الإجابة النموذجية لامتحان كيمياء البترول والبتروكيماويات

٣١٩ ك
(نصف ورقة امتحانية)

المستوى : الثالث
الشعبة: جميع الشعب
التاريخ : الثلاثاء ٢٠١٧/١/٣
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قسم : الكيمياء
كلية : العلوم

Answer the following questions:

[1] Choose the correct answer:

1) Reformed naphtha consists of p-xylene and ……..

a- o-xylene b- m-xylene c- toluene d- all of these

2) Chlorination of methane in presence of light gives chloroform and ……

a- CH_3Cl b- CH_2Cl_2 c- CCl_4 d- all of these

3) Ethanol can be converted to DDT through …….

a- oxidation b- chlorination c- reaction with 2 moles of chlorobenzene d- all of these

4) Electrocracking of methane gives carbon black and hydrogen, which react with N_2 and CO_2 to form ……

a- PVC b- urea c- PPA d- none of these

5) Reaction of acetylene with HCN gives ……

a- acrylonitrile b- vinyl chloride c- propyl cyanide d- allyl cyanide

6) Hydration of acetylene gives …….

a- ethanol b- acetone c- acetaldehyde d- all of these

7) Oxidation of o-xylene gives dicarboxylic acid used in preparation of ….

a- dyes b- insecticides c- polymers d- solvents

8) o-Toluene sulphonic acid used in the production of …….

a- fertilizers b- detergents c- saccharine d- both b & c

9) Phenols are used in the preparation of …….

a- sod. phenoxide b- picric acid c- m-xylene d- both a & b

10) p-Toluene sulphonic acids are used in the preparation of ……

a- detergents b- chloroamine T c- dichloroamine T d- all of these

11) Polymerization of …… of acetylene in red hot tube gives benzene

a- 4 moles b- 2 moles c- 3 moles d- 6 moles

12) Formation of Gammaxine from chlorination of benzene occurs via ……..reaction

a- addition b- elimination c- substitution d- none of these

13) Bakelite is produced from the reaction of HCHO and ……

a- o-xylene b- phenol c- toluene d- none of these

14) Picric acid is formed via the reaction of phenol with ……..

a- excess of conc. HNO_3/conc. H_2SO_4 b- conc. HNO_3/conc. H_2SO_4

c- conc. H_2SO_4 d- all of these

15) TNT is produced from the reaction of toluene with ……

a- conc. HNO_3 b- conc. H_2SO_4

c- conc. HNO_3/conc. H_2SO_4 d- excess of conc. HNO_3/conc. H_2SO_4

16) Terephthalic acid is resulted from the oxidation of …….

a- o-xylene b- m-xylene c- p-xylene d- none of these

17) Oxidation of …….. gives phthalic acid

a- p-xylene b- o-xylene c- toluene d- m-xylene

18) Polymerization of tetrafluoroethylene gives …….

a- Teflon b- PE c- PVC d- all of these

19) Saponification of oil gives …….

a- glycerol b- acid c- soap d- both a & c

20) Transesterification of glycerol stearate with methanol gives ……

a- methyl stearate b- glycerol c- soap d- both a & b

21) Polymerization of acrylonitrile gives ……

a- orolon b- glyptal c- nylon d- none of these

22) Neoprene is produced from the polymerization of ……

a- chlorostyrene b- o-xylene c- chloroprene d- all of these

23) Terylene is produced from the reaction of diol with ……..

a- phthalic acid b- isophthalic acid c- acetic acid d- terephthalic acid

24) Polymerization of ……. gives PP

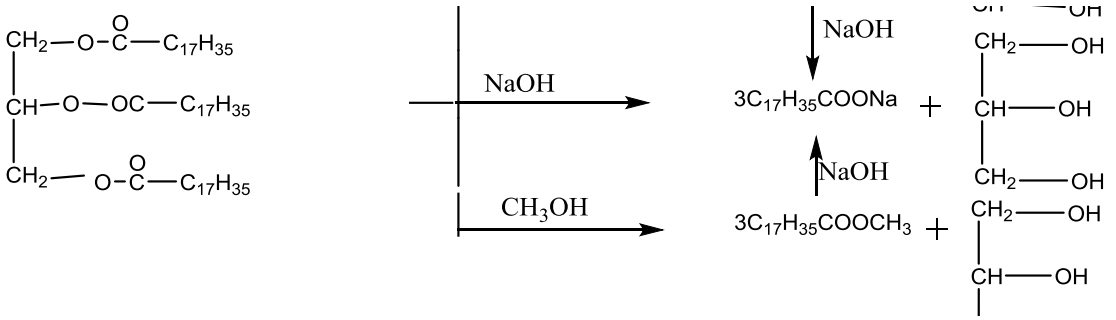
a- propene b- butene c- hexene d- all of these

[2] Explain the following: (12 Marks)

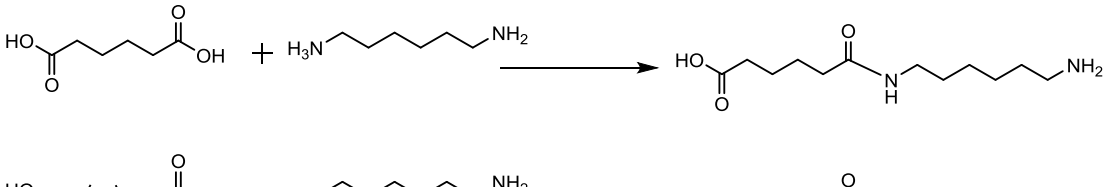
i. Preparation of soap
ii. Preparation of nylon
iii. Types of detergents
iv. Disadvantages of using soap in hard water

Model Answer

2- i- Preparation of soap



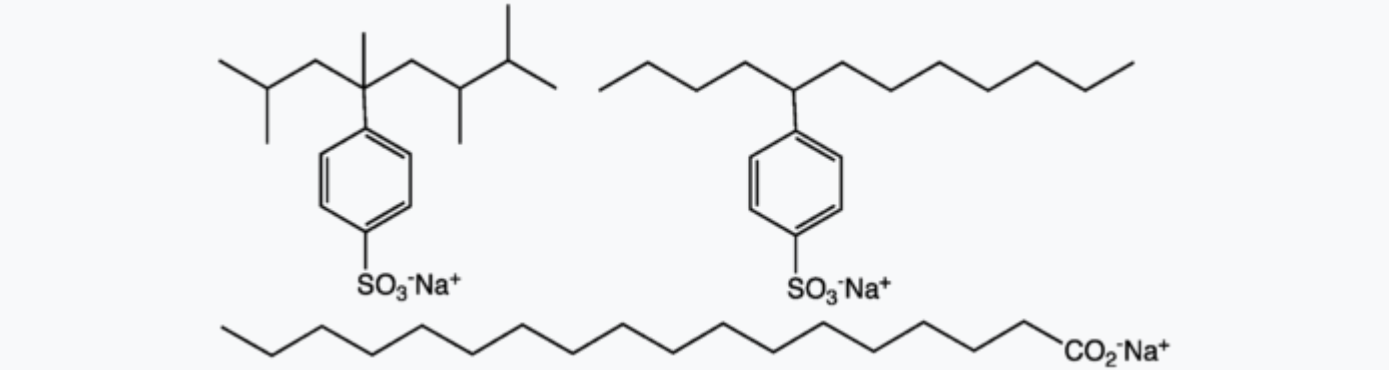
ii- Preparation of Nylon



iii- Types of deteregents:

Anionic detergents

Typical anionic detergents are alkylbenzenesulfonates.



Cationic detergents

Cationic detergents are similar to the anionic ones, with a hydrophobic component, but, instead of the anionic sulfonate group, the cationic surfactants have quaternary ammonium as the polar end. The ammonium center is positively charged

Non-ionic and zwitterionic detergents

Non-ionic detergents are characterized by their uncharged, hydrophilic headgroups. Typical non-ionic detergents are based on polyoxyethylene or a glycoside. Common examples of the former include Tween, Triton, and the Brij

series. These materials are also known as ethoxylates or PEGlyates and their metabolites, nonylphenol..

Amphoteric (Zwitterionic) detergents possess a net zero charge arising from the presence of equal numbers of +1 and −1 charged chemical groups. Examples include CHAPS.

iV- Disadvantages of using soap in hard water:

Soap not work in hard water due to the formation of complex between metal and soap.

$$CH_3(CH_2)_nCOONa + M^{++} \longrightarrow [CH_3(CH_2)_nCOO]_2M$$