

Qnum	Question description	Bad response (-2 or -1)	No response (0)	Weak response (1 or 2)	Mediocre response (3 or 4)	Exemplary response (5 or 6)	Out Of
0	Signed plagiarism form	-100	-100	0	0	0	0
<p>Most models in statistics can be expressed as regression models. Sometimes it takes some effort to transform data so that the model can be expressed as a regression, but it is almost always worthwhile. The hierarchical regression notation is an extremely clear and neat form that can easily be expanded to fit very complex models.</p>							
1	What are the assumptions of ordinary least squares regression?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Some assumptions given, or assumptions badly explained	All assumptions given, or some given and explained	All assumptions explained properly	5
2	What happens when the assumptions are violated?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	General answer only, or specific assumptions only (no general answer)	Details for specific assumptions, plus general answer	5
3	Write the Bayesian logistic regression model in hierarchical form.	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	No maths, or very sloppy	Clean mathematical expressions, or detailed erroneous explanations	Clean mathematical expressions plus notation explained	5
<p>Censoring is common in medical and natural sciences, particularly where measurements are done via device and the device has a lower or upper detection limit. Missing values are most common in surveys where a respondent can freely choose not to answer a question. These situations pose unique challenges to modellers who have to know when and how to adjust for such issues.</p>							
4	What are the main types of censoring?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Weak attempt at an explanation, incomplete list	Complete list with little explanation, or explanation with errors	Explanation of each type	5
5	How is a censored observation usually incorporated into the likelihood?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	General answer	Explanation of each type	5
6	Explain any two common biases that occur with surveys (even with no missing data).	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	General answer	Explanation and practical examples	5
7	Define the main classes of missing data mechanisms.	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	General answer	Explanation of each type	5
8	When do you think it is necessary to impute missing values explicitly (as opposed to implicitly)?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	General answer	Explanation and practical examples	5
<p>Markov chain simulation methods have a random starting point and dependence between simulated vectors. They do not immediately cover the target accurately. Thus, it is important to assess convergence for any simulation process in order to be able to trust the output.</p>							
9	How is simulation convergence assessed horizontally (within chain)?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	Key points covered	Explanation shows deep understanding	5
10	How is simulation convergence assessed vertically (between chains)?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	Key points covered	Explanation shows deep understanding	5
11	Name a statistic that is commonly used to assess convergence. Give a description of how it is evaluated and the target value of that statistic.	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Name and target value given, with citations	Name and target value given, with some explanation or formula	Idea behind the statistic and basics of its calculation explained	5
<p>Unusual situations arise regularly in real world problems. It is important to be able to handle unorthodox situations. Suppose you are tasked with fitting a Gamma distribution to 200 real values, but you are told that the second 100 values are measured more accurately than the first 100 due to some measuring process improvement. You are asked to provide the joint mean and both variances (with uncertainty).</p>							
12	Express the model mathematically using any clear notation.	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	No maths, or very sloppy	Clean mathematical expressions	Clean mathematical expressions plus notation explained	5
13	Express the model in STAN notation, along with other blocks	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Sloppy expressions, would not compile	Might compile	Proper comments and organised layout	5
14	How would you assess whether the variance has actually changed?	Answer both wrong and self-contradictory or offensively wrong	Not answered or answer doesn't make sense.	Attempt at an explanation	Key points covered	Explanation shows deep understanding	5
15	Writing quality (double marks at top)	Text purposefully made difficult to read (e.g. allcaps)	Nothing worth reading	Readable but barely, broken sentences, sloppy, no spell check	No effort to consider reader, just did spell check to make red lines go away	Put in effort to ensure that the reader understands what they meant (e.g. reading out loud, grammar check)	10
16	Citations and references (4 times marks at top)	Deliberate plagiarism	No meaningful sources used	Links to sources provided	At least two citations per answer, references too	2+citations per answer, neat reference list +links	20
17	Penalties and bonuses (see brackets)	Obvious copying or severe plagiarism (-100)	No special effort	Clear headings, formal writing style (+2)	Short table of contents, no further wasted space (easy to navigate) (+4)	Put in effort to make it really easy to mark and interesting to read. (+6)	0
Total							100