Problem 1 (12 points)

a.
   E[A] ← 1pt (0.5pt for logical steps, 0.5pt for correct answer)
   E[B] ← 1pt (0.5pt for logical steps, 0.5pt for correct answer)

b.
   var(A) ← 1pts (0.5pt for logical steps, 0.5pt for correct answer)
   var(B) ← 1pts (0.5pt for logical steps, 0.5pt for correct answer)

c.
   covariance definition ← 1pts (0.5pt deduction if slightly unclear/incomplete, 1pt deduction if wrong)
   correlation definition ← 1pts (0.5pt deduction if slightly unclear/incomplete, 1pt deduction if wrong)

d.
   2pts (1pt for logical steps, 1pt for correct answer)

e.
   independence definition ← 2pts (1pt for clear explanation, 1pt for correct answer)
   A & B independence ← 2pts (1pt for clear explanation, 1pt for correct answer)

Problem 2 (8 pts)

a.
   2pts (1pt for correct variances, 1pt for correct covariances)

b.
   3pts ← (2pts for logical steps, 1pt for correctness)

c.
   3pts ← (2pts for logical steps, 1pt for correctness)

Problem 3 (8 pts)

a. 2pts
b. 2pts
c. 2pts
d. 2pts

Problem 4 (12 pts)

a. 4pts
b. 4pts
c. 4pts

Problem 5 (10 pts)

2 pts ← specifying independence for product of independent variables
2 pts ← each important logical step
6 pts ← showing a minimum of 5 logical steps and reasoning