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[Announcements \(announcements\)](#)    [About the Course \(https://swayam.gov.in/nd1\\_noc20\\_cy02/preview\)](#)
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## Unit 7 - Week 4

### Course outline

How does an NPTEL online course work?

Week 0

MATLAB

Week 1

Week 2

Week 3

Week 4

- Introductory Statistics - Part 01 (unit? unit=45&lesson=46)
- Introductory Statistics - Part 02 (unit? unit=45&lesson=47)
- Hypothesis testing and Finding Outliers - Part 01 (unit? unit=45&lesson=48)

## Assignment 4

The due date for submitting this assignment has passed. **Due on 2020-02-26, 23:59 IST.**  
As per our records you have not submitted this assignment.

1) The z-statistics can be applied when we know: 1 point

- the population mean
- the population standard deviation
- the sample standard deviation
- the sample mean
- Both sample mean and sample standard deviation

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*the population standard deviation*

2) The relationship between z- and t-statistics is: 1 point

- At infinite readings, z-statistics converge to t-statistics.
- At 200 readings, the z-statistics converge to t-statistics
- T-statistics converge to z-statistics for an infinite number of measurements
- Z-statistics is not related to t-statistics at all
- T-statistics and z-statistics are the same.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*T-statistics converge to z-statistics for an infinite number of measurements*

3) The critical value of z at 95% confidence level is: 1 point

- $\pm 1.960$  for a one tailed test

Hypothesis testing and Finding Outliers - Part 02 (unit? unit=45&lesson=49)

Pooling of data (unit? unit=45&lesson=50)

Quiz : **Assignment 4 (assessment? name=51)**

Quantitative Methods in Chemistry : Week 4 Feedback Form (unit? unit=45&lesson=52)

Assignment 4 solutions (unit? unit=45&lesson=71)

Lecture materials (unit? unit=45&lesson=124)

**Week 5**

**Week 6**

**Week 7**

**Week 8**

**Week 9**

**Week 10**

**Week 11**

**Week 12**

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- $\pm 1.960$  for a two tailed test
- $\pm 1.645$  for a one tailed test
- $\pm 1.645$  for a two tailed test
- $\pm 3.29$  for a two tailed test

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $\pm 1.960$  for a two tailed test  
 $\pm 1.645$  for a one tailed test

4) The null hypothesis is to be rejected if: **1 point**

- $Z_{calculated} < Z_{critical}$
- $Z_{calculated} > Z_{critical}$
- $t_{calculated} < t_{critical}$
- $t_{calculated} > t_{critical}$
- $(t_{calculated})^2 > (t_{critical})^2$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $Z_{calculated} > Z_{critical}$   
 $t_{calculated} > t_{critical}$

5) For a population of bacterial cells, it was observed that 0.5% of them died in 48 hours while 2.5% of the cells were dead after 54 hours. The average life of this population of cells will be: **1 point**

- 54 hours
- 50 hours
- 74 hours
- 88 hours
- 78 hours

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
74 hours

6) Suppose the weight of 35 students of X standard is recorded and the mean weight of this population was 44 kg and the standard deviation was 6 kg. **1 point**

The 95% confidence interval for this population will be:

- 40-48 kg
- 38-48 kg
- 42-49 kg
- 41-47 kg
- 42-46 kg

No, the answer is incorrect.  
Score: 0

Accepted Answers:

42-46 kg

7) The pooled value of standard deviation ( $S_{pooled}$ ) of the following three samples is:**1 point**

Sample 1	Sample 2	Sample 3
1001	822	750
1022	805	745
975	788	799
991	779	800
992	800	758

- 15.87
- 18.57
- 17.85
- 19.89
- 20.77

No, the answer is incorrect.

Score: 0

Accepted Answers:

20.77

8) Two different analytical methods were employed on each sample collected from different cities **1 point** to estimate the amount of zinc in water (mg/l). This gave following readings:

Sample No.	Method 1	Method 2
1	0.35	0.3
2	0.94	1.25
3	2.76	2.56
4	3.53	3.98
5	4.99	5.35
6	7.77	8.8
7	10.81	10.68
8	10.92	10.91

The confidence level at which the two methods differ is/are:

- 95%
- 99%
- 90%
- Differs at all the above confidence levels
- No difference at any of the above confidence levels

No, the answer is incorrect.

Score: 0

Accepted Answers:

*No difference at any of the above confidence levels*

9) The average weight 10 year old boys in a city is 31.7 kg. If a sample of 15 boys (who are 10 year old) from a locality had average weight of 31.0 kg and standard deviation of 1.1 kg, then the weight of the sample differs from that of population at confidence level(s) of: **1 point**

- 90%
- 95%
- 99%
- 99.9%
- all the above
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

90%

95%

10) The mean value of a sample was found to be 159 and population standard deviation of that measurement 15. The minimum size of the sample needed to reduce its 95% confidence interval to below 10 is **1 point**

- 5
- 7
- 10
- 9
- 11

No, the answer is incorrect.

Score: 0

Accepted Answers:

9