Let μ be the true population average/mean life of light bulb (in hours)

Given that,

sample size, n=23

sample mean, x―  =721

population standard deviation , σ =60

significance level, α =0.08 (i.e. 8%)

**Claim:** Is to test that, Whether the mean life of light bulb is at least 741 hours.

a)

**Ans) Option C)**

The null and alternative hypotheses,

H0 : μ  ≥ 741 (claim) vs

Ha : μ <741

b) Critical value=-Z α

=-Z0.08

=-1.4051

Therefore,

**Critical value=-1.4051**

c) Rejection region :

We reject H0 at  α% level of significance if,

Z ≤ -Z α

i.e.

**Z<-1.4051**

d) Test statistic:

(barx-muo)/(sigma/\sqrt{n}

(721-741)/(60/\sqrt{23}

therefore z

Decision:

We reject H0 at  α% level of significance if,

Z ≤ -Z α

Here,

Z<-Z α  i.e. -1.5986<-1.4051

**therefore we reject H0 at 8% level of significance.**

**e) Conclusion: There is sufficient evidence to support the claim that , the mean life of light bulb is at least 741 hours**

**a)**

**Ans) Option C)**

**The null and alternative hypotheses,**

**H0 : μ**≥**741 (claim) vs**

**Ha : μ <741a)**

**b) critical value=-1.4051**

**c)Z**≤**-Z**α

**i.e.**

**Z<-1.4051**

**d)Test statistic: Z=-1.5986**

**reject H0 at 8% level of significance.**

**e)Conclusion: There is sufficient evidence to support the claim that , the mean life of light bulb is at least 741 hours**