AUTOMATING RESERVOIR ENGINEERING AND GEOSCIENCES WITH PYTHON

ASSIGNMENT ONE

Question 1 a

a) Develop the front end of an app using tkinter, that could calculate a minimum of four output parameters from at least 4 inputs. Use any of your favourite concepts or calculations in any o of these areas fluid properties, fluid flow, material balance, geophysics, Petrophysics and geology. Indicate your formulas in a logical order.

Note: You're allowed to be creative, only make your codes readable

Put a clear screenshot of your app in a pptx document including all necessary equation and relationships. Upload this in your google classroom. Download your codes from jupyter notebook as a .py file and upload it alongside the presentation. (Please do not use photos taken with cameras, use any screen capture method instead).

Please before submitting convert your pptx file to pdf format. Submit only in pdf formats.

Question 1 b

Write the backend codes for your application and connect it with the front end.

Report in a table format, five input and output values of your app.

Upload your completed codes in .py format alongside your table in pdf format

Question 2

Contained in the excel sheet titled Data_5 is a set of production data from a field.

You're required to, with python codes

a) Read the file with Pandas, rename the columns with more appropriate names and slice the data into pairs of only pressure and oil production, pressure and gas production and pressure and gas production
b) Make a plot of Pressure against oil, water and gas production on the same axes using matplotlib. Indicate your labels and legends
c) Make a plot of pressure against formation volume factor and sub plots of gas formation volume factor and solution gas oil ratio both with pressure.
d) Remember to add your legends and labels

Upload screenshots of your plots and tables alongside your codes in .py format.

GOOD LUCK!