Financial Modelling with Python
Chennai Mathematical School

Q1:
A call option with a higher strike price cannot be worth more than an otherwise identical call with a lower strike price.

Q2: ke^-rt >= P
a European put is never worth more than the present value of the strike price.

Q3:
A European capped call option is like a European call option except that the payoff is H− X instead of S− X when the terminal stock price S exceeds H. Construct a portfolio of European options with an identical payoff.

Q4:
Consider two securities, A and B. In a period, security A's price can go from $100 to either (a) $160 or (b) $80, whereas security B's price can move to $50 in case (a) or $60 in case (b). Price security B when the interest rate per period is 10%.

Q5:
Assume that the underlying stock does not pay dividends. Supply arbitrage arguments for the following claims.
(1) The value of a European call cannot exceed the price of the underlying stock.
(2) The value of a European put is PV(X) when S = 0.

Q6: Already done
Consider a 2-year European put with a strike price of 52 on a stock whose current price is 50. In each time step (of one year) the stock price either moves up by 20% or moves down by 20%. Let the risk-free interest rate be 5%. The current price of the put option.

Q7:
The current price of a stock is 100. After 3 months, it be either 150 or 70. What will be the price of the put option with expiry date is 3 months from today with strike price 110? 6% is the risk-free interest rate.

Also, go through the reading materials and reference books.