**Exam questions:**

**Part 1. Several problems from tests (~5 problems).**

Mark the correct answer, underline and fix errors in some code.

**Part 2. Several question (~3 questions).**

Give an answer with some examples (1-2 sentence and example with a few lines of code). The list of questions is below, it may be slightly modified.

**Part 3. Write programs (~2 programs)**

Write 2 programs on paper, show the code to the lecturer. After approval check the code on a computer, correct possible errors, and show the result on the computer. The list of problems is below, it may be slightly modified.

In almost all cases, the data is obtained through input from the user, it is recommended to write the solution as a function, validate the input, add function validation (if possible), and out result using f-string to briefly describe the result.

NB! Using laptops or smartphones is allowed only on the end of 3rd part (Fixing and reviewing the code after approval.).

**Questions (can be slightly modified):**

What are Python’s built-in data types and data structures?

How do you create a string in Python?

How can you concatenate two strings in Python?

How do you access individual characters in a string?

How do you slice a string in Python?

How do you split a string into a list of substrings?

How do you access elements in a Python list?

What is List Comprehension? Give an Example.

What is a tuple in Python?

How can you access elements in a tuple in Python?

What is the difference between list and NumPy array?

Why NumPy arrays are faster than lists?

What is vector operation (like in NumPy)?

How do you open a text file in Python?

How do you open a csv file in Python?

What are binary files? What is the difference between binary and text files?

How do you write data to a text file in Python?

How do you read a text file line by line in Python?

What is a dictionary in Python?

How do you create a dictionary in Python?

How do you access values in a Python dictionary?

What is a set in Python?

How do you convert a list to a set in Python?

How do you add an element to a set in Python?

How do you check if an element is in a set in Python?

What is the difference between a Set and Dictionary?

What is the use of Assertions in Python?

How can you round float numbers?

What is range () in Python? Give an example to explain it.

Which alternatives to range() is there in NumPy?

Is indentation required in python?

Is Python a compiled language or an interpreted language?

What does the ‘#’ symbol do in Python?

What is the difference between / and // in Python?

Which ways to round numbers do you know?

What is slicing in Python?

**List of problems (can be slightly modified):**

Write a program in Python to calculate simple interest.

Write a program in Python to check if an input string is a palindrome

Write a program in Python to find the largest element in a list

Write a program in Python to reverse an input string

Write a program in Python to count the number of vowels in a string

Write a program in Python to find the sum of digits of a number from input string.

Write a range of numbers from a to b into a text file

Write a NumPy array to a file and read it again

Write a program to round list of float numbers to integers

Approximate data from 2 lists (x and y) by a line function using NumPy

Multiply 2 lists of data with and without using NumPy

Convert input temperature in Celsius to temperature in Kelvin

Write a program that takes an integer as input and outputs True if the passed value falls within the set of intervals [–23,10), (10,15], and (20,+inf), and False otherwise.

Calculate the sum of the numbers in the interval entered from the terminal