

7. Company A is a U.S. international company, and Company B is a Japanese local company. Company A is negotiating with Company B to sell its operation in Tokyo to Company B. The deal will be settled in Japanese yen. To avoid a loss at the time when the deal is closed due to a sudden devaluation of yen relative to dollar, Company A has decided to buy at-the-money dollar-denominated yen put of the European type to hedge this risk.

You are given the following information:

- (i) The deal will be closed 3 months from now.
- (ii) The sale price of the Tokyo operation has been settled at 120 billion Japanese yen.
- (iii) The continuously compounded risk-free interest rate in the U.S. is 3.5%.
- (iv) The continuously compounded risk-free interest rate in Japan is 1.5%.
- (v) The current exchange rate is 1 U.S. dollar = 120 Japanese yen.
- (vi) The natural logarithm of the yen per dollar exchange rate is an arithmetic Brownian motion with daily volatility 0.261712%.
- (vii) 1 year = 365 days; 3 months = $\frac{1}{4}$ year.

Calculate Company A's option cost.