

EXERCISE

Q1. Select the right answer from the choices given with each question.

1) In primary alkyl halides, the halogen atom is attached to a carbon which is further attached to how many carbon atoms:

- a) Two
- b) Three
- c) One
- d) Four

2) SN2 reactions can be best carried out with:

- a) Primary alkyl halides
- b) Secondary alkyl halides
- c) Tertiary alkyl halides
- d) All the three

3) For which mechanisms, the first step involved is the same;

- a) E1 and E2
- b) E2 and SN2
- c) E1 and SN2
- d) E1 and SN1

4) The rate of E1 reaction depends upon:

- a) the concentration of substrate
- b) the concentration of nucleophile
- c) the concentration of substrate as well as nucleophile
- d) none of the above

5) Alkyl halides are considered to be very reactive compounds towards nucleophile because:

- a) they have an electrophilic carbon.
- b) they have an electrophilic carbon and a good leaving group.
- c) they have an electrophilic carbon and a bad leaving group.
- d) they have a nucleophile carbon and a good leaving group.

6) Which one of the following is not a nucleophile?

- a) H_2O
- b) H_2S
- c) BF_3
- d) NH_3

7) Double bond is formed as a result of:

- a) Substitution reactions
- b) Elimination reactions
- c) Addition reactions
- d) Rearrangement reactions

8) Which of the following alkyl halides cannot be formed by direct reaction of alkanes with halogen:

- a) $\text{R}-\text{Br}$
- b) $\text{R}-\text{Cl}$
- c) $\text{R}-\text{F}$
- d) $\text{R}-\text{I}$

9) $\text{CH}_3\text{CH}_2\text{Br}$ on treatment with alc. KOH gives

- a) Propanal
- b) Propene
- c) Propane
- d) None

10) Grignard's reagent gives alkane with:

- a) water
b) Ethylamine
c) Ethanol
d) All of these

11) Action of alkyl halides with Na metal yield;

- a) Alkanes
b) Alcohols
c) Alkenes
d) Phenols

12) Alkyl halides react with excess of ammonia to give;

- a) 1^o— amine
b) 2^o— amine
c) 3^o— amine
d) all

13) Among the alkyl halides the primary alkyl halides always follow the mechanism.

- a) S_N1
b) S_N2
c) S_N3
d) S_N4

14) Grignard's reagent on treatment with chloramines gives;

- a) Acetamide
b) Primary amine
c) Secondary amine
d) Urea

15) Nucleophilic addition of a primary amine gives;

- a) Imine
b) Urea
c) Ammonia
d) Nitrobenzene

Answers

1)	c)	2)	c)	3)	d)	4)	a)	5)	b)
6)	c)	7)	b)	8)	d)	9)	b)	10)	d)
11)	a)	12)	c)	13)	b)	14)	b)	15)	a)

Q2. Give short answers of the following questions.

Q1. What are primary, secondary and tertiary alkyl halides?

Answer

Please see Answer of Q no 18 of chapter notes.

Q2. Why alkyl iodides cannot be prepared by directly heating iodine with alkene?

Answer

- (i) Iodine on reaction with alkenes produced iodoalkanes which are unstable and decompose again to give I₂.
- (ii) The second factors are strong van der Waals among I₂ molecules due to strong van der Waals forces among I₂ molecules the reactivity of I₂ in alkenes decreases.
- (iii) Also, the addition of I₂ to an alkene produces dihalides and not alkyl halides.

Q3. What are Nucleophilic substitution reactions or S_N reactions?

Answer

Please see answer of Q6 of chapter notes.

Q4. Tertiary alkyl halides show S_N1 reactions mostly, why?

Answer

Tertiary alkyl halides on reaction with nucleophile are converted into the product. It means in one step there occurs one change so that is why it is called SN1 reaction.

For example



Q5. What are elimination reactions?

Answer

Please see answer of Q 13 of chapter notes.

Q6. Which factor decides the reactivity of alkyl halides?

Answer

Please see answer of Q2 of chapter notes.

Q7. What are the diazonium salt?

Answer

Please see answer of Q47 of chapter notes.

Q8. How can nucleophilic addition of a primary amine be giving an amine?

Answer

Primary amines on reaction with aldehydes and Ketones on condensation give an imine which is called Schiff base



Q9. Amines are more basic than analogous alcohols, why?

Answer

Please see answer of Q39 of chapter notes.

Q10. How tertiary alcohols are obtained from R—Mg—X?

Answer

Please see answer of Q30 of chapter notes.

Q3. Give detailed answers for the following questions.

Q1. Discuss the reactivity of alkyl halides.

Answer

Please see answer of Q2 of Chapter notes.

Q2. Give three methods for the preparation of alkyl halides?

Answer

Please see answer of Q1 of Chapter notes.

Q3. Explain in detail SN1 and SN2 reactions with mechanism.

Answer

For SN1 reaction Please see answer of Q10 of chapter notes for SN2 reaction please see answer of Q10 of chapter notes.

Q4. What are E— elimination reactions? Explain them with detail.

Answer

Please see answer of Q 13 of Chapter notes.

Q5. How will you convert ethyl chloride to the

i) Ethyl cyanide ii) Ethanol iii) Propane iv) N-butane

v) Tetraethyl lead

Answer

(I) Ethyl chloride into Ethyl cyanide:



(II) Ethyl chloride into Ethanol:



(III) Ethyl chloride into Propane:



(IV) Ethyl chloride into N-butane



(v) Ethyl chloride into tetraethyl lead:



Q6. Discuss the preparation and reactivity of Grignard's reagent?

Answer

Please see answer of Q29 of chapter notes.

Q7. What are the amines? Gives nomenclature.

Answer

Please see answer of Q36 of chapter notes.

Q8. What are the main features which increase the basicity of amine?

Answer

Please see answer of Q44 of chapter notes.

Q9. Amides are reduced by LiAlH_4 . Give mechanism.

Answer

Please see answer of Q43 of chapter notes.

Q10. What are the diazonium salts? How they can be prepared? Give their reactions.

Answer

Please see answer of Q47 of chapter notes.

