CODING & ROBOTICS PRIMARY SCHOOL OLYMPIADS:

GRADES 4 - 7

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GRADE 5

DATE: 16 AUGUST 2024

TIME: 60 MINUTES

INSTRUCTIONS:

1. This booklet has multiple-choice questions, true or false questions, computational questions, practical and problem-solving questions.
2. The total of this booklet is out of fifty marks.
3. You have 60 minutes for the paper.
4. Read the questions carefully before answering.
5. Visit the website: www.saolympiads.co.za.

NAME OF LEARNER:	
SCHOOL:	GRADE:

SECTION A: MULTIPLE CHOICE QUESTIONS

1. Which of the following statements describe piracy of music, videos and software?(1)

   A. It refers to the unauthorized use, distribution, and reproduction of copyrighted music and software without the permission of the owners.
   B. Using open-source software, downloading freeware or shareware from reputable sources, or purchasing licensed software.
   C. Streaming a movie or TV show on a legitimate platform like Netflix or Hulu.
   D. Sharing original content that belongs to you or you have the right to share.

2. Which of the following is not a font type? (1)

   A. Times New Roman
   B. Arial
   C. USB
   D. Verdana

3. Which of the following is an example of plagarism? (1)

   A. A statement declaring that a particular piece of work or content is original and has not been copied from any other source without giving proper credit or attribution.
   B. Plagiarism is when someone uses someone else's work or ideas as their own without giving proper credit or permission.
   C. Credit for writing your own article.
   D. Buying or commissioning work from someone else and presenting it as your own without proper attribution.

4. Event triggers are used for. (1)

   A. Event triggers are used for initiating a response or action when a specific event occurs. Events can be triggered by user actions, system messages, or other sources.
   B. Event triggers are used to communicate events that will take place in future code.
   C. Event triggers predict the order of events code will follow.
   D. Event triggers are used to schedule times in programming.

5. Breadboards are used for. (1)

   A. Prototyping and testing electronic circuits.
   B. Cutting bread.
   C. Used to bake bread.
   D. High-frequency applications.

6. Which of the following sensors is commonly used in robotics to detect obstacles and measure distances? (1)

   A. Infrared sensor
   B. Thermocouple sensor
   C. pH sensor
   D. Geiger-Muller counter

7. What type of robot is typically used on assembly lines to perform repetitive tasks? (1)

   A. Humanoid robot
   B. Mobile robot
   C. Industrial robot
   D. Service robot

8. Which programming language is commonly used for creating web pages and adding interactivity to websites? (1)

   A. Java
   B. HTML
   C. Python
   D. C++

9. What technology enables devices in the Internet of Things (IoT) to communicate wirelessly with each other? (1)

   A. Bluetooth
   B. Ethernet
   C. USB
   D. HDMI

10. Which of the following is a commonly used communication protocol in the Internet of Things (IoT) for connecting devices to the internet? (1)

A. FTP
B. HTTP
C. SMTP
D. MQTT

11. What is the process of systematically breaking down a problem into smaller, more manageable parts to solve it called? (1)

A. Decomposition
B. Abstraction
C. Recursion
D. Iteration

12. Which type of loop executes a block of code repeatedly as long as a specified condition is true? (1)

A. For loop
B. While loop
C. Do-while loop
D. Foreach loop

13. Which programming construct in Scratch allows you to repeat a set of actions multiple times? (1)

A. Loop
B. Event
C. Sprite
D. Costume

14. Which software is commonly used in Computer-Aided Design (CAD) for creating 2D and 3D models? (1)

A. Adobe Photoshop
B. AutoCAD
C. Microsoft Excel
D. Google SketchUp

15. What is an example of an appropriate use of the internet? (1)

A. Streaming movies during work hours.
B. Researching information for a school project.
C. Playing online games during a meeting.
D. Sending spam emails to strangers.

16. What is the purpose of an algorithm in computer science?

A. To create computer viruses.
B. To organize files on a computer.
C. To solve complex problems by breaking them down into smaller steps.
D. To design video games.

17. Which of the following best describes an algorithm?

A. A type of computer program.
B. A series of steps for solving a problem or completing a task.
C. A type of video game.
D. A computer virus.

18. What is the Internet of Things (IoT) primarily known for?

A. Creating virtual reality games.
B. Connecting everyday objects to the internet.
C. Designing mobile phone apps.
D. Building robots.

19. What is a key function of robotics in manufacturing?

A. Creating artwork.
B. Cooking meals.
C. Assembling products.
D. Playing music.

20. What is the purpose of a loop in coding?

A. To repeat a set of instructions a specific number of times.
B. To change the colour of text on a webpage.
C. To delete files from a computer.
D. To play music in a video game.

(20)

SECTION B: TRUE OR FALSE STATEMENTS

1. DC motor stands for Direct Current motor. (1)
   A. True
   B. False

2. In coding, broadcasting refers to the process of transmitting a message, signal, or data to multiple recipients or components simultaneously. (1)

   A. True

   B. False

3. API (Application Programming Interface): A set of protocols and tools for building software applications. (1)

   A. True

   B. False

4. IDE stands for: Internet development ensuite. (1)

   A. True

   B. False

5. Debugging: The process of finding and fixing errors or bugs in code. (1)

   A. True

   B. False

(5)

SECTION C: COMPUTATIONAL

repeat (10)	end
move (10) steps	

1. Using the lines above. Write a line of code for a simple loop. (5)

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when this sprite clicked	move (10) steps
end	play sound [your sound] until done

2. Using the lines above, write a simple code to make sprite talk and move forward. (5)

(10)

SECTION D: PRACTICAL APPLICATION AND PROBLEM SOLVING

1. You are designing a robot that needs to sort objects based on their colour using a colour sensor. Order the sequence of actions to demonstrate the logic the robot should follow to sort red, green, and blue objects into three separate bins. (9)

start	move object to red bin
else if colour is blue	move object to green bin
repeat until all objects are sorted	move object to blue bin
else if colour is green	scan object with colour sensor
if colour is red	

2. You are tasked with designing a Scratch project where a sprite moves in a square pattern continuously. Order the code needed to make the sprite move in a square. (6)

when flag clicked	repeat 4
forever	wait (0.5) seconds
move (10) steps	turn clockwise (90) degrees

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TOTAL = 50 MARKS