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SCO INTERNATIONAL CODING OLYMPIAD

CLASS 4 SOLVED QUESTION PAPER

A carefully reviewed coding olympiad paper for schools, teachers, parents, and students

Question Paper Set A | 2024-25

with corrected answer key, explanations, section-wise review, and website-ready formatting

Designed from Class 4 coding, logic, Scratch game-creation, and Python fundamentals.
Aligned with SCO's platform flow for guided preparation, practice, reporting, and future-ready academic growth.

- age-fit coding concepts for primary learners globally
- programming language basics, logic, Scratch blocks, Python output tracing, and algorithms
- answer key, explanation, editorial corrections, and final revision support

Maths	English	Science	Mental Ability	Finance Knowledge
AI	Entrepreneurship	GK	Coding	Life Skills

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Section-wise Learning Focus

Section	Questions	Focus Area
Section 1: Fundamentals of Coding	1-10	Programming basics, conditions, loops, variables, Python syntax, operators, and Scratch block categories.
Section 2: Logic and Reasoning	11-20	Number patterns, Boolean logic, sorting order, arithmetic precedence, prime numbers, and robot direction reasoning.
Section 3: Simple Game Creation	21-30	Scratch sprites, costumes, movement, loops, broadcasts, backdrops, arrow-key control, and animation behavior.
Section 4: Achievers Section	31-40	Algorithms, Python output tracing, floor division, recursion, variables, game logic, and maze-solving strategy.

Section 1: Fundamentals of Coding

Direction: Programming basics, conditions, loops, variables, Python syntax, operators, and Scratch block categories.

Q1 **Which of the following is a common programming language used for writing code?**

A. JavaScript
B. Microsoft Word
C. Photoshop
D. Excel

Correct Answer: A. JavaScript

Explanation: JavaScript is a programming language used to write instructions for websites and applications. Microsoft Word, Photoshop, and Excel are software tools, not programming languages.

Q2 **What does the 'if' statement do in programming?**

A. It runs a block of code only if a condition is true
B. It creates an infinite loop
C. It ends the program
D. It defines a variable

Correct Answer: A. It runs a block of code only if a condition is true

Explanation: An if statement checks a condition. When the condition is true, the related block of code runs; when it is false, the program can skip that block or move to an else part.

Q3 **Which of these is NOT a type of loop used in programming?**

A. For loop
B. While loop
C. If loop

D. Do-while loop

Correct Answer: C. If loop

Explanation: For, while, and do-while are common loop structures. An if statement is used for decision-making, so 'if loop' is not a standard loop type.

Q4 **What does a loop in coding do?**

A. Stops the program
B. Repeats a set of instructions
C. Creates a new file
D. Deletes code

Correct Answer: B. Repeats a set of instructions

Explanation: A loop repeats instructions until a condition is met or until a fixed number of repetitions is completed. This avoids writing the same instruction many times.

Q5 **Which of the following is a valid variable name in Python?**

A. 1variable
B. variable_name
C. @variable
D. variable-name

Correct Answer: B. variable_name

Explanation: Python variable names may contain letters, digits, and underscores, but they cannot start with a digit and cannot contain symbols such as @ or hyphens.

Q6 **What does the 'print()' function do in Python?**

A. It calculates a value
B. It ends the program
C. It displays a message on the screen
D. It makes a decision in the program

Correct Answer: C. It displays a message on the screen

Explanation: The print() function displays output such as text or values on the screen. It is commonly used to show results while learning or debugging.

Q7 **What happens if you forget to close parentheses in Python?**

A. The program runs without any problem
B. The program produces a syntax error
C. The program stops randomly
D. It automatically fixes itself

Correct Answer: B. The program produces a syntax error

Explanation: Unclosed parentheses break the rules of Python syntax. Python cannot understand the instruction properly, so it reports a syntax error.

Q8 **In Scratch, which block would you use to make a sprite say something?**

A. Motion block
B. **Looks block**
C. Sound block
D. Control block

Correct Answer: B. Looks block

Explanation: The 'say' blocks belong to the Looks category in Scratch because they change what the sprite displays on the stage.

Q9 **What is the purpose of the 'else' statement in coding?**

A. It defines a new function
B. **It executes code if the 'if' condition is false**
C. It stores a value
D. It repeats a section of code

Correct Answer: B. It executes code if the 'if' condition is false

Explanation: The else part gives an alternate path. If the if condition is false, the code inside the else block can run.

Q10 **Which operator is used for checking equality in most programming languages?**

A. =
B. **==**
C. !=
D. >

Correct Answer: B. ==

Explanation: The == operator compares two values for equality. A single = is usually used for assignment, != checks not equal, and > checks greater than.

Section 2: Logic and Reasoning

Direction: Number patterns, Boolean logic, sorting order, arithmetic precedence, prime numbers, and robot direction reasoning.

Q11 **What is the next number in the sequence: 5, 10, 20, 40, _____?**

A. 60
B. **80**
C. 100
D. 120

Correct Answer: B. 80

Explanation: Each number is doubled: 5 x 2 = 10, 10 x 2 = 20, and 20 x 2 = 40. Therefore, the next number is 40 x 2 = 80.

Q12 **Which of the following is the result of the logical expression: True AND False?**

A. True
B. **False**
C. Error
D. Undefined

Correct Answer: B. False

Explanation: The AND operator gives True only when both sides are True. Since one side is False, the whole expression is False.

Q13 **If you reverse the digits of the number 1234, which number do you get?**

A. **4321**
B. 1243
C. 1234
D. 3412

Correct Answer: A. 4321

Explanation: Reversing the order of the digits in 1234 gives 4, 3, 2, 1, which forms 4321.

Q14 **If you have a list of numbers: [5, 3, 7, 1], what would the result be if you sorted the list in ascending order?**

A. [5, 3, 7, 1]
B. **[1, 3, 5, 7]**
C. [7, 5, 3, 1]
D. [1, 7, 3, 5]

Correct Answer: B. [1, 3, 5, 7]

Explanation: Ascending order means arranging numbers from smallest to largest. The sorted list is [1, 3, 5, 7].

Q15 **Which number is the missing one in this pattern: 3, 6, __, 12, 15?**

A. 7
B. 8
C. **9**
D. 10

Correct Answer: C. 9

Explanation: The pattern increases by 3 each time: 3, 6, 9, 12, 15. The missing number is 9.

Q16 **What is the smallest prime number greater than 10?**

A. 12
B. **11**
C. 13
D. 17

Correct Answer: B. 11

Explanation: A prime number has exactly two factors: 1 and itself. The first number greater than 10 with only two factors is 11.

Q17 **What is the result of the expression: 5 + 2 x 3?**

A. 11
B. 15
C. 21
D. 10

Correct Answer: A. 11

Explanation: Multiplication is performed before addition. First calculate 2 x 3 = 6, then 5 + 6 = 11.

Q18 **If you divide 56 by 7, what is the result?**

A. 6
B. 7
C. 8
D. 9

Correct Answer: C. 8

Explanation: 56 divided by 7 equals 8 because 7 x 8 = 56.

Q19 **What comes next in this pattern: 1, 4, 9, 16, 25, _____?**

A. 30
B. 36
C. 40
D. 50

Correct Answer: B. 36

Explanation: These are square numbers: 1=1^2, 4=2^2, 9=3^2, 16=4^2, 25=5^2. The next square is 6^2 = 36.

Q20 **If a robot turns right 90 degrees and then turns left 180 degrees, which direction is it facing now?**

A. Left
B. Right
C. Backward
D. Forward

Correct Answer: A. Left

Explanation: Starting from forward, a right turn makes the robot face right. Turning left 180 degrees from there makes it face the opposite direction, which is left from the original starting direction.

Section 3: Simple Game Creation

Direction: Scratch sprites, costumes, movement, loops, broadcasts, backdrops, arrow-key control, and animation behavior.

Q21 **In Scratch, which block is used to change a sprite's position?**

A. Change costume
B. **Go to block**
C. Say block
D. Play sound

Correct Answer: B. Go to block

Explanation: The Go to block moves a sprite to a specific position on the stage. Costume, say, and sound blocks do not primarily change position.

Q22 **What is a sprite's costume in Scratch?**

A. Its movement
B. Its background
C. **Its appearance**
D. Its sound

Correct Answer: C. Its appearance

Explanation: A costume is the visible look or appearance of a sprite. A sprite can have multiple costumes to create animation effects.

Q23 **What would you use the forever loop for in a game?**

A. **To repeat actions until the program ends**
B. To stop a sprite from moving
C. To create new sprites
D. To change a sprite's costume

Correct Answer: A. To repeat actions until the program ends

Explanation: A forever loop keeps repeating the blocks inside it while the program is running. It is useful for continuous movement, checking keys, or updating game behavior.

Q24 **Which block can be used to make a sprite jump in Scratch?**

A. Move block
B. Change size block
C. Glide block
D. **Change y position block**

Correct Answer: D. Change y position block

Explanation: The y position controls vertical movement. Changing the y position upward and then downward can create a jump effect.

Q25 **How would you make a sprite spin around in Scratch?**

A. Use the rotate block
B. Use the move block
C. Use the change costume block
D. **Use the turn block**

Correct Answer: D. Use the turn block

Explanation: Scratch uses turn clockwise and turn counterclockwise blocks to rotate a sprite. The move block changes position, not rotation.

Q26 **What is the purpose of the broadcast block in Scratch?**

A. **To send a message to another sprite**
B. To repeat an action
C. To control the size of a sprite
D. To change the backdrop

Correct Answer: A. To send a message to another sprite

Explanation: Broadcast sends a message that other sprites or the stage can receive. It helps coordinate actions in games and animations.

Q27 **What is a simple way to create a character that moves with arrow keys in a Scratch game?**

A. Use the when flag clicked block
B. **Use if statements to check key presses**
C. Use the when space pressed block
D. Use the repeat block

Correct Answer: B. Use if statements to check key presses

Explanation: A common game-control pattern is to continuously check whether arrow keys are pressed and then change the sprite's x or y position accordingly.

Q28 **What does the glide block do in Scratch?**

A. Makes a sprite jump
B. **Moves a sprite to a specific point gradually**
C. Changes the color of the sprite
D. Makes the sprite spin

Correct Answer: B. Moves a sprite to a specific point gradually

Explanation: The glide block smoothly moves a sprite to a chosen x-y position over a specified amount of time.

Q29 **Which block is used to change the backdrop in a Scratch project?**

A. **Switch backdrop block**
B. Change backdrop block
C. Change costume block
D. Go to backdrop block

Correct Answer: A. Switch backdrop block

Explanation: Scratch uses a switch backdrop block to change the stage background. Costumes change the appearance of sprites, not the stage backdrop.

Q30 **In a simple animation, what type of block would you use to make a sprite disappear and reappear?**

A. Show and hide blocks
B. Change costume block
C. Glide block
D. Say block

Correct Answer: A. Show and hide blocks

Explanation: The hide block makes a sprite disappear and the show block makes it appear again. These are useful for animation and game effects.

Section 4: Achievers Section

Direction: Algorithms, Python output tracing, floor division, recursion, variables, game logic, and maze-solving strategy.

Q31 **Which algorithm is used to find the greatest common divisor (GCD) of two numbers?**

A. Bubble sort
B. Euclidean algorithm
C. Quick sort
D. Merge sort

Correct Answer: B. Euclidean algorithm

Explanation: The Euclidean algorithm repeatedly uses division remainders to find the greatest common divisor of two numbers. The other options are sorting algorithms.

Q32 **In a program, if you have a condition like if x > 10, what happens if the condition is true?**

A. The code inside the if block will execute
B. The program will skip to the next line
C. The code inside the else block will execute
D. Nothing happens

Correct Answer: A. The code inside the if block will execute

Explanation: When the condition x > 10 evaluates to true, the statements inside the if block are executed.

Q33 **What is the output of the following Python code?**

```
print(2 * 3 + 4)
```

A. 10
B. 12
C. 14
D. 16

Correct Answer: A. 10

Explanation: The expression is print(2 * 3 + 4). Multiplication happens first: 2 x 3 = 6, then 6 + 4 = 10. Therefore the output is 10.

Q34 **What is the result of 5 // 2 in Python?**

A. 2.5
B. 2
C. 3
D. 1

Correct Answer: B. 2

Explanation: In Python, // is floor division. It divides and removes the fractional part, so 5 // 2 gives 2.

Q35 **Which of the following sorting algorithms is usually the fastest for large datasets among the given choices?**

A. Bubble sort
B. Selection sort
C. Quick sort
D. Insertion sort

Correct Answer: C. Quick sort

Explanation: Quick sort is commonly much faster on large datasets than bubble, selection, and insertion sort in typical cases. The wording is refined to 'usually' because algorithm performance can depend on input and implementation.

Q36 **Which of these is an example of a recursive function?**

A. A function that calls itself
B. A function that loops over an array
C. A function that returns a value
D. A function that prints something

Correct Answer: A. A function that calls itself

Explanation: A recursive function is a function that calls itself to solve a smaller version of the same problem.

Q37 **What is the output of this Python code?**

```
for i in range(3):
    print(i)
```

A. 0 1 2 3

B. **0 1 2**
C. 1 2 3
D. 3 2 1

Correct Answer: B. 0 1 2

Explanation: range(3) produces 0, 1, and 2. The loop prints each value, so the output is 0 1 2.

Q38 **Which of these statements is true about variables in Python?**

A. Variables cannot be changed once defined
B. **Variables are case-sensitive**
C. Variables can only hold integer values
D. Variables need to be declared before use

Correct Answer: B. Variables are case-sensitive

Explanation: Python variable names are case-sensitive, so score and Score are treated as different names. Variables can be reassigned and can hold many kinds of values.

Q39 **In a game, if the sprite moves left when the left arrow key is pressed and right when the right arrow key is pressed, which block is essential?**

A. Forever loop
B. **If-else block**
C. Glide block
D. Broadcast block

Correct Answer: B. If-else block

Explanation: The sprite must check conditions such as 'if left arrow key pressed' and 'if right arrow key pressed'. This makes an if or if-else style block essential for key-based control.

Q40 **What is the best algorithm to solve the problem of finding the shortest path in an unweighted maze?**

A. Merge sort
B. **Breadth-first search**
C. Quick sort
D. Selection sort

Correct Answer: B. Breadth-first search

Explanation: Breadth-first search explores nearby positions first, level by level. In an unweighted maze or grid, it is a standard way to find the shortest path.

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Complete Answer Key

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	A	C	B	B	C	B	B	B	B
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
B	B	A	B	C	B	A	C	B	A
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
B	C	A	D	D	A	B	B	A	A
Q31	**Q32**	**Q33**	**Q34**	**Q35**	**Q36**	**Q37**	**Q38**	**Q39**	**Q40**
B	A	A	B	C	A	B	B	B	B

Answer and Concept Summary

Q.No.	Answer	Core Concept	Skill Checked
1	**A. JavaScript**	Coding fundamentals	Recall + application
2	**A. It runs a block of code only if a condition is true**	Coding fundamentals	Recall + application
3	**C. If loop**	Coding fundamentals	Recall + application
4	**B. Repeats a set of instructions**	Coding fundamentals	Recall + application
5	**B. variable_name**	Coding fundamentals	Recall + application
6	**C. It displays a message on the screen**	Coding fundamentals	Recall + application
7	**B. The program produces a syntax error**	Coding fundamentals	Recall + application
8	**B. Looks block**	Coding fundamentals	Recall + application
9	**B. It executes code if the 'if' condition is false**	Coding fundamentals	Recall + application
10	**B. ==**	Coding fundamentals	Recall + application
11	**B. 80**	Logic and numerical reasoning	Recall + application
12	**B. False**	Logic and numerical reasoning	Recall + application
13	**A. 4321**	Logic and numerical reasoning	Recall + application
14	**B. [1, 3, 5, 7]**	Logic and numerical reasoning	Recall + application
15	**C. 9**	Logic and numerical reasoning	Recall + application
16	**B. 11**	Logic and numerical reasoning	Recall + application
17	**A. 11**	Logic and numerical reasoning	Recall + application
18	**C. 8**	Logic and numerical reasoning	Recall + application

19	**B. 36**	Logic and numerical reasoning	Recall + application
20	**A. Left**	Logic and numerical reasoning	Recall + application
21	**B. Go to block**	Scratch game creation	Recall + application
22	**C. Its appearance**	Scratch game creation	Recall + application
23	**A. To repeat actions until the program ends**	Scratch game creation	Recall + application
24	**D. Change y position block**	Scratch game creation	Recall + application
25	**D. Use the turn block**	Scratch game creation	Recall + application
26	**A. To send a message to another sprite**	Scratch game creation	Recall + application
27	**B. Use if statements to check key presses**	Scratch game creation	Recall + application
28	**B. Moves a sprite to a specific point gradually**	Scratch game creation	Recall + application
29	**A. Switch backdrop block**	Scratch game creation	Recall + application
30	**A. Show and hide blocks**	Scratch game creation	Recall + application
31	**B. Euclidean algorithm**	Algorithms and Python tracing	Higher-order application
32	**A. The code inside the if block will execute**	Algorithms and Python tracing	Higher-order application
33	**A. 10**	Algorithms and Python tracing	Higher-order application
34	**B. 2**	Algorithms and Python tracing	Higher-order application
35	**C. Quick sort**	Algorithms and Python tracing	Higher-order application
36	**A. A function that calls itself**	Algorithms and Python tracing	Higher-order application
37	**B. 0 1 2**	Algorithms and Python tracing	Higher-order application
38	**B. Variables are case-sensitive**	Algorithms and Python tracing	Higher-order application
39	**B. If-else block**	Algorithms and Python tracing	Higher-order application
40	**B. Breadth-first search**	Algorithms and Python tracing	Higher-order application

Quick Revision Notes

Python basics: print() displays output; indentation and punctuation matter; unclosed parentheses create syntax errors.

Operators: Use == for equality checking and // for floor division in Python.

Logic: AND is true only when both conditions are true; sequence patterns often use doubling, addition, or square numbers.

Scratch: Sprites use Looks blocks for appearance, Motion blocks for movement, Control blocks for loops, and Events blocks for broadcasts.

Algorithms: Euclidean algorithm finds GCD; breadth-first search is useful for shortest paths in unweighted mazes.