

Date: / /

Ex 1. $e = \frac{G}{\lambda n} \times 2d$

(1) $G = 0.5, e = 0.5, 1-d = 0.95$

$n = \left(\frac{1}{0.5}\right)^2 \times 1.96^2 = 13.7$

(2) $G = 0.2, e = 0.05, 1-d = 0.9$

$n = \left(\frac{0.2}{0.05}\right)^2 \times 1.67^2 = 12.27 \approx 12$

(3) $G = 0.05, e = 0.02, 1-d = 0.98$

$n = \left(\frac{0.05}{0.02}\right)^2 \times 2.326^2 = 31.8 \approx 32$

Ex 6. $n = 120, \bar{y} = 1250, G = 140$

$1250 \pm 2.05 \sqrt{\frac{140}{120}}$

$= 1250 \pm 25.05$

$\Rightarrow (1224.95, 1275.05)$

Ex 10. (1) $\mu_1 - \mu_2 = \bar{X} - \bar{Y} = 85.78 = 7$

(2) $7 \pm 1.645 \sqrt{\frac{16.25}{10} + \frac{16.25}{10}}$

$= 7 \pm 1.645 \times 2.59$

$= 7 \pm 4.26$

Date:

$$\text{Q. 1. } n = 80, \mu = \frac{45}{80} = \frac{9}{16}, \sigma = \frac{1}{\sqrt{16}} = \frac{1}{4}$$

$$\text{Q. 2. } \bar{x} \pm z \frac{\sigma}{\sqrt{n}} = \bar{x} \pm 0.05 \frac{1}{\sqrt{80}} = 1.96 \times 0.06 = 0.12$$

$$\text{Q. 3. } \bar{x} \pm z \frac{\sigma}{\sqrt{n}}$$

$$\bar{x} = \frac{11}{100} = 0.11$$

$$\bar{x} = \frac{80}{100} = 0.8$$

$$(\bar{x} - \bar{x}) \pm z \frac{\sigma}{\sqrt{n}} \sqrt{\frac{1}{n} + \frac{1}{n}}$$

$$= (0.11 - 0.8) \pm 0.05 \sqrt{\frac{0.8 \times 0.2}{100} + \frac{0.2 \times 0.8}{100}}$$

$$= -0.05 \pm 1.96 \times 0.04$$

$$= -0.05 \pm 0.14$$

$$\text{Q. 4. } n = 20, \bar{p} = \frac{12}{20} = 0.6$$

$$\bar{x} \pm z \frac{\sigma}{\sqrt{n}} = \bar{x} \pm 0.05 \sqrt{\frac{0.6 \times 0.4}{20}} = 0.6 \pm 1.645 \times 0.1$$

$$= 0.6 \pm 0.1645$$

$$\Rightarrow (0.435, 0.7645)$$

$$\text{Q. 5. } \bar{p} = 0.1, e = 0.05, 1 - \alpha = 0.95$$

$$e = \frac{\sigma}{\sqrt{n}}$$

$$n = \left(\frac{z}{e} \right)^2 \times \bar{p} \times (1 - \bar{p})$$

$$n = \left(\frac{1.96}{0.1} \right)^2 \times 0.1 \times 0.9 = 89.639$$

$$(b) \bar{p} = 0.42$$

$$n = \left(\frac{1.96}{0.05} \right)^2 \times 0.42 \times 0.58 = 1019.79$$

$$(c) \bar{p} = 0.5$$

$$n = \left(\frac{1.96}{0.05} \right)^2 \times 0.5 \times 0.5 = 1067.76$$