

Marks scored:

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
July, 2017

Level : B.Sc.

Year : II

Course : CHEM 207

Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

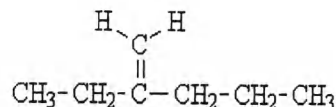
Date : JUL 09 2017

SECTION "A"

[20 Q. × 1=20 marks]

Select the most appropriate answer.

1. What is the best name for the following compound?



3-methylenehexane

2-propyl-1-butene

4-ethyl-4-pentene

2-ethyl-1-pentene

2. In electrophilic aromatic substitution reaction which of the following is deactivating and ortho-para directing group?

-NH<sub>2</sub>

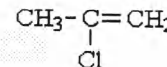
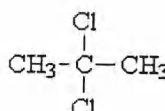
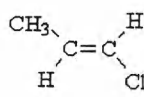
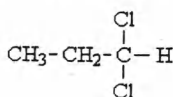
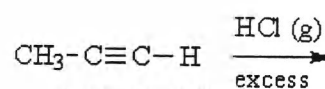
-NO<sub>2</sub>

-CH<sub>3</sub>

-I

3. What is the major product expected from the reaction

13. The major product is



4. The solvent generally used during the preparation of organometallic compounds is

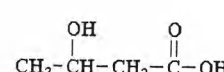
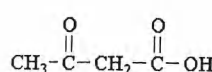
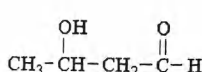
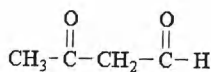
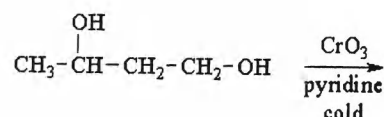
diethyl ether

n-hexane

isopropyl alcohol

chloroform

5. What is the major product of the following reaction?



6. Only sigma bonds are present in

Propene

butanoic acid

butanal

ethoxy ethane

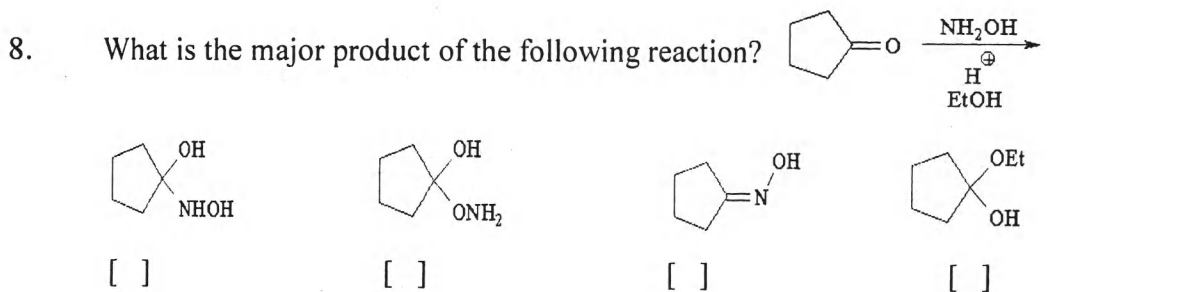
7. Which is not true about free radical mechanism

in initiation step free radicals are generated

in propagation step free radical reacts with another free radicals

in termination step neutral molecules are formed by the reaction of free radicals

the reaction is catalyzed by peroxides



9. Ozonolysis of alkenes followed by the reaction with Zn/H<sub>2</sub>O yields .....as product/s.
- [ ] alcohols and aldehydes       [ ] aldehydes and Ketones  
 [ ] aldehydes       [ ] alcohols and ketones

10. Friedels craft alkylation of Benzene, the reagents used are.....
- [ ] R-Cl/AlCl<sub>3</sub>       [ ] RCOCl/AlCl<sub>3</sub>       [ ] Cl<sub>2</sub>/AlCl<sub>3</sub>       [ ] RCOCl/H<sub>2</sub>SO<sub>4</sub>

11. Acids anhydrides on reaction with alcohols produce .....
- [ ] Ester and alcohols       [ ] Ester and Carboxylic acids  
 [ ] Ether and Ester       [ ] Ester only

12. Amino acids on more acidic condition than isoelectric point remains mostly remains as .....
- [ ] cation       [ ] anion       [ ] zwitter ion       [ ] neutral molecule

13. Which is not true about the coordination polymerization?
- [ ] It gives linear polymers       [ ] It produces polymers of low crystallinity  
 [ ] It permits stereochemical control       [ ] It uses Ziegler -Natta catalyst

14. The maximum number of R-X molecules that react with a molecule of primary amines during alkylation is
- [ ] 1       [ ] 2       [ ] 3       [ ] 4

15. Reaction of .....amines with nitrous acid produce diazonium salts.
- [ ] primary       [ ] secondary       [ ] tertiary       [ ] quaternary

Fill in the blanks with appropriate words/symbols.

16. The structural formula of 1-methylcyclopentanol is.....
17. The electrophile involve during the Sulphonation of Benzene is.....
18. Grignard reagents react with CO<sub>2</sub> followed by hydrolysis produce.....
19. Oxymercuration-demercuration reaction of alkenes has.....orientation.
20. Hex-3-yne can be converted to cis-hex-3-ene by using -----catalyst.

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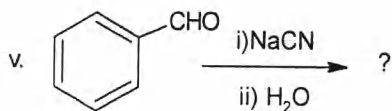
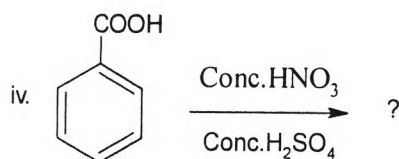
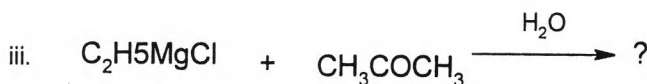
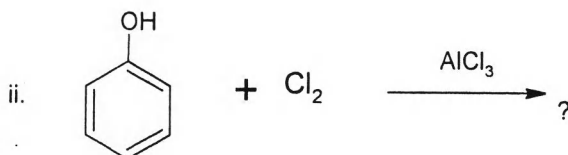
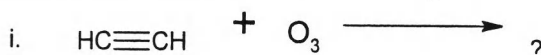
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SECTION "B"

Attempt ALL questions.

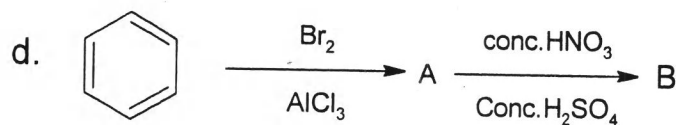
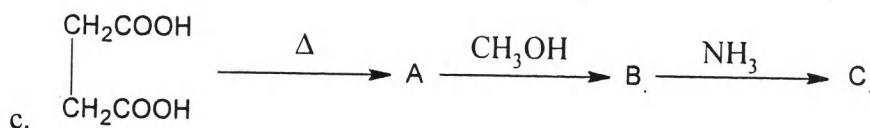
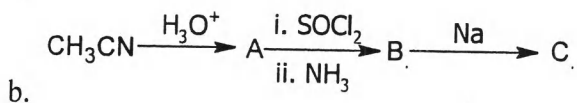
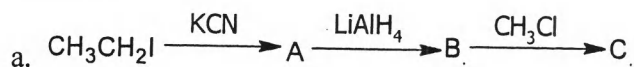
1. a. Draw structural formulas of [4 × 1 = 4]  
i. cyclohexane carboxylic acid      ii. 3-methyl-2-butanol  
iii. Acetophenone                      iv. N-ethyl-N-methylaniline  
b. Write with examples. [2 × 2 = 4]  
i. Aromatic compounds              ii. Polymers

2. a. Give product/s for the following reactions. [5 × 1 = 5]



- b. Starting with benzene, outline steps in a possible synthesis of *m*-chloronitrobenzene and *o,p*-chloronitrobenzene. [2]  
c. Give structures and names of the principal organic products expected from the reaction of primary, secondary and tertiary amines with nitrous acid. [2]
3. Give appropriate reasons. [5 × 2 = 10]  
a. Methyl amine is more basic than Aniline.  
b. Electrophilic substitution of benzaldehyde is favorable at *meta* position.  
c. Alkyl halides though polar, are immiscible with water.  
d. Aldehydes are more reactive than ketones.  
e.  $\text{S}_\text{N}2$  reaction proceeds with inversion of configuration.
4. Write down the mechanism of the following reactions with suitable example. [2.5 × 4 = 10]  
a. Free radical Polymerization  
b. Electrophilic addition to alkene  
c. Aldol condensation  
d. Electrophilic substitution on Benzene

5. Assign structures to the compounds represented by the letters for the following series of reactions. [2 × 4 = 8]



6. Write short notes on
- Coordination Polymerization
  - Amino acids
  - Coaltar distillation
  - Isoelectric point
  - Enzymatic peptide hydrolysis

[5 × 2 = 10]