King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
STAT-319-Term171-Quiz5A

Name: ID: Sec.: Serial: _____

1. (5-Points) The life in hours of a battery is known to be approximately normally distributed, with standard deviation **σ**=1.25 hours, a random sample of 20 batteries has a mean life of $\bar{x} = 40.5$ hours. Use α=.05, is there evidence to support the claim that the battery life exceeds 40 hours? Also, find the **P-value** for your test.

2. (5-Points) A manufacturer of intraocular lenses will certify a new grinding machine if there is evidence that the percentage of polished lenses that contain surface defects does not exceed 2%. A random sample of size 250 lenses contain seven defective lenses.

Formulate and test an appropriate hypothesis to determine whether the machine can be certified. Use α=.05, and find the **P-value**

$$Z = \frac{(\bar{X}-\mu)\sqrt{n}}{\sigma} \quad or \quad Z = \frac{(\bar{X}-\mu)\sqrt{n}}{s} \quad or \quad T = \frac{(\bar{X}-\mu)\sqrt{n}}{s} \quad or \quad Z = \frac{\hat{p}-p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics
STAT-319-Term171-Quiz5B

Name: ID: Sec.: Serial: _____

1. (5-Points) The life in hours of a battery is known to be approximately normally distributed, with standard deviation **σ**=1.5 hours, a random sample of 20 batteries has a mean life of $\bar{x} = 40.5$ hours. Use α=.05, is there evidence to support the claim that the battery life exceeds 40 hours? Also, find the **P-value** for your test.

2. (5-Points) A manufacturer of intraocular lenses will certify a new grinding machine if there is evidence that the percentage of polished lenses that contain surface defects does not exceed 2%. A random sample of size 500 lenses contain sixteen defective lenses.

Formulate and test an appropriate hypothesis to determine whether the machine can be certified. Use α=.05, and find the **P-value**

$$Z = \frac{(\bar{X}-\mu)\sqrt{n}}{\sigma} \quad or \quad Z = \frac{(\bar{X}-\mu)\sqrt{n}}{S} \quad or \quad T = \frac{(\bar{X}-\mu)\sqrt{n}}{S} \quad or \quad Z = \frac{\hat{p}-p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$