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Discrete Structures

Date :- 29-March-2021

(a) -  $A \rightarrow C$  Knave  
 $B \rightarrow A$  Knight  
 $C \rightarrow C$  Spy

(1) - Knight Knight Knave  
A B C

(i) -  $r_2 = F$   $T \neq F$

(ii) -  $p_1 = F$   $T \neq F$

(iii) -  $r_3 = T$   $F \neq T$

Case is not satisfied.

(2) - Knight Knave Knight  
(A) (B) (C)

(i) -  $r_2 = F$   $F = F$

(ii) -  $p_3 = T$   $T = T$

(iii) -  $r_3 = F$   $F = F$

Case is ~~not~~ satisfied

(3) - Knave Knight Knight  
(A) (B) (C)

$r_2 = T$   $F \neq T$

$p_1 = F$   $F = F$

$r_3 = F$   $F = F$

Case is not satisfied

(b) -  $A \rightarrow A$  Knight  
 $B \rightarrow B$  Knave  
 $C \rightarrow B$  Knight