CODING & ROBOTICS PRIMARY SCHOOL OLYMPIADS:

GRADES 4 - 7

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GRADE 4

DATE: 16 AUGUST 2024

TIME: 60 MINUTES

INSTRUCTIONS:

1. This booklet consists out of multiple-choice questions, true or false, 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 best describes an input device? (1)

   A. An input device is any hardware component that allows a user to input data into a computer or other electronic device.
   B. An input device allows a user to extract data from a computer.
   C. Input devices include things such as monitors, speakers, and printers.
   D. Computer cases, power supplies, and cooling fans are examples of input devices.

2. Which of the components is not considered an output device? (1)

   A. Monitor.
   B. Printer.
   C. Speakers.
   D. Keyboard.

3. Binary can best be described as. (1)

   A. Information is processed by a computer in the form of a sequence of 1’s and 0’s.
   B. Information is processed by a computer in the form of a sequence of letters, a, and b.
   C. Information is processed by a computer in the form of a sequence of triangles and squares.
   D. Information is processed by a computer in the form of a sequences of colours.

4. "IoT" is an abbreviation for? (1)

   A. Internal operating timepiece.
   B. Internet on time.
   C. Internet of things.
   D. Intermitted operating thing.

5. The abbreviation CAD stands for. (1)

   A. Computer Application device.
   B. Computer-Aided Design.
   C. Computer Advancement device.
   D. Computer Aligned Degree.

6. Which of the following cannot be classified as an output device? (1)

   A. Keyboards
   B. Printers
   C. Mice, trackpads, and other pointing devices.
   D. Scanners

7. The central processing unit is used for. (1)

   A. Performing arithmetic and logical operations.
   B. Running programs.
   C. Signal processing.
   D. Graphics rendering.

8. Which of the following is an example of a high-level programming language? (1)

   A. Assembly language
   B. Machine language
   C. C++
   D. Binary code

9. Which of the following is a type of robot used for assembly line tasks and other repetitive industrial tasks? (1)

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

10. Which of the following is a type of robot used for exploring environments that are hazardous or difficult for humans to access? (1)

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

11. Which of the following is a type of sensor commonly used in robotics for detecting objects and measuring distances? (1)

    A. Camera
    B. Microphone
    C. Accelerometer
    D. Ultrasonic sensor

12. Which of the following is a programming language used for creating web pages and applications? (1)

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

13. Which of the following is a type of robot used for vacuuming and cleaning floors in homes and offices? (1)

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

14. Which of the following is a type of sensor commonly used in robotics for detecting the color of objects? (1)

A. Camera
B. Microphone
C. Accelerometer
D. Color sensor

15. Which of the following is a type of robot used for assisting with medical procedures and tasks? (1)

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

16. What is the main purpose of a robot?

A. To draw shapes
B. To perform tasks automatically
C. To control music
D. To count numbers

17. What is a robot mostly used for?

A. Playing sports
B. Doing chores
C. Singing songs
D. Teaching math

18. What does a coder do?

A. Fixes broken toys
B. Writes instructions for computers
C. Plays video games
D. Cooks dinner

19. What are application skills?

A. Skills needed to fill out a job application.
B. Skills used to play games on a smartphone.
C. Skills for building software programs.
D. Skills for using computer programs or apps to complete tasks.

20. What is an algorithm?

A. A type of food.
B. A set of instructions for solving a specific problem or challenge.
C. A type of animal.
D. A game played on a comput.

(20)

SECTION B: TRUE OR FALSE STATEMENTS

1. Robotics refers to the design, construction, operation, and use of robots. Robots are machines that are programmed to perform a variety of tasks automatically or with minimal human intervention. (1)

   A. True
   B. False

2. Microcontrollers are small, self-contained computer systems that are designed to control specific functions or devices. (1)

   A. True
   B. False

3. Communication platforms include applications such as WhatsApp and Facebook. (1)
   A. True
   B. False

4. The if-then function in coding is a conditional statement used to test whether a specific condition is true or false. (1)
   A. True
   B. False

5. The "go to" function in coding is used to jump to a specific part of the code from another part. It allows the programmer to bypass certain sections of code and directly access the desired section. (1)
   A. True
   B. False

(5)

SECTION C: COMPUTATIONAL

forever	move (10) steps
change y by (10)	wait (0.25) seconds
seconds move (-10) steps	change y by (-10)

1. What blocks will you use in scratch to move a sprite up and down infinitely. Write them down in order. (5)

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2. What block would you use in Scratch to make a sprite say "Hello, world!" when the green flag is clicked? Write them down in order. (5)

`when flag clicked` block	`broadcast` block
`say` block	`forever` block

(10)

SECTION D: PRACTICAL APPLICATION AND PROBLEM SOLVING

1. In a Scratch project, you need to create a game where a sprite moves up when the up arrow key is pressed, down when the down arrow key is pressed, left when the left arrow key is pressed, and right when the right arrow key is pressed. Order the blocks you would use. (8)

when [up arrow] key pressed	change y by (10)
change x by (10)	when [right] arrow key pressed
when [down arrow] key pressed	change y by (-10)
when [left arrow] key pressed	change x by (-10)

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2. You have a robot with a sensor that detects obstacles. If an obstacle is detetcted within 5 cm, the robot should stop and turn left. Order the code for this behaviour. (7)

repeat forever	start
stop	turn left
if obstacle diatcne < 5cm	else
move forward	

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TOTAL = 50 MARKS