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CLASS 11 | COMPUTER SCIENCE & ENTREPRENEURSHIP

CHAPTER 2: PYTHON PROGRAMMING

EXAM-FOCUSED NOTES, MCQs & PRACTICE TEST

Punjab Board (PECTAA) • Exam preparation 2027
Textbook pp. 20–40 • Classroom study edition

Source and examination status

Textbook source: PECTAA Class 11, Unit 2, Python Programming, textbook pages 20–40. The textbook exercise is on pages 39–40. The 2027 PECTAA ALP excludes sections 2.8–2.10, exercise MCQ 6, short questions 5 and 8, and long question 1(a,c). Excluded sections appear in a supplementary subsection and are not recommended as 2027 examination questions.

Past paper verification: This guide contains original board-style practice questions and textbook exercise coverage. No specific question is claimed to have appeared in a particular BISE board/year because authenticated matching examination scripts were not available for verification. The official 2027 model-paper material is not labeled as a historical past paper.

Official syllabus source: PECTAA Notification PECTAA/C&C Unit/2026/1239 (6 November 2026), https://cti.ac.pk/files/pectaa-smart-syllabus-grade-11-2026-2027.pdf

1. Chapter overview and importance

Section	Textbook pages	Priority (estimated)	2027 ALP
2.1 Introduction to Python Programming	20–21	★★	Included
2.2 Basic Python Syntax and Structure	21–23	★★★	Included
2.3 Operators and Expressions	23–26	★★★	Included
2.4 Control Structures	26–28	★★★	Included
2.5 Functions, Modules and Libraries	28–30	★★	Included
2.6 Built-in Data Structures	31–34	★★★	Included
2.7 Modular Programming in Python	34–35	★★	Included
2.8 Object-Oriented Programming (Supplementary — Excluded in 2027)	35–36	★	Excluded — supplementary
2.9 Advanced Python Concepts (Supplementary — Excluded in 2027)	36–37	★	Excluded — supplementary
2.10 Testing and Debugging (Supplementary — Excluded in 2027)	38	★	Excluded — supplementary

Priority stars represent teaching judgment about textbook centrality and exam preparation, not verified historical frequency.

2. Topic-wise important MCQs (100 questions)

2.1 Introduction to Python Programming

Q1. What is Python primarily classified as?

A) A high-level programming language ✓
B) A database server
C) A hardware device
D) An operating system

Answer: A | Importance: ★★ (conceptual)

Explanation: Correct concept: A high-level programming language. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q2. Which step converts instructions into a form a computer can execute?

A) Compile/interpret ✓
B) Name a file
C) Draw a diagram
D) Print output

Answer: A | Importance: ★★ (conceptual)

Explanation: Correct concept: Compile/interpret. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q3. Which step comes after running a program in the textbook programming basics sequence?

A) Installing RAM
B) Typing a filename
C) Output ✓
D) Writing code

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: Output. This is the correct concept or tool according to the textbook introduction to Python and the basic programming

workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q4. Which tool is needed to write and execute Python programs?

A) A Python interpreter ✓
B) A spreadsheet printer
C) A video editor
D) A web camera

Answer: A | Importance: ★★ (conceptual)

Explanation: Correct concept: A Python interpreter. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q5. Which website is identified for downloading Python?

A) github.io
B) python.org ✓
C) wikipedia.org
D) example.com

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: python.org. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q6. Why is Python suitable for beginners?

A) It needs machine code from users
B) It has straightforward syntax ✓
C) It only runs on phones
D) It cannot use variables

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: It has straightforward syntax. This is the correct concept or tool according to the textbook introduction to Python and the basic

programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q7. Which is a standard Python file extension?

A) .docx
B) .exe
C) .py ✓
D) .jpg

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: .py. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q8. What is meant by execution of a program?

A) Deleting source code
B) Designing a logo
C) Checking a monitor
D) Running code to perform its task ✓

Answer: D | Importance: ★★ (conceptual)

Explanation: Correct concept: Running code to perform its task. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q9. Which application field is mentioned for Python?

A) Only mechanical drawing
B) Only video playback
C) Data analysis ✓
D) Only bookbinding

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: Data analysis. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

Q10. What does an IDE provide?

A) Only electricity
B) Tools to write and run code ✓
C) Only a keyboard
D) Only a printer

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: Tools to write and run code. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.1 Introduction to Python Programming.

2.2 Basic Python Syntax and Structure

Q11. Which function displays output in Python?

A) print() ✓
B) input()
C) int()
D) len()

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: print(). This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q12. Which character begins a single-line comment?

A) &
B) # ✓
C) @
D) $

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: #. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q13. Which is a valid Python variable name?

A) 2students
B) student-age
C) class
D) student_age ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: student_age. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q14. Which data type stores True or False?

A) float
B) list
C) bool ✓
D) str

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: bool. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q15. What does the input() function normally return?

A) A float always
B) A string ✓
C) A boolean always
D) An integer always

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: A string. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q16. Which function converts a numeric string to an integer?

A) input()
B) str()
C) int() ✓
D) print()

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: int(). This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q17. Which value is a floating-point number?

A) 12
B) True
C) 3.14 ✓
D) "book"

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: 3.14. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q18. Which statement assigns 15 to age?

A) age = 15 ✓
B) 15 = age
C) age == 15
D) age => 15

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: age = 15. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q19. Why are meaningful variable names recommended?

A) They improve code readability ✓
B) They change Python syntax
C) They eliminate testing
D) They increase CPU speed directly

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: They improve code readability. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

Q20. Which symbol encloses a typical string literal?

A) Angle brackets
B) Quotation marks ✓
C) Curly braces only
D) Percent signs

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: Quotation marks. This follows Python syntax, naming rules, data types, or input/output behavior. اردو وضاحت: یہ جواب پائتھن کے قواعد، متغیرات، ڈیٹا ٹائپس یا ان پٹ اور آؤٹ پٹ کے اصول کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.2 Basic Python Syntax and Structure.

2.3 Operators and Expressions

Q21. What is the result of 10 // 3?

A) 3 ✓
B) 1
C) 3.333
D) 30

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: 3. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q22. What is the result of 10 % 3?

A) 0
B) 1 ✓
C) 10
D) 3

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: 1. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q23. What does ** represent in Python?

A) Assignment
B) Multiplication only
C) Floor division
D) Exponentiation ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: Exponentiation. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q24. Which operator checks equality?

A) == ✓
B) !=
C) =
D) >=

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: ==. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q25. What does += do?

A) Divides only
B) Compares equality
C) Joins statements
D) Adds and assigns ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: Adds and assigns. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q26. What is the result of 2 + 3 * 4?

A) 9
B) 24
C) 14 ✓
D) 20

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: 14. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q27. Which logical operator is True only when both conditions are True?

A) or
B) not
C) and ✓
D) in

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: and. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q28. What is the value of not True?

A) False ✓
B) 1.0
C) True
D) None

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: False. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q29. Which operator has higher precedence than addition?

A) Multiplication (*) ✓
B) Assignment (=)
C) Logical or
D) Comparison (==)

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: Multiplication (*). Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

Q30. Which is an expression?

A) # comment only
B) a + b ✓
C) def without a body
D) import without a module

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: a + b. Apply the stated Python operator and its precedence or Boolean meaning to determine the result. اردو وضاحت: درست جواب حاصل کرنے کے لیے متعلقہ آپریٹر اور اس کی ترجیح یا منطقی قاعدہ استعمال کیا جاتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.3 Operators and Expressions.

2.4 Control Structures

Q31. Which statement executes a block only when a condition is True?

A) import
B) def
C) for
D) if ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: if. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q32. Which keyword provides the alternative branch of an if statement?

A) from
B) break
C) pass
D) else ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: else. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q33. Which keyword checks additional conditions after if?

A) while
B) return
C) print
D) elif ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: elif. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q34. What is the main purpose of a loop?

A) Store images
B) Load an operating system
C) Name variables
D) Repeat a block of instructions ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: Repeat a block of instructions. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q35. Which loop checks its condition before each iteration?

A) def
B) while ✓
C) import
D) class

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: while. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q36. Which loop directly iterates over elements of a list?

A) elif
B) if
C) for ✓
D) try

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: for. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q37. What values are generated by range(3)?

A) 1, 2, 3
B) 3 only
C) 0, 1, 2 ✓
D) 0, 1, 2, 3

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: 0, 1, 2. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q38. What is the output of list(range(2, 6, 2))?

A) [1, 3, 5]
B) [2, 4, 6]
C) [2, 4] ✓
D) [2, 3, 4, 5]

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: [2, 4]. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q39. Which punctuation appears after an if condition?

A) Full stop (.)
B) Semicolon (;)
C) Colon (:) ✓
D) Question mark (?)

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: Colon (:). Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

Q40. What defines code blocks in Python?

A) Different file extensions
B) Capital letters
C) Indentation ✓
D) Line numbers

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: Indentation. Selection and repetition statements control when and how often code executes. اردو وضاحت: شرطی بیانات اور لوپس یہ طے کرتے ہیں کہ کوڈ کب اور کتنی بار چلے گا۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.4 Control Structures.

2.5 Functions, Modules and Libraries

Q41. Which keyword defines a function in Python?

A) func
B) def ✓
C) method
D) make

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: def. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q42. What is the purpose of a function?

A) Change file extension
B) Group reusable instructions ✓
C) Always print text
D) Delete variables

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: Group reusable instructions. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q43. What is a parameter?

A) A compiler
B) A syntax error
C) A variable in a function definition ✓
D) A file extension

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: A variable in a function definition. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q44. Which keyword sends a value back from a function?

A) print
B) import
C) input
D) return ✓

Answer: D | Importance: ★★ (conceptual)

Explanation: Correct concept: return. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q45. What is a default parameter?

A) A global error
B) An empty program
C) A parameter with a predefined value ✓
D) A required file

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: A parameter with a predefined value. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q46. Which keyword imports a module?

A) include
B) attach
C) import ✓
D) require

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: import. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q47. Which Python module is used for random number generation?

A) mathtext
B) random ✓
C) statistics
D) datetime

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: random. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q48. Which library example is used for current date and time?

A) turtle3d
B) random
C) htmlprint
D) datetime ✓

Answer: D | Importance: ★★ (conceptual)

Explanation: Correct concept: datetime. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q49. What is a Python package?

A) A collection of modules organized together ✓
B) A loop
C) A data type
D) A keyboard shortcut

Answer: A | Importance: ★★ (conceptual)

Explanation: Correct concept: A collection of modules organized together. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

Q50. Why use modules and libraries?

A) Replace the interpreter
B) Reuse existing functionality ✓
C) Disable debugging
D) Avoid all code

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: Reuse existing functionality. Functions, parameters, returns, and imported modules enable reusable code. اردو وضاحت: فنکشن، پیرامیٹر، ریٹرن اور ماڈیول کوڈ دوبارہ استعمال کرنے میں مدد دیتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.5 Functions, Modules and Libraries.

2.6 Built-in Data Structures

Q51. Which structure is mutable and uses square brackets?

A) int
B) str
C) list ✓
D) tuple

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: list. Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q52. Which expression creates a tuple?

A) [1, 2, 3]
B) "1,2,3"
C) {1: 2}
D) (1, 2, 3) ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: (1, 2, 3). Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q53. At what index does Python sequence indexing begin?

A) -1
B) 10
C) 0 ✓
D) 1

Answer: C | Importance: ★★★ (conceptual)

Explanation: Correct concept: 0. Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q54. Which list method adds an item at the end?

A) append() ✓
B) sort()
C) reverse()
D) remove()

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: append(). Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q55. Which list method removes the first matching item?

A) remove() ✓
B) index()
C) copy()
D) append()

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: remove(). Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q56. What does fruits[-1] access?

A) The middle element always
B) The last element ✓
C) The first element
D) The list length

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: The last element. Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q57. What does a slice list[1:3] select?

A) Elements at indexes 1 and 2 ✓
B) Elements at indexes 1, 2, 3
C) Only index 3
D) Elements before index 1

Answer: A | Importance: ★★★ (conceptual)

Explanation: Correct concept: Elements at indexes 1 and 2. Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q58. Which list method arranges items in order?

A) count()
B) sort() ✓
C) clear()
D) append()

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: sort(). Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q59. Which property distinguishes tuples from lists?

A) Tuples use append()
B) Tuples are immutable ✓
C) Tuples must hold numbers
D) Tuples have no indexes

Answer: B | Importance: ★★★ (conceptual)

Explanation: Correct concept: Tuples are immutable. Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

Q60. What does len([4, 5, 6]) produce?

A) 2
B) 4
C) 15
D) 3 ✓

Answer: D | Importance: ★★★ (conceptual)

Explanation: Correct concept: 3. Lists and tuples are ordered sequences; indexing begins at zero and slicing excludes its stop index. اردو وضاحت: لسٹ اور ٹپل ترتیب وار ڈیٹا رکھتے ہیں؛ انڈیکس صفر سے شروع ہوتا ہے اور سلائس کی آخری حد شامل نہیں ہوتی۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.6 Built-in Data Structures.

2.7 Modular Programming in Python

Q61. What is modular programming?

A) Changing a program into hardware
B) Using no functions
C) Dividing software into reusable modules ✓
D) Writing all code in one line

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: Dividing software into reusable modules. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q62. What does __name__ == "__main__" check?

A) Whether syntax is correct
B) Whether Python is installed
C) Whether a list is empty
D) Whether a file runs as the main script ✓

Answer: D | Importance: ★★ (conceptual)

Explanation: Correct concept: Whether a file runs as the main script. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q63. What happens to guarded main code when a module is imported?

A) It converts to a class
B) It always executes twice
C) It deletes the module
D) It does not automatically execute ✓

Answer: D | Importance: ★★ (conceptual)

Explanation: Correct concept: It does not automatically execute. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q64. Which file extension normally stores a Python module?

A) .xlsx
B) .py ✓
C) .pdf
D) .png

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: .py. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q65. What is a benefit of modular code?

A) No need for functions
B) No need for testing
C) Guaranteed absence of bugs
D) Easier maintenance ✓

Answer: D | Importance: ★★ (conceptual)

Explanation: Correct concept: Easier maintenance. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q66. Which statement imports a module named calculator?

A) print calculator
B) include calculator
C) import calculator ✓
D) module calculator

Answer: C | Importance: ★★ (conceptual)

Explanation: Correct concept: import calculator. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q67. How can a function add() from calculator be invoked after import calculator?

A) calculator.add(2, 3) ✓
B) print.import(2, 3)
C) add.calculator(2, 3)
D) calculator->add(2, 3)

Answer: A | Importance: ★★ (conceptual)

Explanation: Correct concept: calculator.add(2, 3). Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q68. Which concept supports reuse across programs?

A) Repeated manual copying only
B) Modules ✓
C) Hard-coded inputs only
D) Avoiding functions

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: Modules. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q69. Which function name is conventionally used as an entry point?

A) launch_os()
B) main() ✓
C) start_python()
D) init_system()

Answer: B | Importance: ★★ (conceptual)

Explanation: Correct concept: main(). Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

Q70. Which design goal does modular programming support?

A) Organization and readability ✓
B) Removing imports
C) Forcing one giant function
D) Replacing data structures

Answer: A | Importance: ★★ (conceptual)

Explanation: Correct concept: Organization and readability. Modules separate reusable functionality; the main guard controls direct script execution. اردو وضاحت: ماڈیولز پروگرام کو منظم کرتے ہیں اور مین گارڈ براہِ راست چلانے والے کوڈ کو کنٹرول کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.7 Modular Programming in Python.

2.8 Object-Oriented Programming (Supplementary — Excluded in 2027)

SUPPLEMENTARY ONLY — This section is excluded from the verified 2027 examination syllabus.

Q71. What is a class in Python?

A) A blueprint for objects ✓
B) A numeric operator
C) A file mode
D) A loop counter

Answer: A | Importance: ★ (supplementary)

Explanation: Correct concept: A blueprint for objects. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q72. What is an object?

A) A type of comment
B) A compiler
C) An instance of a class ✓
D) A syntax keyword

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: An instance of a class. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q73. Which method commonly initializes instance attributes?

A) __main__()
B) __name__()
C) __file__()
D) __init__() ✓

Answer: D | Importance: ★ (supplementary)

Explanation: Correct concept: __init__(). Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q74. What does self refer to in instance methods?

A) The file name
B) The current instance ✓
C) The operating system
D) Every class in Python

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: The current instance. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q75. Which keyword defines a class?

A) class ✓
B) define
C) module
D) object

Answer: A | Importance: ★ (supplementary)

Explanation: Correct concept: class. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q76. What is an attribute?

A) Data associated with an object ✓
B) A Python extension
C) A loop condition only
D) A comment

Answer: A | Importance: ★ (supplementary)

Explanation: Correct concept: Data associated with an object. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q77. What is a method?

A) An external monitor
B) A function defined in a class ✓
C) A string delimiter
D) A spreadsheet cell

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: A function defined in a class. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q78. What does ToyCar('red', 'small', 4) create when ToyCar is a valid class?

A) A new Python keyword
B) A loop
C) A ToyCar instance ✓
D) A package folder

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: A ToyCar instance. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q79. Which is a benefit of using classes?

A) Organizing related data and behavior ✓
B) Preventing all runtime errors
C) Removing indentation
D) Making strings immutable

Answer: A | Importance: ★ (supplementary)

Explanation: Correct concept: Organizing related data and behavior. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

Q80. How can multiple objects relate to one class?

A) A class cannot make objects
B) Every object changes class name
C) Only one object is allowed
D) They can be separate instances of it ✓

Answer: D | Importance: ★ (supplementary)

Explanation: Correct concept: They can be separate instances of it. Classes are blueprints and objects are instances with attributes and methods. اردو وضاحت: کلاس ایک نمونہ ہے جبکہ آبجیکٹ اس کی مثال ہوتی ہے جس میں خصوصیات اور طریقے ہوتے ہیں۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.8 Object-Oriented Programming.

2.9 Advanced Python Concepts (Supplementary — Excluded in 2027)

SUPPLEMENTARY ONLY — This section is excluded from the verified 2027 examination syllabus.

Q81. Which construct is used to handle exceptions?

A) def/return
B) try/except ✓
C) if/else only
D) for/range

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: try/except. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q82. Which exception occurs for division by zero?

A) NameError always
B) ZeroDivisionError ✓
C) FileNotFoundError
D) IndexError always

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: ZeroDivisionError. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q83. What is the purpose of the except block?

A) Import packages
B) Define a class
C) Create a tuple
D) Handle a matching exception ✓

Answer: D | Importance: ★ (supplementary)

Explanation: Correct concept: Handle a matching exception. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q84. Which mode opens a file for reading?

A) x+
B) a
C) r ✓
D) w

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: r. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q85. Which mode opens a file for overwriting and writing?

A) rb
B) r
C) a
D) w ✓

Answer: D | Importance: ★ (supplementary)

Explanation: Correct concept: w. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q86. Which mode adds new text to the end of a file?

A) rb
B) w
C) a ✓
D) r

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: a. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q87. Why is with open(...) useful?

A) It always deletes the file
B) It closes the file automatically after the block ✓
C) It removes all exceptions
D) It converts text to numbers

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: It closes the file automatically after the block. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q88. Which method writes text to a file?

A) read()
B) write() ✓
C) input()
D) close_only()

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: write(). Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q89. Which method reads all contents of a text file?

A) append()
B) read() ✓
C) range()
D) write()

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: read(). Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

Q90. What is a purpose of exception handling?

A) Convert code into machine hardware
B) Increase monitor brightness
C) Prevent abrupt failure from certain runtime errors ✓
D) Prevent every logical bug

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: Prevent abrupt failure from certain runtime errors. Exception handling manages runtime errors, while file modes control reading, writing, or appending. اردو وضاحت: ایکسپشن ہینڈلنگ چلتے پروگرام کی غلطیوں کو سنبھالتی ہے اور فائل موڈ پڑھنے یا لکھنے کا تعین کرتا ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.9 Advanced Python Concepts.

2.10 Testing and Debugging (Supplementary — Excluded in 2027)

SUPPLEMENTARY ONLY — This section is excluded from the verified 2027 examination syllabus.

Q91. What is software testing?

A) Checking whether code behaves as expected ✓
B) Installing an IDE
C) Only writing comments
D) Changing a font

Answer: A | Importance: ★ (supplementary)

Explanation: Correct concept: Checking whether code behaves as expected. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q92. What is debugging?

A) Deleting all code
B) Finding and fixing program errors ✓
C) Only printing results
D) Making a flowchart

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: Finding and fixing program errors. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q93. Which test checks a single function in isolation?

A) Acceptance testing

B) Stress-only testing
C) System testing
D) Unit testing ✓

Answer: D | Importance: ★ (supplementary)

Explanation: Correct concept: Unit testing. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q94. Which test examines interactions between modules?

A) Unit testing only
B) Integration testing ✓
C) Syntax highlighting
D) Code formatting

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: Integration testing. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q95. Which test checks the complete application?

A) A keyboard test
B) Only variable naming
C) Functional/system testing ✓
D) Only code comments

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: Functional/system testing. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q96. Which test guards against reintroduced bugs?

A) Color testing

B) Typing testing
C) Regression testing ✓
D) Manual copying

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: Regression testing. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q97. How can print() help debugging?

A) Compile code to binary
B) Automatically fix every error
C) Show intermediate variable values ✓
D) Replace all tests

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: Show intermediate variable values. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q98. What is a breakpoint used for?

A) Opening websites
B) Pausing execution to inspect state ✓
C) Creating a module
D) Ending every loop forever

Answer: B | Importance: ★ (supplementary)

Explanation: Correct concept: Pausing execution to inspect state. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q99. Which tool helps inspect variable values step by step?

A) Printer
B) Spreadsheet chart
C) Debugger ✓
D) Browser cache

Answer: C | Importance: ★ (supplementary)

Explanation: Correct concept: Debugger. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

Q100. What does a Python traceback help identify?

A) The computer price
B) The Wi-Fi speed
C) The textbook page count
D) Where and why an exception occurred ✓

Answer: D | Importance: ★ (supplementary)

Explanation: Correct concept: Where and why an exception occurred. This is the correct concept or tool according to the textbook introduction to Python and the basic programming workflow. اردو وضاحت: یہ جواب پائتھن کے تعارف اور پروگرام بنانے کے بنیادی مراحل کے مطابق ہے۔

Past-paper status: Not verified; original board-style practice question. Textbook topic: 2.10 Testing and Debugging.

3. Easy topic-wise notes, examples and graphics

2.1 Introduction to Python Programming

Introduction: Python is a high-level, general-purpose programming language. Its simple syntax helps beginners understand algorithms and programming logic. The textbook introduces a basic cycle: write code, compile/interpret, execute, and examine output.

Key definition / board-ready facts: A program is a set of instructions designed to complete a task. An interpreter executes Python code through the Python runtime.

Real-life applications: Write a greeting program; create a marks calculator; build a simple data-analysis script.

Worked Python example:

```
print("Welcome to Raytech Institute")
```

Visual learning flow:

Writing code	Compile/Interpret	Execute	Output

Common mistake / exam tip: Do not confuse writing a program with executing it. Installing an IDE alone does not guarantee that a Python interpreter is configured.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.2 Basic Python Syntax and Structure

Introduction: Python uses statements, comments, variables, data types, and input/output functions. A variable stores a value that can change. Common types in this chapter are int, float, str and bool.

Key definition / board-ready facts: Use meaningful variable names beginning with a letter or underscore. Python identifiers are case-sensitive; input() returns text unless converted.

Real-life applications: Ask a student for a name; calculate a person's age next year; convert a height string to float.

Worked Python example:

```
name = input("Enter name: ")
age = int(input("Enter age: "))
print(name, age + 1)
```

Visual learning flow:

User input	conversion	storage	output

Common mistake / exam tip: Do not attempt to add a string returned by input() directly to an integer. Do not start an identifier with a digit.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.3 Operators and Expressions

Introduction: Operators act on values and variables. Arithmetic operators include +, -, *, /, //, %, **. Comparison operators return Boolean values, while and/or/not combine conditions. Precedence determines evaluation order.

Key definition / board-ready facts: Floor division // gives a floor quotient for numeric operands, modulo % gives the remainder and ** calculates powers. Use parentheses to communicate intent.

Real-life applications: Compute total shopping cost; calculate remainder after dividing students into groups; decide if age meets an entry condition.

Worked Python example:

```
a, b = 10, 3
print(a // b) # 3
print(a % b) # 1
print(2 + 3 * 4) # 14
```

Visual learning flow:

Operands + operators	expression	evaluated result

Common mistake / exam tip: = assigns; == compares equality. Do not confuse / with //, or % with percentage calculation.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.4 Control Structures

Introduction: Selection and repetition control the execution path of a program. if/elif/else run branches according to conditions. while repeats until its condition becomes false, and for iterates through a sequence or range.

Key definition / board-ready facts: Python uses indentation to group statements. range(stop) counts from zero up to, but not including, stop.

Real-life applications: Check positive/negative numbers; display names in a list; print multiplication tables.

Worked Python example:

```
number = int(input("Number: "))
if number > 0:
print("Positive")
elif number < 0:
print("Negative")
else:
print("Zero")
```

Visual learning flow:

Condition	True branch / False branch	next statement

Common mistake / exam tip: The endpoint in range() is excluded. A while loop may run indefinitely if its condition never becomes false.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.5 Functions, Modules and Libraries

Introduction: Functions package reusable operations. Define functions with def; parameters accept inputs and return sends a result back to the caller. Modules are Python files with reusable code and packages organize modules.

Key definition / board-ready facts: A parameter is declared in a function header; an argument is supplied in a call. Default parameters provide fallback values.

Real-life applications: Write a reusable greeting; calculate the sum of two numbers; use random and datetime modules.

Worked Python example:

```
def add(a, b):
return a + b
print(add(6, 4)) # 10
import random
print(random.randint(1, 10))
```

Visual learning flow:

Input arguments	function body	return value

Common mistake / exam tip: print() displays a result while return passes a value to the caller; they are not interchangeable.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.6 Built-in Data Structures

Introduction: A list is a mutable ordered sequence and a tuple is an immutable ordered sequence. Both support positive/negative indexing and slicing. List methods include append(), remove(), sort(), and reverse().

Key definition / board-ready facts: Indexing begins at zero; a negative index counts from the end. Slice stop is exclusive.

Real-life applications: Store student names; maintain book titles; store fixed coordinate pairs in a tuple.

Worked Python example:

```
books = ["Math", "Python", "English"]
books.append("Physics")
print(books[0])
print(books[1:3])
```

Visual learning flow:

Sequence	index selection or slice	selected value(s)

Common mistake / exam tip: Do not modify a tuple directly. A list slice [1:3] includes index 1 and 2, not 3.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.7 Modular Programming in Python

Introduction: Modular programming divides a large program into manageable files and functions. A module can be imported by another script. The main guard runs a block only when the file is executed directly.

Key definition / board-ready facts: The common guard is if __name__ == "__main__":. A Python module normally has the .py extension.

Real-life applications: Reuse a calculator module; separate student-mark calculations; organize utility functions.

Worked Python example:

```
def main():
print("Program starts here")

if __name__ == "__main__":
main()
```

Visual learning flow:

Modules	imported functions	main application

Common mistake / exam tip: Avoid running top-level demonstration code whenever a module is imported; use the main guard for direct-run code.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.8 Object-Oriented Programming in Python

SUPPLEMENTARY — excluded in 2027 ALP examination.

Introduction: Supplementary for 2027: Object-oriented programming organizes data and behavior through classes and objects. A class defines a blueprint and an object is an instance. The textbook uses a toy-car example.

Key definition / board-ready facts: The __init__ method initializes instance attributes. self refers to the current instance.

Real-life applications: Describe a student class; build a toy car object; represent library books as objects.

Worked Python example:

```
class ToyCar:
def __init__(self, color):
self.color = color
car = ToyCar("red")
print(car.color)
```

Visual learning flow:

Class blueprint	instance creation	attributes/methods

Common mistake / exam tip: This section is excluded from the verified 2027 ALP examination syllabus; retain for optional learning.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.9 Advanced Python Concepts

SUPPLEMENTARY — excluded in 2027 ALP examination.

Introduction: Supplementary for 2027: try/except manages certain runtime errors, and file operations read and write stored data. Common text-file modes are r, w and a.

Key definition / board-ready facts: Use with open(...) to close files safely after a block. ZeroDivisionError arises when dividing a number by zero.

Real-life applications: Read a saved report; append attendance data; handle invalid arithmetic input.

Worked Python example:

```
try:
print(10 / 0)
except ZeroDivisionError:
print("Cannot divide by zero")
```

Visual learning flow:

Potentially failing action	exception handling	safe response

Common mistake / exam tip: Opening with w overwrites existing content. This section is excluded from the 2027 ALP examination syllabus.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

2.10 Testing and Debugging in Python

SUPPLEMENTARY — excluded in 2027 ALP examination.

Introduction: Supplementary for 2027: testing checks expected behavior using sample inputs; debugging locates and corrects faults. The textbook describes unit, integration, functional and regression testing.

Key definition / board-ready facts: Use print statements, a debugger, and error messages to investigate issues; test edge cases before release.

Real-life applications: Test a calculator function; debug a broken loop; check whether a corrected bug reappears.

Worked Python example:

```
def square(n):
return n * n
assert square(4) == 16
```

Visual learning flow:

Test case	actual output	expected output	diagnosis/fix

Common mistake / exam tip: A test passing once does not prove a program is error-free. This section is excluded from the 2027 ALP examination syllabus.

Quick revision: remember the definition, syntax or rule, the worked example, the relevant operators/keywords, and the common error described above.

4. High-yield comparison tables

Feature	List	Tuple
Syntax	[1,2]	(1,2)
Change contents?	Yes (mutable)	No (immutable)
Both indexed?	Yes	Yes

Feature	for loop	while loop
Best use	Iterate over known sequence/range	Repeat while condition remains True
Control	Automatic iteration	Condition must be updated when appropriate

Feature	=	==
Meaning	Assignment	Equality comparison
Example	x = 5	x == 5

Feature	print()	return
Purpose	Displays output	Sends a result from function
Effect	Usually returns None	Can be used in subsequent calculations

5. Textbook exercise — essential revision

Textbook exercise, pages 39–40: 9 MCQs, 8 short questions and 6 numbered long questions are provided. The following are topic pointers rather than reproductions of the full exercise.

MCQ focus: installation/PATH, valid variable names, output of print(age), exponentiation, list iteration, range(), def, conditional output, combining lists. Exercise MCQ 6 (range) is specifically excluded from the 2027 examination exercise, although range() remains covered as part of the retained chapter topic.

Retained short-question prompts: comments; integer versus float; operator precedence; short-hand if-else; default parameters; modular programming. Supplementary excluded: questions 5 (range) and 8 (class vs object).

Long-question focus: expression evaluation, mathematical expressions translated into Python, variables, sign checking, and odd-number counting with while. Exercise long question 1(a,c) is excluded for the 2027 exam.

6. Important short questions with model answers

Q1. Define Python programming.

Answer: Python programming means writing instructions in the high-level Python language to solve problems and automate tasks.

Q2. Why are comments used in Python?

Answer: Comments explain code for human readers and are ignored by the interpreter; a single-line comment begins with #.

Q3. Differentiate int and float.

Answer: int stores whole numbers, e.g., 12; float stores numbers with decimal fractions, e.g., 12.5.

Q4. What is operator precedence?

Answer: It is the order in which operators are evaluated; multiplication is normally evaluated before addition.

Q5. Differentiate if and if-else.

Answer: if executes only a true-condition branch; if-else chooses between true and false branches.

Q6. Why is int(input()) useful?

Answer: input() returns a string; int() converts a valid numeric string to an integer for arithmetic.

Q7. What is a function?

Answer: A function is a reusable block of code defined with def and called when needed.

Q8. What is a default parameter?

Answer: It is a parameter assigned a default value, used when the caller omits that argument.

Q9. What is a module?

Answer: A module is a Python source file containing definitions and statements that may be imported.

Q10. Difference between list and tuple?

Answer: Lists are mutable while tuples are immutable; both are ordered sequences.

Q11. What does a slice [1:4] do?

Answer: It extracts indexes 1, 2 and 3; the stopping index 4 is excluded.

Q12. Why use modular programming?

Answer: It improves organization, code reuse, readability, and maintenance.

Q13. What is a while loop?

Answer: It repeats its body while its condition remains true; avoid infinite loops.

Q14. What does return do?

Answer: It exits a function and sends a specified value to its caller.

Q15. What is a package?

Answer: A package organizes related Python modules, supporting reuse in larger programs.

Q16. How does range(5) behave?

Answer: It produces integers 0, 1, 2, 3 and 4; the stop value is excluded.

7. Important long questions and solved answers

Long Question 1: Explain Python variables, types and input/output with examples.

Variables name values. Common types include int, float, str and bool. input() receives string data, while print() displays output. Convert when arithmetic is needed.

```
name = input("Name: ")
marks = float(input("Marks: "))
print(name, marks)
```

Long Question 2: Explain arithmetic operators, precedence and comparisons.

Arithmetic includes +, -, *, /, //, %, **. Comparisons such as ==, >, <= produce Boolean results. Parentheses clarify calculation order.

```
a = 10
b = 3
print(a // b, a % b, a ** 2)
```

Long Question 3: Explain selection statements and write a program to check the sign of a number.

An if/elif/else chain checks conditions in order and runs the first matching branch. Indentation marks the body of each branch.

```
x = int(input("Number: "))
if x > 0: print("Positive")
elif x < 0: print("Negative")
else: print("Zero")
```

Long Question 4: Explain for and while loops with examples.

for is useful for sequences and ranges; while repeats according to a Boolean condition. Each can implement counting and accumulation.

```
for n in range(1, 6):
print(n)
i = 1
while i <= 5:
print(i)
i += 1
```

Long Question 5: Explain functions, default parameters and modules.

A function is introduced by def. Parameters supply inputs; return supplies outputs. Default parameters make some arguments optional. Import reusable modules as needed.

```
def greet(name="Student"):
return "Hello " + name
print(greet())
```

8. Quick revision checklist

□ Python programming basics; Python setup and interpreter

□ Variables, naming rules, numeric/string/Boolean data

□ print(), input(), int() and float()

□ Arithmetic, comparison, assignment and logical operators

□ Expressions and correct operator precedence

□ if, elif, else and indentation

□ for, while and range()

□ Functions, return and default parameters

□ Libraries, packages and import

□ List versus tuple; indexing, slicing and list methods

□ Modular programming; main guard

9. Chapter practice test

Part A: 20 MCQs (answers deliberately unmarked)

1. What is Python primarily classified as?

A) A high-level programming language B) A database server C) A hardware device D) An operating system

2. Which step comes after running a program in the textbook programming basics sequence?

A) Installing RAM B) Typing a filename C) Output D) Writing code

3. Which function displays output in Python?

A) print() B) input() C) int() D) len()

4. Which character begins a single-line comment?

A) & B) # C) @ D) $

5. Which is a valid Python variable name?

A) 2students B) student-age C) class D) student_age

6. Which data type stores True or False?

A) float B) list C) bool D) str

7. What is the result of 10 // 3?

A) 3 B) 1 C) 3.333 D) 30

8. What is the result of 10 % 3?

A) 0 B) 1 C) 10 D) 3

9. What does ** represent in Python?

A) Assignment B) Multiplication only C) Floor division D) Exponentiation

10. What is the result of 2 + 3 * 4?

A) 9 B) 24 C) 14 D) 20

11. Which statement executes a block only when a condition is True?

A) import B) def C) for D) if

12. Which keyword provides the alternative branch of an if statement?

A) from B) break C) pass D) else

13. Which keyword checks additional conditions after if?

A) while B) return C) print D) elif

14. What is the main purpose of a loop?

A) Store images B) Load an operating system C) Name variables D) Repeat a block of instructions

15. Which loop directly iterates over elements of a list?

A) elif B) if C) for D) try

16. Which keyword defines a function in Python?

A) func B) def C) method D) make

17. Which keyword sends a value back from a function?

A) print B) import C) input D) return

18. Which expression creates a tuple?

A) [1, 2, 3] B) "1,2,3" C) {1: 2} D) (1, 2, 3)

19. What does fruits[-1] access?

A) The middle element always B) The last element C) The first element D) The list length

20. What does __name__ == "__main__" check?

A) Whether syntax is correct B) Whether Python is installed C) Whether a list is empty D) Whether a file runs as the main script

Part B: 10 short questions

1. Define Python programming.

2. Why are comments used in Python?

3. Differentiate int and float.

4. What is operator precedence?

5. Differentiate if and if-else.

6. Why is int(input()) useful?

7. What is a function?

8. What is a default parameter?

9. What is a module?

10. Difference between list and tuple?

Part C: 3 long questions

1. Explain Python variables, types and input/output with examples.

2. Explain arithmetic operators, precedence and comparisons.

3. Explain selection statements and write a program to check the sign of a number.

10. Practice-test answer key

1. A — A high-level programming language

2. C — Output

3. A — print()

4. B —

5. D — student_age

6. C — bool

7. A — 3

8. B — 1

9. D — Exponentiation

10. C — 14

11. D — if

12. D — else

13. D — elif

14. D — Repeat a block of instructions

15. C — for

16. B — def

17. D — return

18. D — (1, 2, 3)

19. B — The last element

20. D — Whether a file runs as the main script

Short and long question model answers are provided in Sections 6–7. The chapter practice test is a teacher-designed test, not a reproduced board examination.

11. Past-paper evidence and source notes

No authenticated board-year occurrence of these 100 newly drafted questions could be established from the verified sources. Board/year/frequency: Not verified. Do not infer historical repetition from importance stars.

Primary textbook: PECTAA, Computer Science and Entrepreneurship Grade 11, Unit 2, pp. 20–40 (uploaded by the user).

Exam syllabus: PECTAA notification dated 06 November 2026, No. PECTAA/C&C Unit/2026/1239, https://cti.ac.pk/files/pectaa-smart-syllabus-grade-11-2026-2027.pdf