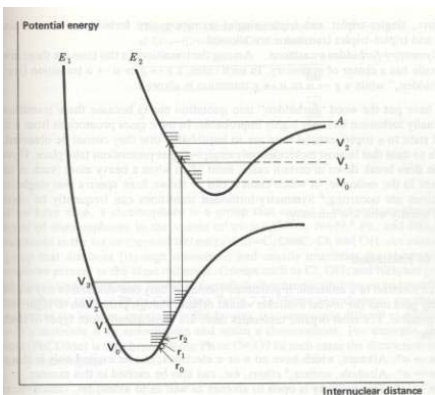


TWQ 4 (25points)

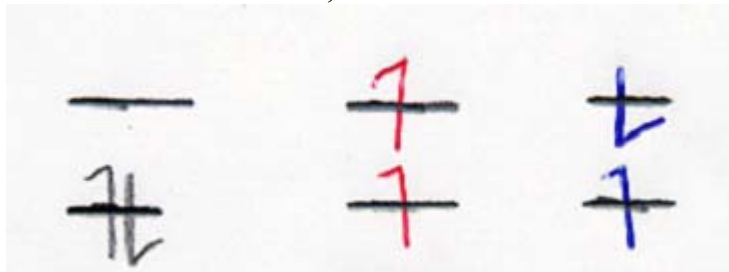
Name _____

1) Who is this type of Diagram named after?



2-5) Photochemistry is dominated by two main rules. (One deals with the geometries of ground and excited states – the other deals with electron spin inversion upon excitation). State these two rules.

6-8) Label these three states as TRIPLET, SINGLET or GROUND STATE.



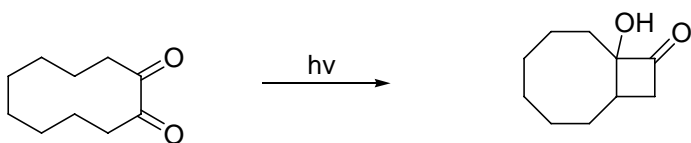
9-10) Indicate for above, which is the highest energy state; and also which has the lowest energy.

11-12) Circle the typically lowest energy transition; and underline the highest energy transition.

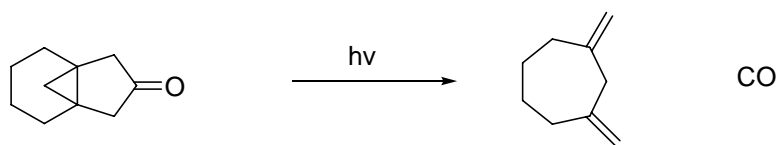


13-16) For each transition, draw a molecule which would easily undergo such a photochemical transition.

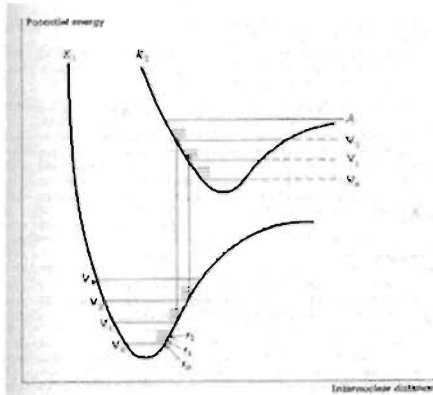
17-20) Write a mechanism for this transformation.



21-25) Write a mechanism for this transformation.



1) Who is this type of Diagram named after?



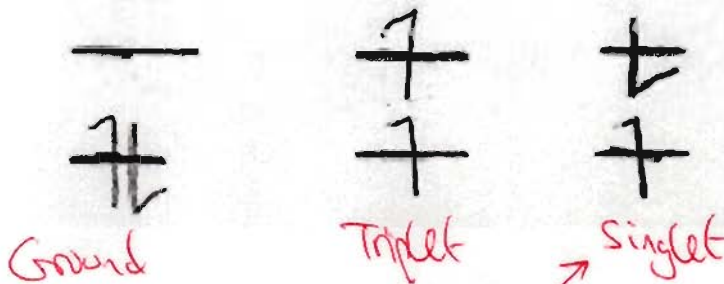
Jablonski

2-5) Photochemistry is dominated by two main rules. (One deals with the geometries of ground and excited states – the other deals with electron spin inversion upon excitation). State these two rules.

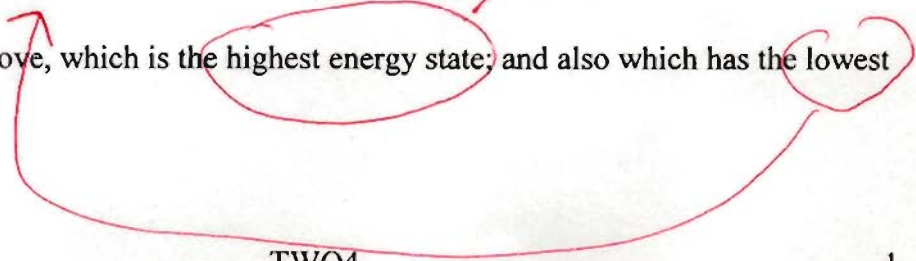
i) The initial excited state will have the same geometry as the ground state. (i.e. excitation much faster than vibration).

ii) Excitation cannot cause electrons to undergo spin inversion.

6-8) Label these three states as TRIPLET, SINGLET or GROUND STATE.



9-10) Indicate for above, which is the highest energy state, and also which has the lowest energy.



11-12) Circle the typically lowest energy transition; and underline the highest energy transition.

$\pi \rightarrow \pi^*$

$n \rightarrow \sigma^*$

$\sigma \rightarrow \sigma^*$

$n \rightarrow \pi^*$

13-16) For each transition, draw a molecule which would easily undergo such a photochemical transition.

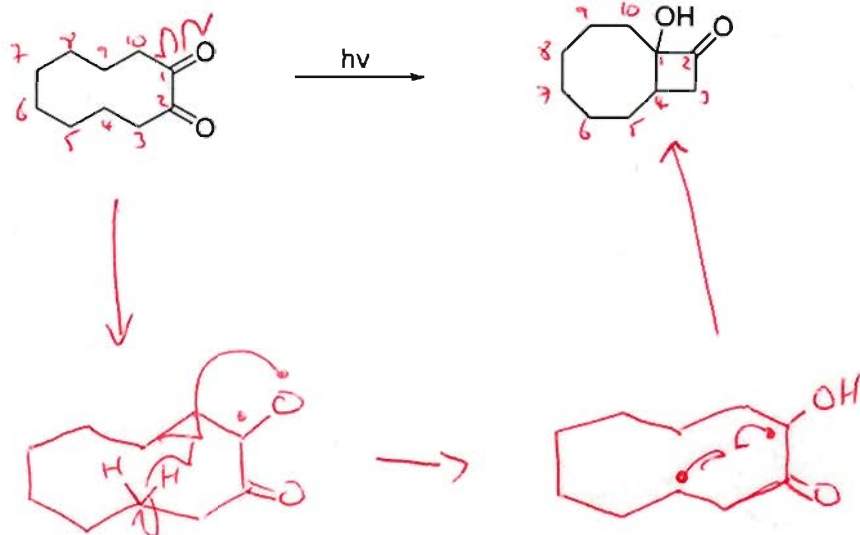
alkenes
aldehydes
acids
esters

amine
alcohol
ether
CH3OH

alkane

aldehyde
ketone
ester
CH3-C(=O)-O-CH3

17-20) Write a mechanism for this transformation.



21-25) Write a mechanism for this transformation.

