(1)
495×70=34650
----
(2)
abc, acb, bac, bca, cab, cba
----
(3)
P(A) = P(D) x P(D|D-1)
P(A) = (4/12) x (3/11) = 1/11
P(B) = P(N) x P(N|N-1)
P(B) = (8/12) x (7/11) = 14/33
P(at least one item is defective) = 1 - P(both items are non-defective)

P(both items are non-defective) = P(B) = 14/33

Therefore,

P(at least one item is defective) = 1 - 14/33 = 19/33

----
(4)
n C r = n! / (r! * (n-r)!)
10 C 3 = 10! / (3! * (10-3)!) = 120
15 C 3 = 15! / (3! * (15-3)!) = 455
P(none defective) = 120 / 455 = 24 / 91
5 C 1 = 5
10 C 2 = 45

5 * 45 = 225
P(exactly one defective) = 225 / 455 = 45 / 91
P(at least one defective) = 1 - P(none defective)

We have already calculated P(none defective) in part (i).

Therefore,

P(at least one defective) = 1 - 24/91 = 67/91
----
(5)
P(B) = = 10 / 30= 1/3
P(M) == 15 / 30= 1/2
Mansoura University is 5/2 = 2.5, which is not possible. Therefore, P(B and M) = 0.
P(B or M) = P(B) + P(M) - P(B and M)
= 1/3 + 1/2 - 0
= 5/6

---

(6)

(i) $P(Ac) = 5/8$

(ii) $P(Bc) = 1/2$

(iii) P(Ac intersection Bc) = 5/8

(iv) P(Ac union Bc) = 1/2

(v) P(A intersection Bc) is not possible (-1/8)

(vi) P(B intersection Ac) = 0

---

(7)

$1 - 6/36 = 5/6$

$(5/6)^3 = 125/216$

$1 - 125/216 = 91/216$

---

(8)

Since we are given that $\Sigma P(x) = k^2 - 8$, we can start by using the fact that the sum of probabilities for all possible outcomes in a probability distribution is equal to 1:

$\Sigma P(x) = 1$

Substituting $\Sigma P(x) = k^2 - 8$, we get:

$k^2 - 8 = 1$

Adding 8 to both sides, we get:

$k^2 = 9$

Taking the square root of both sides, we get:

$k = \pm 3$

Since k must be a non-negative number in this context, we can take k = 3. Therefore, the value of k is 3.

---

(9)

$P(A \cap B) = P(A) + P(B) - P(A \cup B)$

$P(A \cup B) = P(A) + P(B)$

Substituting the given values, we get:

$P(A \cup B) = 0.35 + 0.45 = 0.8$

So, the probability of neither A nor B occurring is:

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