Question #223
Answer: C

ILT:

We have $p_{70} = 6,396,609/6,616,155 = 0.96682$

$${}_2p_{70} = 6,164,663/6,616,155 = 0.93176$$

$$e_{70:\overline{2}|} = 0.96682 + 0.93176 = 1.89858$$

CF: $0.93176 = {}_2p_{70} = e^{-2\mu} \Rightarrow \mu = 0.03534$

Hence $e_{70:\overline{2}|} = p_{70} + {}_2p_{71} = e^{-\mu} + e^{-2\mu} = 1.89704$

DM: Since l_{70} and ${}_2p_{70}$ for the DM model equal the ILT, therefore l_{72} for the DM model

also equals the ILT. For DM we have $l_{70} - l_{71} = l_{71} - l_{72} \Rightarrow l_{71}^{(\mathrm{DM})} = 6,390,409$

Hence $e_{70:\overline{2}|} = 6,390,409 / 6,616,155 + 6,164,663 / 6,616,155 = 1.89763$

So the correct order is CF < DM < ILT

You could also work with *p*'s instead of *l*'s. For example, with the ILT,

$$p_{70} = (1 - 0.03318) = 0.96682$$
$$_2p_{70} = (0.96682)(1 - 0.03626) = 0.93176$$

Note also, since $e_{70:\overline{2}|} = p_{70} + {}_2p_{70}$, and ${}_2p_{70}$ is the same for all three, you could just order p_{70}.