

1.

- a) Then hypothesis is H1- there is no change in market share.
- b) **10.25** is the test statistic value.
- c) At 5% significance level the critical **value is 7.815**.
- d) Since table value is less than Calculated Value we can say that market share has changed.

2.

a) The proof for the battery life of the new battery is more than twice as long as that of the leading product. Therefore; Null hypothesis- battery life of the new battery is more than 10 hours

Alternative hypothesis- the battery life of the new battery is not more than 10 hours

b)

The test statistic is ;

$$z = \frac{\bar{x} - \mu_0}{\frac{\sigma}{\sqrt{n}}}$$

$$z = \frac{10.5 - 10}{\frac{1.8}{\sqrt{45}}}$$

$$z = 1.863389981$$

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c) at $\alpha = 0.05$,

the critical value for the z-test which is single sided is 1.64

since the test statistic $z = 1.863389981$ is greater than the critical value (1.64), we reject H_0 at the 5% level of confidence and propose that , the battery life of the new battery is not more than 10 hours.