse needing to be physically present at all times.

Answer: Advantage 2: FASTER AND MORE ACCURATE DETECTION of dangerous changes, since the computer can trigger an immediate **ALARM** if a reading goes outside a safe range.

Q3(d) Why use a graph plotter

Answer: A graph plotter produces a **CONTINUOUS VISUAL RECORD** (a graph/trend line) of the patient's readings over time, making it much easier for medical staff to spot patterns or sudden changes at a glance than by reading raw numbers.

Q4: Three tasks done by an operating system

Answer: 1. **MANAGING MEMORY** (allocating and freeing RAM for running programs).

Answer: 2. **MANAGING INPUT/OUTPUT DEVICES** (controlling peripherals such as the keyboard, screen and printer).

Answer: 3. **MANAGING FILES** (organising, storing and retrieving files on disk).

Question 3. SECTION A, Q5-6 [9 marks]: Makani Advertising's information system, and a star network.

Q5(a) Suitable application package

Answer: A **DESKTOP PUBLISHING (DTP) PACKAGE**, used to combine and lay out text and graphics for newsletters, brochures and other advertising material.

Q5(b)(i) Why CD-ROM and RAM are each necessary

Answer: **CD-ROM** is necessary for **PERMANENT, LONG-TERM STORAGE** of large amounts of data (such as images, clip art and fonts) that does not change and needs to be read repeatedly.

Answer: **RAM** is necessary to **TEMPORARILY HOLD THE DATA AND PROGRAM CURRENTLY BEING WORKED ON**, giving the computer fast access to it while processing.

Q5(c) Two suitable output devices

Answer: 1. A **(COLOUR) PRINTER**, to produce printed copies of the newsletters/brochures.

Answer: 2. A **MONITOR/SCREEN**, to display and check the design before printing.

Q6(a) Star network diagram (description, to be drawn by hand)

Answer: Draw a small circle or box in the centre and label it **HUB** (or **SWITCH**). Draw four or five smaller boxes around it, each labelled 'Computer 1', 'Computer 2', etc., and connect **EACH** computer to the central hub with its **OWN SEPARATE CABLE** -- no computer connects directly to any other computer, only to the hub. This hub-and-spoke layout, with every node independently wired back to one central point, is the star topology.

Q6(b) Device to connect the star network to a WAN

Answer: A **ROUTER**.

Question 4. SECTION A, Q7-9 [12 marks]: illegal access, internet shopping, expert systems.

Q7(a) Two problems caused by illegally accessing computers

Answer: 1. **THEFT OR CORRUPTION OF DATA/INFORMATION.**

Answer: 2. **INTRODUCTION OF VIRUSES OR OTHER MALWARE** that can damage the system or its data.

Q7(b) Two ways of preventing such problems

Answer: 1. **USE STRONG, REGULARLY CHANGED PASSWORDS** to control who can log in.

Answer: 2. INSTALL A FIREWALL (and up-to-date antivirus software) to block unauthorised access.

Q8(a) Two advantages to the customer of buying on the internet

Answer: Advantage 1: CONVENIENCE -- can shop from home at any time, without travelling.

Answer: Advantage 2: EASIER TO COMPARE PRICES across a wide range of shops before buying.

Q8(b) Two advantages to the shop owner

Answer: Advantage 1: REACHES A LARGER, WIDER MARKET of customers, not limited by geography.

Answer: Advantage 2: LOWER OVERHEAD COSTS, since a large physical shop and many sales staff are not needed.

Q8(c) One reason internet shopping may not be as successful as predicted

Answer: MANY CUSTOMERS DO NOT HAVE RELIABLE INTERNET ACCESS, OR DO NOT TRUST ONLINE PAYMENT SECURITY and prefer to see/handle goods before buying them.

Q9(a) Typical input interface on a diagnostic expert system

Answer: A SCREEN-BASED QUESTION-AND-ANSWER (menu/dialogue) INTERFACE, where the user types responses or selects from options on a keyboard as the system asks a series of diagnostic questions.

Q9(b) Two parts of an expert system

Answer: 1. THE KNOWLEDGE BASE (the stored facts and rules of the subject).

Answer: 2. THE INFERENCE ENGINE (the part that applies the rules to the facts to reach a conclusion).

Q9(c) An example of an expert system

Answer: A MEDICAL DIAGNOSIS SYSTEM (e.g. a system used to diagnose illnesses from a patient's symptoms).

Question 5. SECTION A, Q10-11 [8 marks]: web browsers/search engines, and a property database.

Q10(a) Web browser vs search engine

Answer: A WEB BROWSER is a program (e.g. Chrome, Firefox) used to **ACCESS AND DISPLAY** web pages. A **SEARCH ENGINE** is a website/tool (e.g. Google) used **WITHIN** a browser **TO SEARCH FOR AND FIND** information or web pages across the internet, based on keywords.

Q10(b) One feature of a web browser

Answer: IT HAS AN ADDRESS BAR, for typing or displaying a website's URL (bookmarks/favourites and navigation buttons are also accepted).

Q10(c) One disadvantage of a search engine

Answer: A SEARCH CAN RETURN A VERY LARGE NUMBER OF RESULTS, MANY OF WHICH ARE IRRELEVANT OR UNRELIABLE, making it time-consuming to find accurate, trustworthy information.

Q11 The property database table

Answer: (a)(i) Number of records in the database = 6 (the six rows PP22 to PA48).

Answer: (a)(ii) Number of fields in each record = 5 (Code number, Type of property, Class, Price, Number of rooms).

Answer: (b) A code for a terraced property, following the same single-letter pattern as D (detached) and S (semi-detached), could be T (for Terraced).

Answer: (c) The appropriate KEY FIELD is the CODE NUMBER, because EACH CODE NUMBER IS UNIQUE to one record (no two properties share the same code), so it can reliably identify every record individually.

Question 6. SECTION A, Q12 [3 marks]: the flowchart (counting/digit-reduction loop).

The flowchart sets A=1, inputs N, then repeatedly divides N by 10; if the result is less than 1 it outputs A, otherwise it adds 1 to A and divides by 10 again.

Answer: (a) Input N = 48: $48/10 = 4.8$ (not less than 1, so A becomes 2); $4.8/10 = 0.48$ (this is less than 1) -- OUTPUT A = 2.

Answer: (b) Input N = 9170: $9170/10=917$ (A=2); $917/10=91.7$ (A=3); $91.7/10=9.17$ (A=4); $9.17/10=0.917$ (less than 1) -- OUTPUT A = 4.

Answer: (c) Input N = -800: $-800/10 = -80$, which IS already less than 1 (negative numbers are always less than 1) -- OUTPUT A = 1 immediately, on the very first pass.

Question 7. SECTION B, Q1 (compulsory) [8 marks]: systems analysis for a supermarket's stock control.

(a) Two methods to collect information about the existing system

Answer: 1. INTERVIEWS with staff and the owner about how stock is currently controlled.

Answer: 2. QUESTIONNAIRES distributed to staff (observation of the current paper-based process is also accepted).

(b) Three features of the database structure design

Answer: 1. A STOCK TABLE with fields such as item code, description, quantity in stock and price.

Answer: 2. A PRIMARY (KEY) FIELD, such as a unique stock/item code, to identify each record uniquely.

Answer: 3. VALIDATION RULES on fields (e.g. quantity must be a positive number) to help maintain accurate data.

(c) A suitable implementation method

Answer: PARALLEL RUNNING -- the new computerised system is run alongside the old paper-based system for a period before fully switching over.

(d) Two reasons for choosing parallel running

Answer: 1. IF THE NEW SYSTEM FAILS, the old system is still available as a working backup, so the business is not disrupted.

Answer: 2. IT ALLOWS RESULTS FROM BOTH SYSTEMS TO BE COMPARED, so staff can check the new system is working correctly before relying on it completely.

Question 8. SECTION B, Q2 (if chosen) [6 marks]: algorithm, variables/constants, loops and arrays.

(a) Algorithm to determine a student's average grade and pass/fail

Answer: START

Answer: INPUT Mark1, Mark2, Mark3, Mark4

Answer: Total = Mark1 + Mark2 + Mark3 + Mark4

Answer: Average = Total / 4

Answer: IF Average is greater than or equal to 60 THEN

Answer: PRINT 'PASS'

Answer: ELSE

Answer: PRINT 'FAIL'

Answer: ENDIF

Answer: STOP

(b) Variable vs constant

Answer: A VARIABLE is a named storage location whose VALUE CAN CHANGE while the program runs. A CONSTANT is a named storage location whose VALUE STAYS FIXED throughout the program's execution.

(c) Purpose of a DO...WHILE loop

Answer: A DO...WHILE loop REPEATS A BLOCK OF CODE, checking its condition AFTER each pass (at the end of the loop), so the loop body always executes AT LEAST ONCE before the condition is tested -- useful when an action must happen first before deciding whether to repeat it.

(d) Why arrays are used

Answer: Arrays let MULTIPLE RELATED VALUES OF THE SAME TYPE BE STORED UNDER ONE VARIABLE NAME, accessed by an index/position, which makes it far easier to store, process and loop through large sets of related data than using many separate individual variables.

Question 9. SECTION B, Q3 (if chosen) [6 marks]: HTML.

(a) Purpose of Hypertext Markup Language (HTML)

Answer: HTML is used to CREATE AND STRUCTURE WEB PAGES -- it defines the content and layout of a page so that a web browser can correctly display it.

(b) Identifying and explaining the elements in the code fragment

Answer: (i) Document type declaration -- the very first line of the code, the DOCTYPE declaration. It tells the browser which version/standard of HTML the document is written in, so

the page is interpreted and displayed correctly.

Answer: (ii) Root element -- the HTML element (the opening and matching closing tag that wrap the entire document). It is the top-level container that holds every other element on the page.

Answer: (iii) Head element -- the HEAD element. It holds information ABOUT the page that is not directly displayed to the user, such as the page's TITLE (shown in the browser tab).

Answer: (iv) Body element -- the BODY element. It contains all the CONTENT THAT IS ACTUALLY DISPLAYED on the web page, such as the heading and paragraph text shown in this fragment.

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