

題號	答案
1	$6220181 = 11 \times 17 \times 29 \times 31 \times 37$ <p>(a) <math>S(5, 3) = 25</math></p> <p>(b) <math>3! \times S(5, 3) = 6 \times 25 = 150</math></p> <p>(c) <math>S(5, 2) + S(5, 3) + S(5, 4) + S(5, 5) = 15 + 25 + 10 + 1 = 51</math></p> <p>(d) 容器的 factors 為 1, 即可視該容器沒放 elements  <math>\therefore S(5, 1) + S(5, 2) + S(5, 3) = 1 + 15 + 25 = 41</math></p>
2	<p>(a) <math>\therefore f(a, b)</math> 確定是 <math>C \Rightarrow b \times b - 1 = 35 \Rightarrow b^{35}</math></p> <p>(b) <math>b^{24}</math> (c) <math>4 \times b^{24}</math> (<math>a</math> 和 <math>b</math> 不為 identity)</p> <p>(d) <math>C_2 - 1 = 14 \Rightarrow 4 \times b^{14}</math></p> <p>(e) <math>5 \times b^{25}</math>  <math>\rightarrow f(a, b)</math> 有 5 種可能</p> <p>(f) <math>5 \times b^{24}</math></p>
3	<p>把 <math>S</math> 分成 <math>\{3\} \{7, 103\} \{11, 99\} \dots \{51, 59\} \{55\}</math>          共 14 組.</p> <p>至少要拿 15 個數字才能確保至少其中有 2 個數字是同一種.</p>

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$$(a) \{y\}^*x\{y\}^*x\{y\}^* \checkmark$$

$$(b) (x\{x,y\}^*) \cup (\{x,y\}^*yx y) \checkmark \quad \text{D}$$

(c)

$$[(x\{x,y\}^*) \cup (\{x,y\}^*yx y)] - [x\{x,y\}^*yx y]$$

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(a)

(1)  $\lambda \in A$ ; and

(2) If  $x \in A$ , then each of the following is also in  $A$ : (i)  $x1$  (ii)  $1x$  (iii)  $00x$   
 (iv)  $x00$  (v)  $0x0$

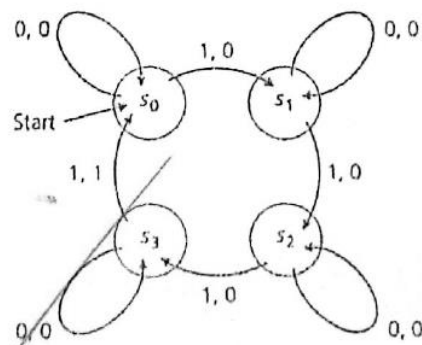
(b)

(1)  $\lambda \in A$ ; and

(2) For each  $x \in A$ , the string  $1x$  and  $x0$  are also in  $A$

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(a) 檢查輸入中的 string 的「1」的個數是否有  $4k$  ( $k \in \mathbb{N}$ ), 每 4 個「1」會輸出「=」或「1」.



$$(b) C_8^0 + C_4^0 + C_0^0 = 72 \quad (\text{for } \|x\| = 8)$$

$$C_{12}^{12} + C_8^{12} + C_4^{12} + C_0^{12} = 992 \quad (\text{for } \|x\| = 12)$$