

## CHO-453 DESIGNING ORGANIC SYNTHESIS & ASYMMETRIC SYNTHESIS

| Item Text   | Option Text 1  | Option Text 2   | Option Text 3   | Option Text 4  |
|---|--|---|---|--|
| Which of the following statements best describes retrosynthesis?                    | The reaction conditions required to convert the product of a reaction back to the original starting materials  | A strategy used to design a synthesis of a target molecule by working back from the target to simple starting materials | The design of a synthetic scheme using cheap, traditional reagents, rather than expensive modern reagents   | The design of reaction conditions such that an equilibrium reaction is pushed towards the products rather than the starting materials. |
| Which of the following statements best describes a synthon?                         | A synthetic reagent used in a reaction   | A key intermediate in a reaction sequence   | A transition state involved in a reaction mechanism   | A hypothetical structure that would result in a given reaction if it existed   |
| Which of the following statements best describes a disconnection in retrosynthesis? | A disconnection involves a theoretical disconnection of a bond in a target structure in order to identify simpler structures that could be linked through the formation of that bond | A disconnection involves identifying stages where a bond is split in the corresponding synthesis.                       | A disconnection identifies retrosynthetic stages which would not be feasible in the corresponding synthesis | A disconnection describes the reaction conditions required to split a target structure into simpler molecules.                         |

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|---|-------------------------------|----------------------------------|-------------------------------|--------------------------------------|
| Which of the following (to be converted by functional group interconversion, FGI) is <b>not</b> a good alternative target for the synthesis of a primary amine, $\text{RCH}_2\text{NH}_2$ ? | $\text{RCH}_2\text{Cl}$       | $\text{RCH}_2\text{OH}$          | $\text{RCHO}$                 | $\text{RCN}$                         |
| Which of the following (to be converted by FGI) is <b>not</b> a good alternative target for the synthesis of a carboxylic acid, $\text{RCO}_2\text{H}$ ?                                    | $\text{RCH}_2\text{OH}$       | $\text{RCHO}$                    | $\text{RCOCH}_3$              | $\text{RCN}$                         |
| Which of the following is used as a acylanion equivalent?   | Nitroethane                   | Nitrene                          | Ether                         | Alkene                               |
| For the synthesis of 1,2-dicarbonyl compound which molecule is use to react with lithium salt   | Acyl halide                   | Epoxide                          | Alkyl halide                  | unsaturated aldehyde                 |
| Enamines are  | alpha, beta-unsaturated amine | alpha, beta-unsaturated aldehyde | alpha, beta-unsaturated ether | alpha, beta-unsaturated alkyl halide |
| For the preparation of enamine which amine is used?   | Primary Amine                 | Secondary Amine                  | Tertiary Amine                | Quaternary Amine                     |
| Reaction of ketone or aldehyde with primary amine gives   | Imine                         | Enamine                          | Alkene                        | Alkyne                               |
| Which of the following amine is not used in synthesis of enamine?   | Pyrolidine                    | Morpholine                       | Piperidine                    | Methyl amine                         |
| Enamines are  | Nucleophile                   | Electrophile                     | Neutral                       | Radical                              |
| The phenomenon or process by which imine are converted into enamine is which of the following?  | Imination                     | Enamination                      | Amination                     | Tautomerism                          |
| What is the name of the compound formed when alkylation of enamine is followed by hydrolysis?   | Carboxylic Acid               | Ketone                           | Amide                         | Ester                                |
| Which cyclic ketone enamine is most reactive?   | Five Membered                 | Six Membered                     | Seven Membered                | Eight Membered                       |
| Fmoc chloride is used to protect the  | Amine                         | Alcohol                          | Acid                          | Diol                                 |

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|  |             |                  |                |                |
|--|-------------|------------------|----------------|----------------|
| Which of the following is used to deprotect the silylethers  | Mild base   | Fluoride or TBAF | Hydrogenation  | Acid           |
| In Umpolung Chemistry which of the following intermediate is formed?                                     | Carbene     | Carbocation      | Carbanion      | Nitrene        |
| Which of the following compound is obtained by the oxidation of primary alcohol with Nascent oxygen?     | Alkanal     | Alkanone         | Ether          | Amine          |
| The reaction of carboxylic acid with alcohol catalysed by conc. H <sub>2</sub> SO <sub>4</sub> is called | Dehydration | Saponification   | Esterification | Neutralization |