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Question 1.

Mike has 15 computers. 5 computers don't work.
Choose 3 computers randomly

a) P(one computer is defective out of three)

1 defective computer out of 5 defective. $\Rightarrow C(5,1) = 5$
2 working computer out of 10 $\Rightarrow C(10,2) = \frac{10 \cdot 9}{2} = 45$

Total ways to choose 3 computers $\Rightarrow C(15,3)$

$$= \frac{\overset{5}{\cancel{15}} \cdot \overset{7}{\cancel{14}} \cdot 13}{\cancel{3} \cdot \cancel{2}} = 455$$

$\Rightarrow$ P(one computer is defective and two are not)

$$= \frac{5 \cdot 45}{\frac{\cancel{455}}{91}} = \frac{45}{91} \simeq \boxed{0.495}$$

b) P(two computers are defective among three chosen)

P(2 computers are not working) = $\frac{5 \cdot 4}{2} = 10$

P(1 computer is working) = 10

P(Total ways to choose 3 out of (5)) = $\frac{15 \cdot 14 \cdot 13}{3 \cdot 2} = 455$

$\therefore$ P(Two are defective among three chosen computer) = $\frac{10 \cdot 10}{455}$

$$= \frac{100}{455} \simeq \boxed{0.22}$$

Question 2.

$P(A \text{ go with friend}) = 0.9$
$P(A \text{ w/o friend}) = 0.15$

$P(\text{friend go trip}) = 0.65$

$\Rightarrow P(A \mid F) = 0.9$
$P(A \mid NF) = 0.15$
$P(F) = 0.65$

$P(A) = P(A|F) \cdot P(F) + P(A|NF) \cdot P(NF)$

$P(NF) = 1 - P(F) = 0.35$

$\Rightarrow 0.9 \cdot 0.65 + 0.15 \cdot 0.35$
$= 0.6375$
$\therefore P(\text{Alice go on the trip}) = \boxed{0.6375}$