Formula Sheet-Final Exam

1) Z-score or standardized normal variate , $z = \frac{x-\mu}{\sigma} = \frac{x-np}{\sqrt{npq}}$

2) Sampling distribution of sample mean, $z = \frac{\bar{x}-\mu}{\frac{\sigma}{\sqrt{n}}}$

3) Sampling dist. of Sample proportion, $\boxed{\hat{p} = \frac{x}{n}}$ $\boxed{z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}}$

4) Confidence interval for population mean: $\boxed{\bar{x} \pm z_{\alpha/2}\sigma_{\bar{x}} = \bar{x} \pm z_{\alpha/2}\frac{\sigma}{\sqrt{n}}}$

5) Confidence interval for population proportion: $\boxed{\hat{p} \pm z_{\alpha/2}\sigma_{\hat{p}} = \hat{p} \pm z_{\alpha/2}\sqrt{\frac{\hat{p}\hat{q}}{n}}}$

6) Confidence interval for population mean (σ unknown): $\boxed{\bar{x} \pm t_{\alpha/2\,(n-1)D.F}\,\sigma_{\bar{x}} = \bar{x} \pm t_{\alpha/2\,(n-1)D.F}\frac{s}{\sqrt{n}}}$

7) Correlation Coefficient (r) between (X, Y) $\boxed{r = \frac{\sum x_i y_i - \frac{(\sum x_i)(\sum y_i)}{n}}{\sqrt{\{\sum x_i^2 - \frac{(\sum x_i)^2}{n}\}\{\sum y_i^2 - \frac{(\sum y_i)^2}{n}\}}}}$

8) Regression Equation, Y = a + bX, where, $\boxed{b = \frac{\sum x_i y_i - \frac{(\sum x_i)(\sum y_i)}{n}}{\{\sum x_i^2 - \frac{(\sum x_i)^2}{n}\}},\ a = \bar{y} - b\bar{x}}$