(26) $$P(E_1) = \frac{{}^{4}C_1 \times {}^{48}C_{12}}{{}^{52}C_{13}}$$

$$= \frac{4!}{3!} \times \frac{48!}{12!\,36!} \times \frac{13!\,39!}{52!}$$

$$= \frac{4 \times \cancel{48!} \times 13 \times \cancel{12!} \times (39 \ldots \times 37) \times \cancel{36!}}{\cancel{12!} \times \cancel{36!} \times 52 \times \ldots \times 49 \times \cancel{48!}}$$

$$= \frac{\cancel{52} \times (39 \times \ldots \times 37)}{\cancel{52} \times (51 \times \ldots \times 49)}$$

$$= \boxed{\frac{39 \times 38 \times 37}{51 \times 50 \times 49}} \text{ Ans}$$

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$$P(E_2|E_1) = \frac{({}^{3}C_1)({}^{36}C_{12})}{{}^{39}C_{13}}$$

$$= \frac{3!}{2!} \times \frac{36!}{12!\,24!} \times \frac{13!\times 26!}{39!}$$

$$= \frac{\cancel{3} \times \cancel{36!} \times \cancel{13} \times \cancel{12!} \times 26 \times 25 \times \cancel{24!}}{\cancel{12!} \times \cancel{24!} \times \cancel{39} \times 38 \times 37 \times \cancel{36!}}$$

$$= \boxed{\frac{26 \times 25}{38 \times 37}} \text{ Ans.}$$

$$P(E_3|E_1E_2) = \frac{{}^{2}C_1\ {}^{24}C_{12}}{{}^{26}C_{13}}$$

$$= 2 \times \frac{24!}{12!\,12!} \times \frac{13! \times 13!}{26!}$$

$$= \frac{\cancel{2} \times \cancel{24!} \times \cancel{13} \times \cancel{12!} \times 13 \times \cancel{12!}}{\cancel{12!} \times \cancel{12!} \times \cancel{26} \times 25 \times \cancel{24!}}$$

$$= \boxed{\frac{13}{25}} \text{ Ans}$$

$$P(E_4|E_1E_2E_3) = \frac{{}^{1}C_1 \times {}^{12}C_{12}}{{}^{13}C_{13}} = \boxed{1} \text{ Ans}$$

$$P(E_1E_2E_3E_4) = \frac{39 \times \cancel{38} \times \cancel{37}}{51 \times 50 \times 49} \times \frac{26 \times \cancel{25}}{\cancel{38} \times \cancel{37}} \times \frac{13}{\cancel{25}} \times 1$$

$$= \boxed{\frac{39 \times 26 \times 13}{51 \times 50 \times 49}} \text{ Ans.}$$