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Page No.
Date

Soln:- 2:-

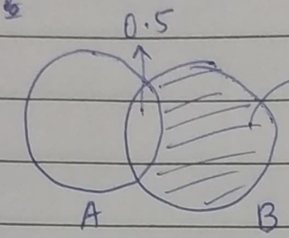
(b) $P(A) = 0.5$

$P(B|A) = 1 \Rightarrow \frac{P(BA)}{P(A)} = 1$

$P(B) = 0.75$

$\Rightarrow P(BA) = 0.5$

$\therefore P(B|\neg A) = \frac{P(B.\neg A)}{P(\neg A)}$



$\rightarrow P(B\neg A)$

$= P(B) - P(AB)$

$= 0.75 - 0.5$

$= 0.25$

$\therefore P(B|\neg A) = 0.25/0.5 = \frac{1}{2}.$

(c) (i) $P(ABC) = P(A) \cdot P(B) \cdot P(C|AB)$

$= \frac{1}{4} \times \frac{3}{4} \times 1$

$= \frac{3}{16}$

(ii) $P(AB) \Rightarrow \because$ A & B are independent

$P(AB) = P(A) \cdot P(B)$

$= \frac{1}{4} \times \frac{3}{4}$

$= \frac{3}{16}$

Page No.
Date

(iii) $\cancel{P(C)} = \cancel{P(CA)+P}$

$= \cancel{P(CAB)+P(CAB)}$

$\Rightarrow P(C) = P(CAB) + P(CA\neg B) + P(C\neg AB) + P(C\neg A\neg B)$

$\therefore P(ABC) = 3/16$

$P(A\neg BC) = P(A) \cdot P(\neg B) \cdot P(C \mid A\neg B)$

$= \frac{1}{4} \times \frac{1}{4} \times 0 = 0$

$P(\neg ABC) = P(\neg A) P(B) P(C \mid \neg AB)$

$= \frac{3}{4} \times \frac{3}{4} \times \frac{1}{2}$

$= \frac{9}{32}$

$P(\neg A\neg BC) = P(\neg A) P(\neg B) P(C \mid \neg A\neg B)$

$= \frac{3}{4} \times \frac{1}{4} \times 0 = 0$

$\therefore P(C) = \frac{3}{16} + \frac{9}{32} = \frac{6+9}{32} = \frac{15}{32}$

$\therefore P(C) = \frac{15}{32}$

(iv) $P(B|C) = P(BC) / P(C)$

$= P(CB) / P(C)$

$= [P(CBA) + P(CB\neg A)] / P(C)$

$= \left(\frac{3}{16} + \frac{9}{32}\right) / \left(\frac{15}{32}\right)$

$= 1$

(v) $P(AB|C) = \dfrac{P(ABC)}{P(C)}$

$= \dfrac{3/16}{15/32}$

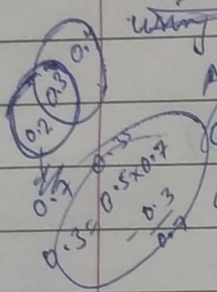
$= \dfrac{6}{15}$

$= \dfrac{2}{5}$.

(a) (i) $P(AB) = P(A)P(B) - P(A|B)$

$\because P(A|B) = \dfrac{P(AB)}{P(B)}$

~~using truth~~ table.



A	B
0	1
0	0
1	0
1	1

$\Rightarrow P(AB) = P(A)P(B) - \dfrac{P(AB)}{P(B)}$

$\therefore$ false

(ii) $P(AB) = P(A)P(B)$

false because it only holds when A & B are independent

(iii) $P(AB) = P(A|B)P(B) + P(B|A)P(A)$

from RHS,

$P(A/B)\,P(B) + P(B/A)\,P(A)$

$$= \frac{P(A\cap B)}{\cancel{P(B)}}\,\cancel{P(B)} + \frac{P(A\cap B)}{\cancel{P(A)}}\,\cancel{P(A)}$$

$$= 2\,P(AB) \neq LHS$$

$\therefore$ false.

(iv) $P(A) = \sum_{b\in B} P(A \mid B=b)\,P(B=b)$

true

(v) false

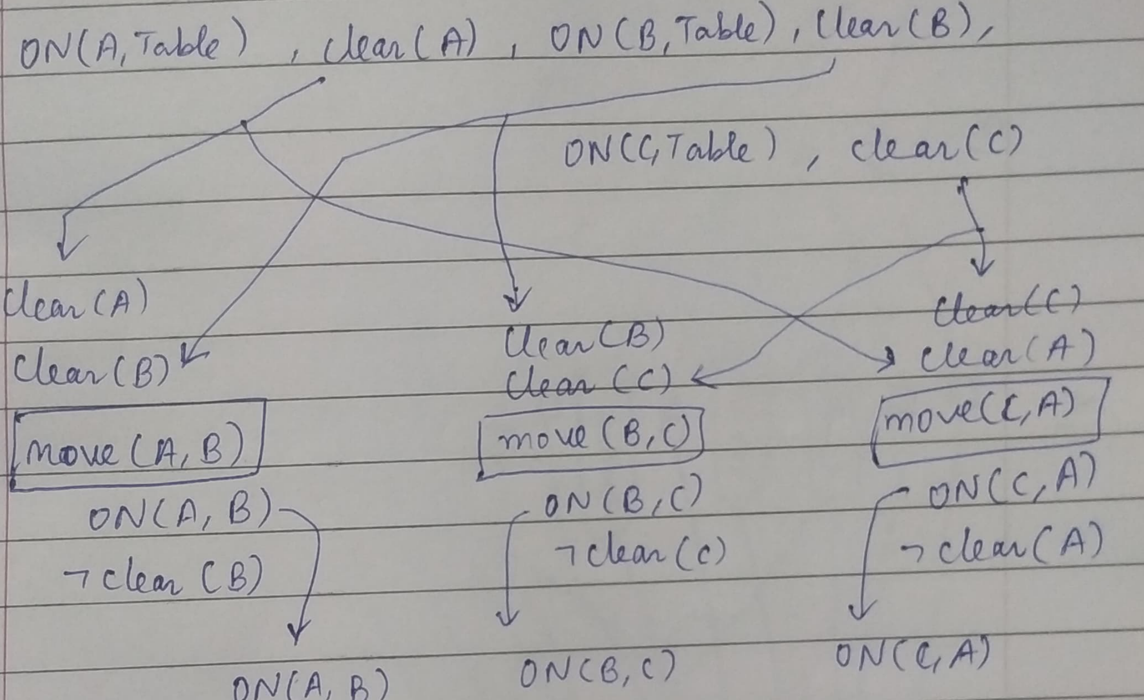
(vi) $P(ABC) = P(C/A)\,P(B \mid CA)\,P(A)$

$\therefore$ True

Sol^n:- 3:- Initial :- ON (A, Table)
ON (B, Table), ON (C, Table)

Goal:- ON (A, B) ON(B, C) ON(C, A)

Initial



Goal

In the above partial order, we observe that for the move (B,C), move (A, B) and move(C, A) operations.
There are threats that which can not be resolved by ordering ie;
(i) effect ¬clear(B) of move (A, B) negates the precondition of move (B, C) thus implies an ordering was introduced.

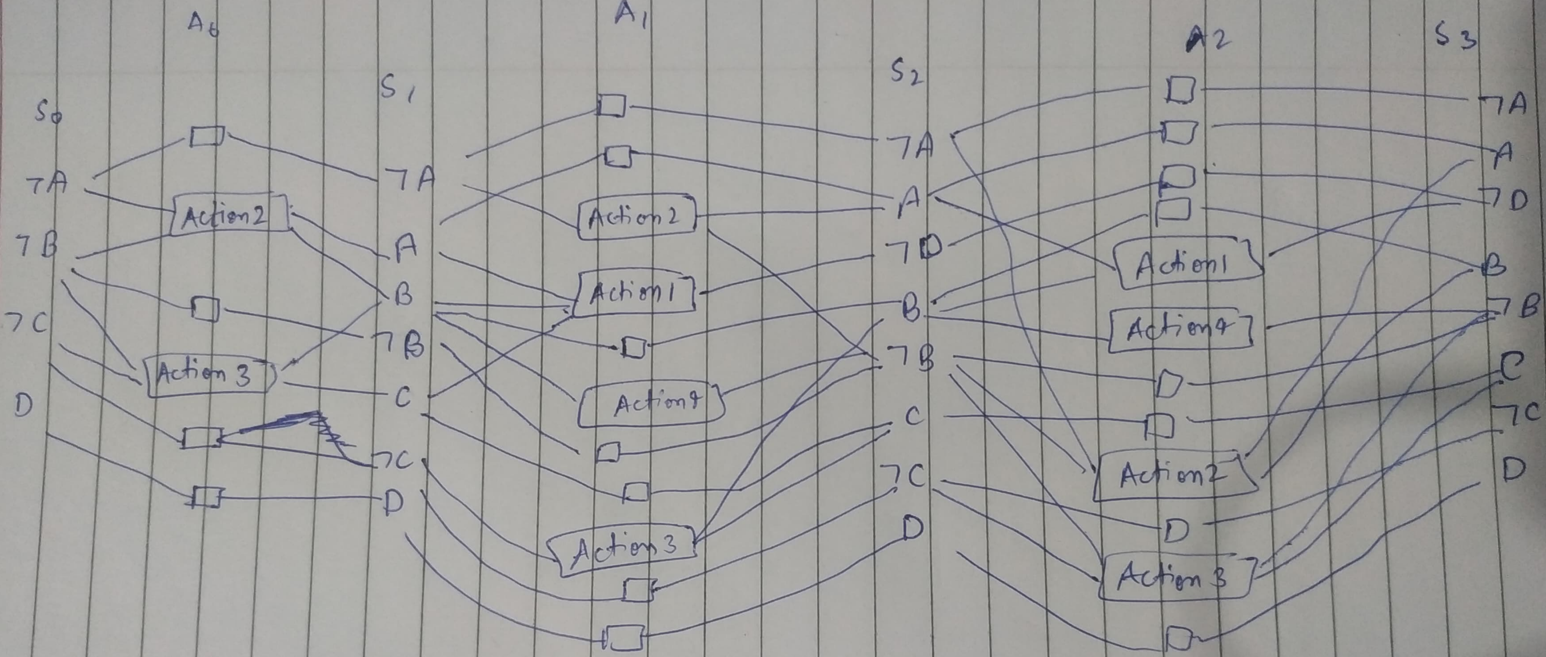
Page No.

Date

(ii) However $\neg$ Clear(C) persists during the step, move (C, A) & negates the precondition

$\therefore$ Therefore, there is no solution for the partial order plan.

Ans:- 1:- (a)



S_0
A_0
S_1
A_1
S_2
A_2
S_3
¬A
A
¬B
B
¬C
C
D
¬D
Action 1
Action 2
Action 3
Action 4