Formula sheet

$$C - P = S_0 - e^{-rT}K - \mathrm{PV(div)}, \qquad C - P = e^{-\delta T}S_0 - e^{-rT}K$$
$$F^P_{0,T}(S) = S_0 - \mathrm{PV(div)}, \quad F^P_{0,T}(S) = e^{-\delta T}S_0$$
$$\Delta = e^{-\delta h}\frac{C_u - C_d}{S_0(u-d)}, \quad B = e^{-rh}\frac{uC_d - dC_u}{u-d}, \quad C_0 = \Delta S_0 + B$$
$$p^* = \frac{e^{(r-\delta)h} - d}{u-d}, \quad C_0 = e^{-rh}\mathbb{E}^*(C_h)$$
$$u = e^{(r-\delta)h+\sigma\sqrt{h}}, \quad d = e^{(r-\delta)h-\sigma\sqrt{h}}, \quad p^* = \frac{1}{1+e^{\sigma\sqrt{h}}}$$
$$p = \frac{e^{(\alpha-\delta)h} - d}{u-d}, \quad C_0 = e^{-\gamma h}\mathbb{E}(C_h), \quad e^{\gamma h} = \frac{\Delta S_0}{\Delta S_0 + B}e^{\alpha h} + \frac{B}{\Delta S_0 + B}e^{rh}$$
$$C(S_0, K, \sigma, r, T, \delta) = S_0 e^{-\delta T}N(d_1) - Ke^{-rT}N(d_2)$$
$$P(S_0, K, \sigma, r, T, \delta) = Ke^{-rT}N(-d_2) - S_0 e^{-\delta T}N(-d_1)$$
$$d_1 = \frac{\ln\left(\frac{S_0}{K}\right) + (r - \delta + \frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}}, \quad d_2 = d_1 - \sigma\sqrt{T}$$
$$C = F^P_{0,T}(S)N(d_1) - F^P_{0,T}(K)N(d_2), \quad P = F^P_{0,T}(K)N(-d_2) - F^P_{0,T}(S)N(-d_1)$$

$$\Delta_C = e^{-\delta(T-t)}N(d_1), \qquad \Delta_P = -e^{-\delta(T-t)}N(-d_1), \qquad \Omega = \frac{\Delta S}{V_{opt}}, \quad \sigma_{opt} = \sigma_S|\Omega|$$
$$dG(t,x) = G_x dx + G_t dt + \frac{1}{2}G_{xx}(dx)^2 + \frac{1}{2}G_{tt}(dt)^2 + G_{tx}(dt)(dx)$$
$$dF(x) = F_x dx + \frac{1}{2}F_{xx}(dx)^2$$
$$\ln\left(\frac{S_t}{S_0}\right) \sim \mathcal{N}\left(\left(\mu - \frac{\sigma^2}{2}\right)t, \sigma^2 t\right) \qquad d\tilde{Z}(t) = dZ(t) + \frac{\alpha - r}{\sigma}dt$$
$$C_{BC} = e^{-r(T-t)}XN(d_2), \qquad P_{BC} = e^{-r(T-t)}XN(-d_2),$$
$$C_{BA} = e^{-\delta(T-t)}XS_tN(d_1), \qquad P_{BA} = e^{-\delta(T-t)}XS_tN(-d_1),$$
$$C_G = S_t e^{-\delta(T-t)}N(d_1) - K_1 e^{-r(T-t)}N(d_2) \qquad P_G = K_1 e^{-r(T-t)}N(-d_2) - S_t e^{-\delta(T-t)}N(-d_1)$$
$$d_1 = \frac{\ln\left(\frac{S_t}{K_2}\right) + (r - \delta + \frac{1}{2}\sigma^2)(T-t)}{\sigma\sqrt{T-t}}, \quad d_2 = d_1 - \sigma\sqrt{T-t}$$
$$C_E = S_t e^{-\delta_s(T-t)}N(d_1) - K_t e^{-\delta_k(T-t)}N(d_2) \qquad P_E = K_t e^{-\delta_k(T-t)}N(-d_2) - S_t e^{-\delta_s(T-t)}N(-d_1)$$
$$d_1 = \frac{\ln\left(\frac{S_t e^{-\delta_s(T-t)}}{K_t e^{-\delta_k(T-t)}}\right) + (\frac{\sigma^2}{2})(T-t)}{\sigma\sqrt{T-t}}, \quad d_2 = d_1 - \sigma\sqrt{T-t}, \quad \sigma = \sqrt{\sigma_s^2 + \sigma_k^2 - 2\rho\sigma_s\sigma_k}$$