**Note: Oral is expected to be mainly on your Project. But along with project , syllabus that is covered in class for SDL and assignments that you performed in labs questions can be asked on these part as well.**

**ORAL QUESTIONS**

1. What is Python? What are the benefits of using Python?
2. Why python is called as a general purpose programming language?
3. How Python is interpreted?
4. How memory is managed in Python?
5. What are Python decorators?
6. How are arguments passed by value or by reference?
7. What is difference between Dict and List?
8. What is difference between List and Tuple?
9. What are the built-in type does python provides?
10. What is lambda function in Python?
11. What is pass in Python?
12. In Python what are iterators?
13. In Python what is slicing?
14. What is docstring in Python?
15. What is negative index in Python?
16. How you can convert a number to a string?
17. How you can convert a string to a number?
18. What is module and package in Python?
19. Mention what are the rules for local and global variables in Python?
20. Explain how can you access a module written in Python from C?
21. Mention the use of // operator in Python?
22. Mention five benefits of using Python?
23. Why python is called as general purpose language?
24. Mention the use of the split function in Python?
25. What is namespace in Python?
26. What are python modules? Name some commonly used built-in modules in Python?
27. Is python case sensitive?
28. Is indentation required in python?
29. What is the difference between Python Arrays and lists?
30. What are functions in Python?
31. What is \_\_init\_\_?
32. What is self in Python?
33. How does break, continue and pass work?
34. What does [::-1] do?
35. How can you randomize the items of a list in place in Python? How will you convert a string to all lowercase?
36. How do you write comments in python?
37. How will you capitalize the first letter of string?
38. How to comment multiple lines in python?
39. What is the purpose of is, not and in operators?
40. What does len() do?
41. What does this mean: \*args, \*\*kwargs? And why would we use it?
42. How can files be deleted in Python?
43. What are the built-in types of python?
44. How to add values to a python array?
45. How to remove values to a python array?
46. How to create an array?
47. Does Python have OOps concepts?
48. Explain Inheritance in Python with an example.
49. Does python support multiple inheritance?
50. What is Polymorphism in Python?
51. Define encapsulation in Python?
52. Define encapsulation in Python?
53. How to create an empty class in Python?
54. Is python numpy better than lists?
55. How to get indices of N maximum values in a NumPy array?
56. What is the output of print str[2:5] if str = 'Hello World!'?
57. What is the output of print list[1:3] if list = [ 'abcd', 786 , 2.23, 'john', 70.2 ]?
58. What are tuples in Python?
59. What are Python's dictionaries?
60. How will you create a dictionary in python?
61. How will you get all the keys from the dictionary?
62. How will you get all the values from the dictionary?
63. What is the purpose of \*\* operator?
64. How will you reverse a list?
65. What are the applications of Python?
66. What is the basic difference between Python version 2 and Python version 3?
67. Is String in Python are immutable? Explain.
68. Name the python Library used for Machine learning.
69. What are universal functions in python?
70. What is the use of Matplotlib?
71. What are legends?
72. What are subplots axes and ticks?
73. Explain use and need of Pandas.
74. What is series?
75. What are dataframes? Can you convert series to dataframe?
76. What is panel?
77. How do you handle missing data?
78. How will you access csv,excel,txt file in python?
79. Explain merge with example.
80. What are aggregate functions in pandas?
81. What is correlation matrix?
82. What are histograms? How to create histograms in python?
83. Enlist functions comes under pandas.io.
84. What is groupby function?
85. What is the use of date time module?
86. How to create 2D array?
87. What is reshape function?
88. How to create zero matrix?
89. What is linespace function?
90. Explain map function in python?
91. How index are provided in dataframes if not mentioned?

**Point to be studied for R programming**

**Introduction to R**

What is R? Installation of R.

Basic features of R.

R Objects.Creating Vectors and Matrices.

Getting Data in and out of R.

Using different packages related to data science. Managing Data frames and Functions.

**Descriptive Statistics using R**

Discrete and continuous random variables,

densities and distributions

**Data Summarization:** Measures of Central Tendency,

Measures of Dispersion (quartiles, five number summary, variance, standard deviation), Measures of shape (skewness, kurtosis),

Measures of association (covariance, correlation), Outliers.

Using R for descriptive statistics and data visualization using ggplot2 package.

Predictive Analysis using Machine Learning Techniques using R:

**Machine learning**

what, how, where.

Difference: Supervised, unsupervised and semi-supervised learning.

Explain Training, validation, testing, generalization, over fitting.

Explain Building a Regression model using R.

Features and feature engineering.

Explain Decision trees,

Linear classifiers,

Naïve Bayes,

Nearest neighbor methods in R packages.

**Data Science**

1. What is Data Science?
2. List the differences between supervised and unsupervised learning.
3. Python or R – Which one would you prefer for text analytics?
4. What are Recommender Systems?
5. Explain The Data Science Process life cycle.
6. What is the difference between Supervised Learning an Unsupervised Learning?
7. Can you enumerate the various differences between Supervised and Unsupervised Learning?
8. What do you understand by the Selection Bias? What are its various types?
9. Please explain the goal of A/B Testing.
10. How will you calculate the Sensitivity of machine learning models?
11. Between Python and R, which one would you pick for text analytics and why?
12. Please explain the role of data cleaning in data analysis.
13. Can you compare the validation set with the test set?
14. What do you understand by linear regression and logistic regression?
15. What do you understand by Deep Learning?
16. [Difference between Data Science vs Machine Learning](https://hackr.io/blog/data-science-vs-machine-learning).
17. What is Data pre-processing?
18. What do you understand by the term Normal Distribution?