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17012296

Sheet 1

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(1) a) $L = \{00, 000, 010, 0000, 0010, 0100, 0110 \ldots\}$

b) $L = \{\varepsilon, \lambda, 0, \lambda 1, 01, \lambda\lambda, 00, \lambda 1 \lambda 1, 0101, \ldots\}$ Repeating first 5 elements

c) $L = \{000, 010, 011, 0000, 0010, 0011 \ldots\}$

d) $L = 0^* 1 0^* 10^*$ (even multiples) $\Rightarrow \{11, 011, 101, 110 \ldots\}$
(ε or multiple; ε or multiple)

f) L = same as the language above but the whole string can be empty or multiple $\Rightarrow \{\varepsilon, 11, 011, 101, 110, \ldots\}$

e) $L = \{111, 0111, 1011, 1101, 1110 \ldots\}$

g) $L = \{\varepsilon, 000, 000\,000, 000\,000\,000, \ldots\}$

h) $L = \{\varepsilon, 00, 11, 000101, 001010, 00010001 \ldots\}$

$(00|11)^* \; ((01110)(00|11)^*(01|10)(00|11)^*)^*$

($(00|11)^*$: repeat or none; $(01110)(00|11)^*$: repeat or none; $(01|10)(00|11)^*$: repeat or none; outer $(\ldots)^*$: repeat or none)

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② a) $(200)^*(1(0|20))^*$

b) $(1(0(11+))^*1)^*$

c) $\{a-z\}^*$

d) $(a^*b^*)bb^*$

e) $\{a^*b^*)\wedge\{abb\}$

③ $(a^*b^*c^*d^*)(\varepsilon|.)(a^*b^*c^*d^*)$

④ a) Regular $\Rightarrow \{0^*1^*0^*\}$

b) Regular $\Rightarrow a^*$

c) Regular expression $(0 \vee 1)^* 000 (0 \vee 1)^*$

d) Reglur $\Rightarrow (01)^*$

e) Regular $\Rightarrow (a^*b^*a^*)$