Week 7 Assessment

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. Due on 2019-03-20, 23:59 IST.

1) What is the purpose of simple linear regression? 1 point

- To predict scores on an independent variable from scores on a single dependent variable from scores on a single dependent variable.
- To assess whether there is a significant difference between independent groups.
- To predict scores on a dependent variable from scores on multiple independent variables.
- To predict scores on a dependent variable from scores on a single independent variable

No, the answer is incorrect.
Score: 0
Accepted Answers: To predict scores on a dependent variable from scores on a single independent variable

2) The permissible concentration of PM2.5 in ambient air as set by WHO is 1 point

- Less than 10ug/m3
- Less than 40ug/m3
- Less than 15ug/m3
- Less than 30 ug/m3

No, the answer is incorrect.
Score: 0
Accepted Answers: Less than 10ug/m3
4) To measure 1000 ppm gas concentration using given circuit, 22.5mW is dissipated by 100 ohm $R_{heater}$. The output voltage $V_0$ is measured as 3.33V for 1.8k ohm $R_{sensor}$. Find $R_{pot}$ and $R_{serial}$.

\[ V_{cc} = 5V \]

- $R_{serial} = 333$ ohm, $R_{pot} = 3600$ ohm
- $R_{serial} = 233$ ohm, $R_{pot} = 2780$ ohm
- $R_{serial} = 133$ ohm, $R_{pot} = 2600$ ohm
- $R_{serial} = 33$ ohm, $R_{pot} = 360$ ohm

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of these

5) In Linear Regression, what are considered as residuals?

- Residuals are the difference between the observed and expected dependant variable values.
- Residuals are the independent values collected.
- Residuals are the confidence intervals.
- Residuals are the serendipitous findings.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Residuals are the difference between the observed and expected dependant variable values.

6) Which of the following methods helps to best solve the...
problem of calibration of gas sensor including correction for cross sensitivity?

- Simple linear regression
- Non-linear regression
- Logarithmic regression
- Artificial Neural Network

No, the answer is incorrect.
Score: 0
Accepted Answers:
Artificial Neural Network

7) Refer to the given linear log-log graph for NO2 sensor MiCS-4514:

Find the behaviour equation for NO2 sensor i.e ppm vs Rs/Ro without considering the effect of temperature and humidity on resistance values.

Use the following data for calculation.
Rs/Ro = 6 at 1 ppm.
Rs/Ro = 0.6 at 0.1 ppm.

- ppm = Rs/(Ro*6)
- ppm = Rs/(Ro*60)
- ppm = Rs/(Ro*0.6)
- ppm = Rs/(Ro*0.06)

No, the answer is incorrect.
Score: 0
Accepted Answers:
ppm = Rs/(Ro*6)

8) Consider the NO2 gas sensor MiCS-4514 behavior equation derived in Q7. It has Ro of 6000 ohm. The sensor resistance was found to be 6100 ohm in a polluted street. What is the concentration of NO2 according to the equation derived?

- 170 ppb
- 600 ppb
A diesel vehicle emits exhaust at an average rate of 15 litres per second. A PM sensor which measures PM10 in micro gram/m3 is fitted to the tailpipe of the vehicle and data acquired from the exhaust is available in the dataset https://drive.google.com/open?id=1epB_HSP7IoSrTH9GwuPt-TIKg39RRo08 in column PM10ex. The data is collected every 5 seconds. Assume that PM10 values in the dataset are the average values over a 5 second interval.

What is the total amount of PM10 in micrograms output by the vehicle after it starts moving from its stationary position?

- 4700 micrograms – 4900 micrograms
- 190 micrograms - 210 micrograms
- 4500 micrograms - 4600 micrograms
- 2900 micrograms - 3000 micrograms

PM10 particles are the particles whose size is

- More than 10nm
- Less than 10um
- Between 2.5 nm to 10nm
- Less than 10nm