

Examination Roll no.....

**Unique Paper Code** : 12483301  
**Name of the Paper** : Introduction to Big Data Analysis  
**Name of the Course** : B.A. (HONS.) BUSINESS ECONOMICS  
**Semester** : III  
**Duration** : 3 hours  
**Maximum Marks** : 75 Marks

**Instructions for Candidates:**

1. Attempt any four questions. All questions carry equal marks.
2. All the commands and programs must be written on the answer sheet with own handwriting which must be easily to read, legible with no overwriting or cutting of letters, words or numbers.
3. If any assumptions are made while attempting a problem, the same must be stated clearly.

Q1 (a) What do you understand by the term Big Data? Explain its key characteristics.

(b) Explain the main features of Python programming language? Describe **any four** real-world applications of Python.

(c) What is the difference between a High-level and a Low-Level Language?

(d) What is an Algorithm? Explain using an example.

Q2. (a) Under PANDAS show the command which generates three columns of one digit random numbers. What is a dataframe. Is it same as Array.

(b) Let there be a variable 'SS' with nine data entries, 1,3,9,4,4,8,3,1,2 ; develop this into an array. State the command which displays the entry in 3<sup>rd</sup> row and 2<sup>nd</sup> column. Next define a new 'RR' which is a dataframe of 'SS'. What shall be the command to obtain for RR:

(i) statistical description (ii) Converting all entries of row into column and column to row

for variable 'RR'. (iii) A new Variable 'XX' which formed from above variable 'RR' . However XX must not include the cell values 4 or above .State the command for the same.

(c) What are toy data sets. State how would you load any of these in PANDAS calling this as 'UU'. Which command would give you 'dictionary of keys' for the variable 'UU'. Also state the command for showing only the names of the variables in the dataset UU. How one can obtain complete data for the dependent variable for the data set UU both as an array and as a single column representation.

(d) Which command is to be used for importing stats model. Further clearly write down steps by which we can run an OLS for a data set using stats model (you may use any data set but the commands must be executable). State the command which returns the output of the OLS model.

Q3. (a) Write a program that asks the user to enter the width and length of a room. Once these values have been read, your program should compute and display the area of the room. The length and the width will be entered as floating-point numbers. Include units in your prompt and output message; either feet or meters. Add comments after the command by inserting # explaining each line of code.

(b) Is 'mutation' permissible in lists and tuples. Show with an example. Add comments after the command by inserting # explaining each line of code.

(c) What is a variable? Which of the following variable names are invalid and why? If invalid, rewrite them so as to make them valid:

- i. My city
- ii. 1stnumber
- iii. input
- iv. Section\_No\_1
- v. 22
- vi. Var#1

(d) What is an expression? Differentiate between operators and operands.

Q4. (a) Write a function to return average of best two numbers (i.e. largest two numbers) from list of numbers

(b) How will the following be written in python:-

(i)  $\sqrt{x^2 + y^2 + z^2}$                       (ii)  $4 - ye^{2y} + 16y$

(c) What shall be the output under Python of the following variable 'M' ?

$$M=(4*(13//54/1)+(2**2/2))-12.5$$

(d) You are given 'ch'=5, 'i'=3, 'db' =5.0 and 'fd'= 36.0

Write a program and obtain the result in Python where 'ch' is divided by 'i' and the absolute value of the result is multiplied with 'db'. The square root of this result is then divided by 'fd' to get the final result

Q5. (a) How is Machine Learning related to Artificial Intelligence?

(b) Diagrammatically explain Deep Learning

(c) Machine Learning is all about Predictions . Comment

(d) State (without giving details) two parametric and two non parametric machine learning algorithms.

Q6 Write short programs which include the following (**attempt any five**)

- (i) Output showing Sum of two Complex Numbers where numbers are both real and imaginary.
- (ii) Showing that the python regards the input made by you as a string.
- (iii) Program which includes type(M), Note : M is a variable
- (iv) Print command with the result showing double of any float number.
- (v) Program which includes values of 10 and 100 and where the output results in swapping of values
- (vi) Program where output is such that it asks a question : What is the name of yourcollege ?
- (vii) Program which gives output of '1' without any end (never stopping)

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