**Exercício 3 – Matemática Discreta II – Resolução**

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**1)**

**a –**

FND: (~P ^ Q) V (~P ^ ~Q)

FNC: (~P V ~Q) ^ (~P V Q)

FC:

C1:{~P,Q}

C2:{~P,~Q}

**b –**

FND: (P ^ Q) V (~P^Q) V (~P ^ ~Q)

FNC: (~P ^ Q)

FC:

C1: {P,Q}

C2: {~P,Q}

C3: {~P, ~Q}

**c –**

FND: **(**P ^ Q ^ R**)** V **(**P ^ ~Q ^ R**)** V **(**~P ^ Q ^ R**)** V **(**~P ^ ~Q ^ R**)** V **(**~P ^ ~Q ^ ~R**)**

FNC: (~P v ~Q v R) ^ ( ~P v Q v R) ^ (P v ~Q v R)

FC:

C1: {~P, ~Q, R}

C2: {~P,Q,R}

C3: {P,~Q,R}

**d –**

FND: (P ^ R) v (~P ^ R) v (~P ^ ~R)

FNC: **(**~P ^ R)

FC:

C1: {~P,R}

**e –**

FND: (~P ^ ~Q)

FNC: (~P v ~Q) ^ ( ~P v Q) ^ (P v ~Q)

FC:

C1: {~P,~Q}

**f –**

FND: (P ^ ~Q)

FNC: (~P v ~Q) ^ (P v ~Q) ^ (P v Q)

FC:

C1: {P,~Q}

**g –**

FND: (P ^ ~Q)

FNC: (~P v ~Q) ^ (P v ~Q) ^ (P v Q)

FC:

C1: {P, ~Q}

**h –**

FND: (~Q ^ R) v (~Q ^ ~R)

FNC: **(**~Q v ~R) ^ (~Q v R)

FC:

C1: {~Q,R}

C2: {~Q,~R}

**i –**

FND: (~P ^ ~Q)

FNC: **(**~P v ~Q) ^ (~P v Q) ^ (P v ~Q)

FC:

C1:{~P, ~Q}

**j –**

FNC: **(**~P v ~Q) ^ (~P v Q) ^ (P v ~Q) ^ (P v Q)

FC:

C1: {~P,~Q}

C2: {~P,Q}

C3: {P,~Q}

C4: {P,Q}

**k –**

FND: (P ^ Q ^ R) v (P ^ Q ^ ~R) v (P ^ ~Q ^ R) v (P ^ ~Q ^ ~R)

FNC: **(**P v ~Q v ~R) ^ (P v ~Q v R) ^ (P v Q v ~R) ^ (P v Q v R)

FC:

C1: {P,~Q,~R}

C2: {P,~Q,R}

C3: {P,Q,~R}

C4: {P,Q,R}

**2)**

**a –**

∀x (arara(x) → cv(x))

**b –**

¬∃x (pequeno(x) ^ n alto(x))

**c –**

∀x (~n alto(x) → ¬cv(x))

**d –**

∀x (arara(x) → grande(x))

**3)** Letra C

**4)**

**b –**

∀(x)[sobre(x) ^ desce(x)]

**c –**

~∀(x)[leão(x) ^ manso(x)]

**d –**

∀(x)[circo(x) ^ palhaço(x)]