Math 6400 Quiz October 7, 2018

1a.) Give a cellular decomposition of $S^2 \vee S^4$

The chain complex, $\cdots \to C_n \to \cdots$ for this decomposition is

1b.) Use this cellular decomposition of $S^2 \vee S^4$ to calculate $H_n(S^2 \vee S^4)$

1c.) Use the universal coefficient theorem for cohomology to calculate $H^n(S^2 \vee S^4)$

1d.) Use the definition of cohomology and the decomposition from 1a to calculate $H^n(S^2 \vee S^4; \mathbb{Z})$

By definition, $C^n(S^2 \vee S^4; \mathbb{Z}) =$

1e.) If $\phi, \psi \in \bigoplus_n H^n(S^2 \vee S^4; \mathbb{Z})$, then $\phi \smile \psi =$