

1) Let $X_1, X_2, X_3 \sim f_{X_1, X_2, X_3}(t_1, t_2, t_3)$. Choose the correct options from the following.

$f_{X_1}(t_1) = \sum_{t'_2 \in T_{X_2}, t'_3 \in T_{X_3}} f_{X_1, X_2, X_3}(t_1, t'_2, t'_3)$

$f_{X_1, X_2}(t_1, t_2) = \sum_{t'_3 \in T_{X_3}} f_{X_1, X_2, X_3}(t_1, t_2, t'_3)$

$f_{X_1, X_2}(t_1, t_2) = \sum_{t'_1, t'_2} f_{X_1, X_2, X_3}(t'_1, t'_2, t'_3)$

$f_{X_2}(t_2) = \sum_{t'_1 \in T_{X_1}, t'_3 \in T_{X_3}} f_{X_1, X_2, X_3}(t'_1, t_2, t'_3)$

Sum over all the values except the ones you want to find the PMF for.

Let $X_1, X_2, X_3 \sim f_{X_1, X_2, X_3}(t_1, t_2, t_3)$. Their joint PMF is given in Table 1.6.1.

t_1	t_2	t_3	$f_{X_1, X_2, X_3}(t_1, t_2, t_3)$
0	0	0	1/6
0	1	0	1/6
0	1	1	1/6
1	0	0	1/6
1	0	1	1/6
1	1	1	1/6

Table 1.6.1: Joint PMF of X_1, X_2 , and X_3 .

Q) Find the PMF of X_1 and X_2 .

⇒ Sum over the values of X_3 .

$X_1 \backslash X_2$	0	1
0	1/6	2/6
1	2/6	1/6

Q) Find the PMF of X_2 and X_3 .

⇒ Sum over the values of X_1 .

$X_2 \backslash X_3$	0	1
0	2/6	1/6
1	1/6	2/6