You may use the following formulas in the exam. This does not mean that all the formulas are necessary in the exam. You may also need to use formula not presented here.

$$P(A) + P(B) - P(A \cap B)$$

$$\frac{P(A \cap B)}{P(B)}$$

$$\frac{\text{sensitivity} \times \text{prevalence}}{\text{sensitivity} \times \text{prevalence} + (1 - \text{specifcity}) \times (1 - \text{prevalence})}$$

$$\binom{n}{x} p^x (1-p)^{n-x}$$

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

$$T = \frac{\bar{x} - \mu_0}{s / \sqrt{n}}$$

$$t_{n_1+n_2-2} = \frac{\bar{x}_1 - \bar{x}_2 - (\mu_1 - \mu_2)}{\sqrt{s_p^2 (\frac{1}{n_1} + \frac{1}{n_2})}} \quad \text{where} \quad s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

$$t_\nu = \frac{\bar{x}_1 - \bar{x}_2 - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad \text{where } \nu = \frac{(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2})^2}{\frac{(s_1^2/n_1)^2}{n_1 - 1} + \frac{(s_2^2/n_2)^2}{n_2 - 1}}$$

$$\hat{p} \pm z_{\alpha/2} \sqrt{\hat{p}(1-\hat{p})/n}$$

$$z = \frac{\hat{p} - p_0}{\sqrt{p_0(1-p_0)/n}}$$