No: Date:

Hw1

(1) $= \frac{n!}{(n-r)! \cdot r!} = \frac{250!}{248! \cdot 2!}$

(2) Zero = 3 $= 3 \times 2 = 6$
Two = 1

(3) (1, 2, 3, 2, 1) $1 \times 2 \times 2 \times 2 \times 1 = 8$

(4) 3 awards, 30 players $= \frac{n!}{(n-r)! \cdot r!} = \frac{30!}{(30-3)! \cdot 3!}$

(5) 3 books, 6 solution $= \frac{n!}{(n-r)! \cdot r!} = \frac{6!}{(6-3)! \cdot 3} = 20$

(6) $S = 6 \times 6 \times 6 = 216$
$P(E) = 9$
$P: \frac{P(E)}{P(n)} = \frac{9}{216} = \frac{1}{24}$

(7) 3 books (r), 6 solution (n) If there are 2 books that shold not both be chosen together?

التركيب مش مهم (Condition)

$$\frac{n!}{(n-r)! \, r!} = \frac{6!}{2! \times 4!} = 15$$

(8) 25 student
two: ahmed
two: sally
two: mariam
two: youssef
two: i Brahim

a) 14 student
Ahmed, sally, mariam, yousef, Ib

b) 14 student (Condition) $= \frac{n!}{(n-r)! \cdot r!} = \frac{14}{4! \cdot}$
$= 1001$

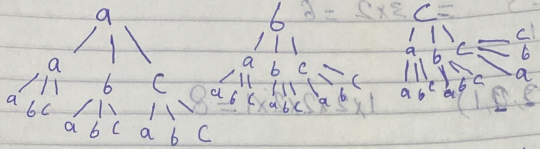
YASSIN

No: Date:

HW2

(1) $n=12$, $r=3$ $= \frac{12!}{9! \cdot 3!} = 220$

(2) 3!



(3) i) $P(A) = \frac{4}{12} \times \frac{4}{12} = \frac{16}{199}$

4 are defective

8 are not defective

$P(B) = \frac{8}{12} \times \frac{8}{12} = \frac{64}{199}$

P (at least one) $= 1 - \frac{64}{199}$

(4) 5 are defective

10 aren't defective

i) $= \frac{10}{15} \times \frac{10}{15} \times \frac{10}{15} = \frac{8}{27}$

ii) $= \frac{5 \times 10 \times 10}{15 \times 15 \times 15} \times 3$

$= \frac{15}{15} \times \frac{10}{15} \times \frac{10}{15} = \frac{4}{9}$

iii) $1 - \frac{8}{27} = \frac{19}{27}$

5) $P(\text{boys}) = \frac{10}{30}$ $P(\text{Girls}) = \frac{20}{30}$

$P(\text{Mansora}) = \frac{15}{30}$ $P(\text{Not Mansoura}) = \frac{15}{30}$

$P(\text{Not Girl and not from mansora}) = \frac{20 \times 15}{30 \times 30} = \frac{1}{3}$

$P(\text{boy or from mansoura}) = 1 - \frac{1}{3} = \frac{2}{3}$

(6) $p(A) = \frac{3}{8}$ $p(B) = \frac{1}{2}$ $p(A \cap B) = \frac{1}{2}$

i) $p(A') = 1 - \frac{3}{8} = \frac{5}{8}$

ii) $p(B') = 1 - \frac{1}{2} = \frac{1}{2}$

iii) $p(A' \cap B') = 1 - (A \cup B) = 1 - (\frac{3}{8} + \frac{1}{2})$

$= \frac{5}{8}$

$p(A') = \frac{5}{8}$

$p(B) = \frac{1}{2}$ $p(A' \cap B) = \frac{1}{8}$

$p(A' \cup B) = \frac{5}{8} + \frac{1}{2} - \frac{1}{8} = \frac{5}{8} + \frac{4}{8} - \frac{1}{8} = 1$

iv) $p(A' \cup B') = p(A') = \frac{5}{8}$

v) $p(A \cap B') = 0$

vi) $p(B \cap A') = \frac{1}{8}$

7)

$S = 6^3$

roll $7 = 6$

$\frac{6}{36} = \frac{1}{6}$ $p(\text{not } 7) = \frac{5}{6} \times \frac{5}{6} = \frac{125}{216}$

$p(7) = 1 - \frac{125}{216}$

(8)

(9) $p(A) = 0.35$ $p(B) = 0.95$

$p(A \cup B) = 0.35 + 0.95 = 0.8$

$p(A' \cap B') = 1 - (A \cup B) = 1 - 0.8 = 0.2$