

1. Which of the following is/are true about bash?

- (a) Comments start with `//`
- (b) `$[]` is used for command substitution
- (c) If `x='hello'` then `echo 'x'` will print `x`
- (d) To use floating points, one needs to use the `bc` command

**Answer: (c), (d)**

2. Which of the following is/are true about Python?

- (a) Multiline comments start and end with double quotes
- (b) In a 1-dimensional array `a`, `len(a)` will always equal `a[-1]`
- (c) Tuples allow for duplicate members
- (d) Python uses indentation to denote blocks of code

**Answer: (c), (d)**

3. Which of the following is/are true about matplotlib?

- (a) Matplotlib utilities lie under the `plotpython` submodule
- (b) To view plots via a graphical user interface, you need to call `plot()` function (i.e, `plt.plot()`)
- (c) The `subplot()` function in matplotlib needs 4 arguments
- (d) To save a plot to a file, you can use the `savefig()` function (i.e., `plt.savefig()`)

**Answer: (b), (d)**

4. Which of the following is/are true about NumPy?

- (a) `ndarray` can store heterogeneous data
- (b) If `arr` is an `ndarray` object, `type(arr)` tells us its data type (i.e., array elements are integers or complex numbers etc.)
- (c) If `x` is a copy of an `ndarray`, `x.base` will print `None`
- (d) If `arr = np.linspace(10, 25, 5)`, then the middle element of the array is 15

**Answer: (c)**

5. Which of the following is/are true about Python?

- (a) If `arr = np.array([1, 2, 3, 4, 5])`, `arr[-3:-1]` will hold `[3, 4, 5]`
- (b) If `arr = np.array([1, 2, 3, 4, 5])`, `print(arr.ndim)` will print `(5,)`
- (c) Nested dictionaries are allowed in Python
- (d) In classes, the `__str__()` function controls what should be returned when the class object is represented as a string

**Answer: (c), (d)**

6. Suppose you want to add `(aam)` after `mango` in a file called `fruits.txt` i.e Every `mango` word should now become `mango(aam)`. Select all the commands that can achieve this.

- (a) `sed '/mango/c mango(aam)' fruits.txt`
- (b) `sed 'i/mango/(aam)' fruits.txt`
- (c) `sed 's/mango/mango(aam)' fruits.txt`
- (d) `sed 's/mango/mango(aam)/g' fruits.txt`

**Answer: (d)**

7. Suppose you want to replace all the “,” to “ ” in a file called `students.csv`, assume there are a total of 5 fields separated by “,”. Which of the following can achieve this? Assume field values don't have a “,” within.

- (a) `sed 's/,/ /g' students.csv`
- (b) `awk 'BEGIN FS=",";OFS=" \" print $1,$2,$3,$4,$5' students.csv`
- (c) `awk 'BEGIN FS=",\" print $1,$2,$3,$4,$5' students.csv`
- (d) `awk 'BEGIN FS=",\";OFS=" \" print $0' students.csv`

**Answer: (a), (b), (c)**

8. Which of the following is/are true about LaTeX?

- (a) Proper LaTeX compilation to generate correct pdf will involve running `pdflatex` at the terminal 4 times
- (b) To do inline maths, you need to enclose maths expression within `$`

- (c) If you label a figure, you can refer to it via `\cite`
- (d) Specifying which class file to use is mandatory in a LaTeX document
- (e) `\bibitem{...}` is used to include include a bibliography in a LaTeX document

**Answer: (b), (d), (e)**

9. Suppose you select an array of cells `A1:Z10` in a spreadsheet in a spreadsheet. How many cells will be selected in total?

**Answer: 260**

10. Which of the following are true for spreadsheets?

- (a) If you want to prevent a cell reference from adjusting, you need to use \$
- (b) If you want to glue the contents of two or more cells, you can use piper i.e., `|` (e.g., `=A1|B1`)
- (c) `=if(and(A1<3,B1>10),1,0)` is a valid statement
- (d) In `vlookup`, the first argument is an array

**Answer: (a), (c)**