FILE 1 ASSIGNMENT

1)

If `a` is 0, it returns `b`.

Otherwise, it calls itself recursively with arguments `(b % a, a)`.

The output of the code snippet when `func(30, 75)` is called will be the GCD of 30 and 75, which is 15.

`func(30, 75)` calls `func(75 % 30, 30)` which is `func(15, 30)`.
`func(15, 30)` calls `func(30 % 15, 15)` which is `func(0, 15)`.
`func(0, 15)` returns 15.
So the output is = 15

2)
`Sorted(numbers)`: This sorts the `numbers` tuple in ascending order and assigns the result to `sorted_numbers`.
`even = lambda a: a % 2 == 0`: This defines a lambda function `even` which returns `True` if the input is even, otherwise `False`.
`Filter(even, sorted_numbers)`: This filters the elements of `sorted_numbers` using the `even` function, keeping only those for which `even` returns `True`.

`print(type(even_numbers))`: This prints the type of `even_numbers`.

Now, the output:

Since `filter()` returns an iterator, the type of `even_numbers` will be `<class 'filter'>`.

So, the output of `print(type(even_numbers))` will be: Filter.

3)
In Python, when you use `*args` in a function definition, it allows you to pass a variable number of positional arguments to the function. These arguments are then collected into a tuple.

So the answer is Tuple.

4) set1 = {14, 3, 55}
 set2 = {82, 49, 62}
set3={99,22,17}
 print(len(set1 + set2 + set3)

In Python, we can't directly concatenate sets using the `+` operator like we would with lists.

So the answer is Error

5)

In Python, the ***`raise`*** keyword is used to raise exceptions explicitly.

6)

To handle date and time computations in Python, you need to import the ***`datetime`*** module.

7)
Evaluate the exponentiation operations:

- `4**3` equals 64.
- `(7 + 5)**(1 + 1)` equals `(12)**2`, which is 144.

Perform addition:

- `64 + 144` equals 208.

Therefore, the output of the expression `4**3 + (7 + 5)**(1 + 1)` will be= 208.

8)

Strptime

9)

The Python tuple is ***immutable*** in nature.

10)
The built-in function in Python that returns a range object is ***`range().`***

The `range()` function generates a sequence of numbers, typically used to iterate over with a for loop. It can take one, two, or three arguments: `start`, `stop`, ***and*** `step`.

11)

Lambda function

12)

In summary, the `pickle` module is used for:

- Saving Python objects (serialization)
- Loading saved Python objects (deserialization)

It allows you to save the state of Python objects in a file and load them back later, preserving their structure and data.

So the answer is Both A and B.

13)

Amongst the options provided, the method used to convert Python objects for writing data in a binary file is:

B. `dump()` method.

14)

Amongst the options provided, the method used to unpickle data from a binary file is:

A. `load()` method.

15)

A text file can contain various types of textual information, including alphabets, numbers, and special symbols. Therefore, the correct option is:

D. All of the mentioned above

16)

Both options a) and b) would produce the desired output:

17)

The line of code that will create an empty dictionary named `captains` is:

d) `captains = {}`

18)

c) captains = { "Enterprise": "Picard", "Voyager": "Janeway", "Defiant": "Sisko",}

19)

The correct option to display the ship and captain names contained in the dictionary `captains` with additional context is:

b) for ship, captain in captains.items(): print(f"The {ship} is captained by {captain}.")

20)

The statement that will remove the entry for the key "Discovery" from the dictionary `captains` is:

c) `del captains["Discovery"]`