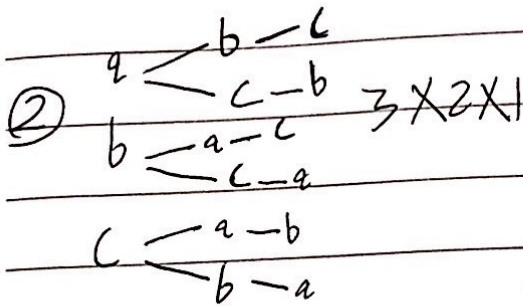Name: Mohamed ALi Mostafa
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Task ②

① $12C4 \times 8C4 \times 4C4 = 34650$

or $\dfrac{12!}{4! \times 4! \times 4!} = 34650$

②
$$a \begin{cases} b - c \\ c - b \end{cases}$$
$$b \begin{cases} a - c \\ c - a \end{cases} \quad 3 \times 2 \times 1$$
$$c \begin{cases} a - b \\ b - a \end{cases}$$

③ $P(A) = \dfrac{\overset{\text{effective}}{4}}{\underset{\text{total}}{12}} \times \dfrac{3}{11} = \dfrac{1}{11}$

non defective $P(B) = \dfrac{8}{12} \times \dfrac{7}{11} = \dfrac{14}{33}$

P(at least one item is defective)

$= 1 - P(B) = 1 - P(\text{both non-defective})$

$1 - \dfrac{14}{33} = \dfrac{19}{33}$

④ ① $\dfrac{10C3}{15C3} = \dfrac{24}{91}$

② $\dfrac{5C1 \times 5C2}{15C3} = \dfrac{45}{91}$

③ at least $= 1 - \dfrac{24}{91} = \dfrac{67}{91}$

⑤

total number mansoura = 10 + 5 = 15

$$\frac{10}{30} + \frac{15}{30} - \frac{5}{30} = \frac{2}{3}$$

⑥ 1. $P(A^c) = 1 - P(A) = 1 - \frac{3}{8} = \frac{5}{8}$

2. $P(B^c) = 1 - P(B) = 1 - \frac{1}{2} = \frac{1}{2}$

3. $P(A^c \text{ intersection } B^c) =$

$$A^c \cap B^c = (A \cup B)^c$$

$$1 - (\frac{3}{8} + \frac{1}{2} - \frac{1}{2}) = \frac{5}{8}$$

4. $(A' \cup B') = 1 - (A \cap B) = 1 - \frac{1}{2} = \frac{1}{2}$

5. $\frac{3}{8} \cdot \frac{1}{2} = \frac{-1}{8}$

6. $P(B \cap A') = P(B) - P(A \cap B)$

$$\frac{1}{2} - \frac{1}{2} = zero$$

7. $(1,6)\ (6,1)\ (4,3)\ (3,4)\ (5,2)\ (2,5)$

(no roll = 2) $\frac{30}{36} = \frac{5}{6}$ في رميتواحدة

$$\frac{5}{6} \times \frac{5}{6} \times \frac{5}{6} = ,578 = \frac{125}{216}$$

$$1 - \frac{125}{216} = \frac{91}{216}$$

(8) $\sum P(x) = k^2 - 8$

$$k^2 - 8 = 1$$
$$k^2 = 9$$
$$\therefore k = 3$$

(9) exclusive events = $A \cap B = $ zero

$$(A' \cap B') = (A \cup B)' = (A+B)^- = 1 - (.35 + .45) = .2$$