第41回 2級 問7

①

$$S_{AB} = \sum x_{AB}^2 - \frac{(\sum x)^2}{n_A + n_B} = 27787.57 - \frac{1663.9^2}{100} = 101.9379$$

$$V_{AB} = \frac{S_{AB}}{n-1} = \frac{101.9379}{99} = 1.02967\cdots$$

$$s_{AB} = \sqrt{1.02967} = 1.0147\cdots \fallingdotseq 1.015 \quad (キ)$$

(1) キ

$$C_{p(B)} = \frac{S_u - S_L}{6 s_B} = \frac{20-15}{6 \times 0.9} = \frac{5}{5.4} = 0.9259 \fallingdotseq 0.93 \quad (カ)$$

(2) カ

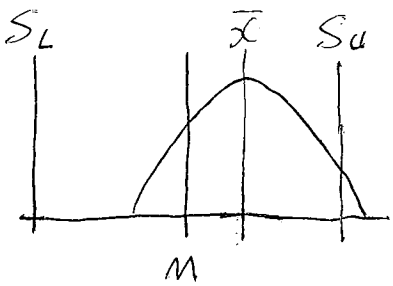
$$C_{p(AB)} = \frac{S_u - S_L}{6 s_{AB}} = \frac{5}{6 \times 1.015} = 0.821 \fallingdotseq 0.82 \quad (エ)$$

(3) エ

②

$$K_A = \frac{|M - \bar{x}_A|}{(S_u - S_L)/2} = \frac{17.5 - 15.98}{5/2} = 0.608 \quad (ア)$$

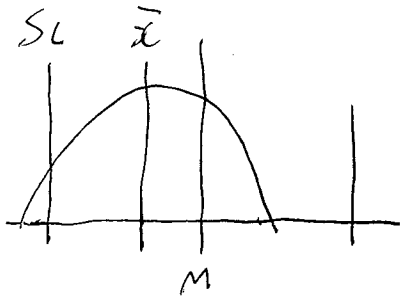
(4) ア



$\bar{x} \geq M$ のとき $1-K$ は

$$\frac{S_u - \bar{x}}{(S_u - S_L)/2} = \frac{2(S_u - \bar{x})}{S_u - S_L} \quad (オ)$$

(5) オ



$\bar{x} \leq M$ のとき $1-K$ は

$$\frac{\bar{x} - S_L}{(S_u - S_L)/2} = \frac{2(\bar{x} - S_L)}{S_u - S_L} \quad (イ)$$

(6) イ

$$C_{pk} = \min\left\{\frac{S_u - \bar{x}}{3s}, \frac{\bar{x} - S_L}{3s}\right\} \text{ より}\cdots$$

$$C_{pk_A} = \frac{\bar{x}_A - S_L}{3 s_A} = \frac{15.98 - 15}{3 \times 0.629} = 0.5193\cdots \fallingdotseq 0.52 \quad (ア)$$

(7) ア