

CHINIOT ISLAMIA PUBLIC SCHOOL AND COLLEGE

1ST QUARTERLY TEST

Computer Science (2210) - Paper 1 - Grade O-I

Name: _____ Section: _____ Roll No: _____

Duration: 2 Hours

Total Marks: 50

INSTRUCTIONS • Answer all questions. • Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs. • Write your name, centre number and candidate number in the boxes at the top of the page. • Write your answer to each question in the space provided. • Do not use an erasable pen or correction fluid. • Do not write on any bar codes. • Calculators must not be used in this paper.

INFORMATION • The total mark for this paper is 75. • The number of marks for each question or part question is shown in brackets []. • No marks will be awarded for using brand names of software packages or hardware.

Q1 .

1. What is meant by interrupts? why interrupts occurs list any four causes.

2. Operating system performs different functions so what is the basic purpose of file management and memory management explain in detail.

3. Explain how sensors (temperature, humidity, light) and actuators (water pumps, heaters) are used together in a computer-controlled greenhouse.

4. A security system uses a facial recognition camera at an entrance gate. (a) Explain why the camera is an input device. (b) The image captured by the camera must be processed before comparison. Describe **two** steps in converting the captured image into a digital form usable by the computer (e.g. from image → binary). (c) After verification, the system displays a “Access Granted” message on a screen. What type of output device is the screen? Give one advantage and one limitation of using such a screen in bright daylight.

5. Compare the use of barcodes and QR codes in supermarkets and advertising. Discuss their **advantages and disadvantages** for businesses and customers.

6. The following are descriptions of devices or components. Identify each to the correct input/output device: Projects an image onto a screen in large format Converts hand motions into cursor movement Emits sound from digital audio data Draws or prints physical 3D objects layer by layer Reads coded labels on products in supermarkets

7. What is meant by Interface? and define its types .

8. (a) State **three** input devices that might be built into a **tablet computer**. (b) What advantage does a **touchscreen** provide compared to a separate keyboard + mouse?

9. A printer is one example of an output device.

Give **three** other examples of output devices.

Example 1

Example 2

Example 3

[3]

Give **three** examples of input devices.

Example 1

Example 2

Example 3

[3]

10. Discuss the differences between LCD and OLED screens, including their working principles and advantages.

11. The paragraph describes the process of printing a document using an inkjet printer.

Complete the paragraph using the most appropriate terms from the list. **Not** all of the terms in the list need to be used.

- binary
- buffer
- drum
- information
- interrupt
- laser
- liquid
- nozzles
- operating system
- powder
- thermal bubble
- toner

Data is sent from the computer to the printer. The data is held in a print

..... that is temporary storage until the data is processed to be printed.

Inkjet printers operate by having a print head that moves

..... side to side across the page. These spray ink droplets onto the page. These ink droplets can be created using piezoelectric or technology.

If the paper jams in the printing process, the printing stops and an

..... is sent to the computer.

[5]

12. In a lecture hall, the lecturer's computer is connected to a projector, speakers, and an interactive whiteboard. (a) For each device (projector, speakers, interactive whiteboard), classify it as input, output, or both (if applicable) and state its role. (b) Suppose the lecturer writes on the interactive whiteboard and the writing appears on the students' screens instantly. Explain how the interactive whiteboard captures the lecturer's writing (i.e. as input) and sends it to students' displays (i.e. output). (c) Give two challenges in using such a system (hardware or environmental) and suggest solutions.

13. Explain how a digital camera converts light into a digital image. Include the role of CCD and ADC.

14. Compare the **working, advantages and disadvantages** of inkjet printers and laser printers.

15. Jason is writing a computer program in a high level language. He needs to send just the machine code for the program to his friend, electronically. It is important that the program is executed as quickly as possible. Identify which translator will be most suitable for Jason to use and also explain this translator.

16. Compare resistive and capacitive touch screens in terms of advantages and

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17. State any three advantages and two disadvantages of command line interface (CLI).

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18. A hospital is installing an automated patient monitoring system. Sensors detect

10. A hospital is installing an automated patient monitoring system. Sensors detect patients' vital signs (e.g. heart rate, temperature), and a computer triggers alerts if values are out of safe limits. (a) Name **three** different types of sensors (input devices) suitable for such a system. (b) For one of your named sensors, explain **how** it works (i.e. the principle by which it senses and converts data). (c) Suppose an alert must be given when temperature exceeds a limit. Suggest an **output device** and describe how it would act in this scenario.

19. The smartwatch has built-in input and output devices.

Identify **two** input devices that can be built into the smartwatch.

1

2 [2]

Identify **one** output device that can be built into the smartwatch.

..... [1]

The smartwatch has read only memory (ROM).

Explain why the smartwatch needs ROM.

.....

.....

.....

..... [2]

The smartwatch uses a text message application that receives data from cloud storage.

(i) Describe what is meant by cloud storage.

.....

.....

.....

..... [2]

20. What is meant by security management in OS? discuss several features of security

20. What is meant by security management in OS? discuss several features of security management.

21. Describe what is meant by a high-level language. and explain one drawback to a user if the program is distributed as freeware.

22. Describe the difference between system software and application software. Give two

22. Describe the difference between system software and application software . Give two example of application software and one example of system software.

Q2 .

Hexadecimal is used for Hypertext Markup Language (HTML) colour codes.

An HTML colour code is:

#2F15D6

Each pair of digits is stored as binary in an 8-bit register.

(a) Give the 8-bit binary value that would be stored for each pair of hexadecimal digits.

2F							
15							
D6							

[6]

Working space

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2. When the employee enters the email address, the computer uses Unicode to convert the email address to binary.

(i) State what Unicode is an example of.

..... [1]

(ii) Give **two** advantages of the computer using Unicode instead of American standard code for information interchange (ASCII).

1

.....

2

.....

[2]

3. An image is converted to binary to be represented by a computer

An image is converted to binary to be represented by a computer.

Complete the table with the missing terms and definition about representing an image.

Term	Definition
.....	This is the smallest component of an image.
resolution	
.....	This is the number of bits used to create each colour in an image.
.....	This is additional data that is stored with an image that can provide information such as the time and date the image was taken.

[4]

4. Data can be measured using different units of storage.

(a) Tick (✓) **one** box to show which of the following is the largest unit of data storage.

- | | | |
|----------|----------------|--------------------------|
| A | tebibyte (TiB) | ☐ |
| B | pebibyte (PiB) | ☐ |
| C | mebibyte (MiB) | ☐ |
| D | gibibyte (GiB) | ☐ |

[1]

5. A new computer comes with primary and secondary storage

..... new computer comes with primary and secondary storage.

(a) Data storage is measured using binary denominations.

Complete each conversion.

8 bytes = nibbles

512 kibibytes (KiB) = mebibytes (MiB)

4 gibibytes (GiB) = mebibytes (MiB)

1 exbibyte (EiB) = pebibytes (PiB)

[4]

Working space

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.....

6. Calculate the binary number for the denary number 175. Show all your working.

.....

.....

.....

.....

..... [2]

7. A music company has a website that allows users to stream music. The music is stored in sound

A music company has a website that allows users to stream music. The music is stored in sound files.

(a) The sound files are compressed using lossless compression.

(i) Describe how the sound files are compressed using lossless compression.

.....

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.....

..... [4]

(ii) State **one** reason why the music company would compress the sound files using lossless, rather than lossy, compression.

.....

..... [1]

8. (a) Complete the table by defining each term about images

(a) Complete the table by defining each term about images.

Image term	Definition
pixel	
resolution	

[2]

(b) One of the images has a resolution of 1000×1000 and a colour depth of 2 bytes.

Calculate the file size of the image. Give your answer in bytes.

Show your working.

Working space

.....

.....

.....

File size bytes

[2]

9. The number 01001100 is added to 11100011

The number 01001100 is added to 11100011

Add the two 8-bit binary numbers, using binary addition.

Give your answer in binary. Show all your working.

.....

.....

.....

.....

.....

..... [4]

10. Convert the denary numbers 14, 59 and 234 to binary.

14

59

234 [3]

Working space

.....

.....

.....

.....

Convert the denary numbers 9, 26 and 65 to hexadecimal.

9

26

65 [3]

11. State what is meant by the image resolution.

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

State what is meant by the image colour depth.

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

Give **one** benefit of increasing the colour depth of the image.

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

The photographer compresses the image using a method that permanently reduces the colour depth and resolution of the image.

Identify which compression method the photographer uses.

..... [1]

One benefit for compressing the image is to reduce the storage space it uses.

Give **two** other benefits of compressing the image.

1
.....

2
.....

[2]

12. Add the **two** binary numbers using binary addition.

Give your answer in binary. You must show all your working.

$$\begin{array}{r} 01100101 \\ + 01110000 \\ \hline \end{array}$$

[3]

An overflow occurs when two other 8-bit binary numbers are added together.

Explain why the overflow error occurs.

.....

.....

.....

..... [2]

The negative denary number –22 is stored in RAM.

Negative denary numbers can be represented as binary using two's complement.

Give the two's complement 8-bit binary integer that would be stored for the denary number –22.

You must show all your working.

Working space

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Two's complement 8-bit binary integer [2]