Chapter 14 : Synthetic Organic Chemistry

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	Which is the reagent used to convert ethyl alcohol into acetic acid? $K_2Cr_2O_7$ / H_2SO_4 or any suitable example	U Identify
2.	When chloromethane is heated with sodium in dry ether forms ethane. Name the reaction. Wurtz reaction	U Identify Average
3.	Name the reagent used for decarboxylation. Soda lime or NaOH + CaO (1 mark)	K Name Average
4.	Identify 'X' in the following reaction, $CH_4 \xrightarrow[Sunlight]{Cl_2} CH_3Cl \xrightarrow{X} C_2H_6$ Sodium in dry ether (1 mark)	U Identify Average
5.	Name a reagent which can convert chloroethane into ethanol. Aqueous potassium hydroxide	U Identify Easy
6.	How do you convert methane to ethane? Methane to methyl chloride (1 mark) Methyl chloride to ethane (1 mark) Either in equation or in words	U Explain Average
7.	Identify A,B, C and D in the following reaction. $C_2H_5Cl \xrightarrow{aq.KOH} A \xrightarrow[H_2SO_4]{K_2Cr_2O_7} B \xrightarrow{NaOH} C \xrightarrow{Soda\ lime} D$	U Identify Difficult

A → C_2H_5OH (½ mark)
B → CH_3COOH (½ mark)
C → CH_3COONa (½ mark)
D → CH_4 (½ mark)

8. How would you convert methane to methyl alcohol? — A, Translate, Average

$CH_4 + Cl_2 \xrightarrow{h\nu} CH_3Cl + HCl$ with expression (1 mark)
$CH_3Cl + KOH_{aq} \xrightarrow{\Delta} CH_3OH + KCl$ (1 mark)

9. How do you convert methanol to ethanol? — A, Translate

3 steps (3 marks)

Chapter 17 : Hydrocarbons

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	Name the highly strained cycloalkane according to Baeyer's strain theory.	K, Name, Easy
	Cyclopropane	
2.	What is angle strain?	K, Define, Easy
	Deviation of each bond angle from normal tetrahedral angle. (Planar should be mentioned)	
3.	Who proposed planar model for cycloalkanes?	K, Recall, Easy
	Baeyer	
4.	Which confirmation of cyclohexane is more stable?	K, Recall, Easy
	Chair form	

5. Who proposed the theory of Strainless rings? — K Recall Easy

Sachge Mohr

6. What is the angle strain in cyclobutane? — K Recall

$9°44'$

7. Write the formula used to calculate angle strain in cycloalkanes. — K Recall

Angle strain = ½ ($109° 28'$ - Bond angle in cycloalkanes)

8. What is the value of tetrahedral bond angle? — K Recall Easy

$109° 28'$

9. What is the state of hybridization of carbon atoms in Benzene? — U Identify Easy

sp^2

10. Which is the neutral electrophile involved in the sulphonation of benzene? — U Identify Average

SO_3

11. Name the reaction by which alkylation of Benzene is done. — K Name Easy

Friedel Craft's reaction

12. Name the electrophile involved in the nitration of benzene. — U Identify Average

Nitronium ion

13. Bond angle in a cycloalkane is 108°. Calculate the angle strain. S Solve Average

Angle strain = ½ (109° 28′ - Bond angle) ½ mark
Angle strain = ½ (109° 28′ - 108°) ½ mark
= ½ (19° 28′) (½ mark)
= 9° 44′ (½ mark)

14. Write the structures of boat form and chair form of cyclohexane. S Drawing Average

Boat form structure – (1 mark)
Chair form structure – (1 mark)

15. Explain Sachse-Mohr theory of Strainless Rings. U Explain

1. Non-planar (1 mark)
2. Tetrahedral bond angle (1 mark)

16. Explain the mechanism of chlorination of benzene.

1. Generation of electrophile (Cl^+)
2. Attack of electrophile on benzene with equation
3. Elimination of proton with equation

17. Explain the mechanism of nitration of benzene.

1. Generation of an electrophile (NO^+_2) – equation
2. Attack of electrophile on benzene – equation
3. Elimination of proton – Equation

18. Explain the mechanism of Alkylation of benzene.

1. Generation of an electrophile (R^+) – equation
2. Attack of electrophile on benzene – equation
3. Elimination of proton – equation

19. Explain the mechanism of sulphonation of benzene. U Explain

1. Generation of an electrophile (SO_3) equation (1 mark)
2. Attack of electrophile on benzene equation (1 mark)
3. Elimination of proton – equation (1 mark)
4. Formation of final product – equation (1 mark)

20. On the basis of Valence Bond Theory, how will you establish — U Explain

i) ring structure of benzene
ii) three double bonds in benzene
iii) all the six carbon atoms in benzene are identical
iv) describe bonds in benzene different from alkenes

i) Benzene $\xrightarrow{halogenation}$ monasubstituted product (1 mark)

ii) Benzene + $3H_2$ $\xrightarrow[180°C]{Ni}$ cycloterane (1 mark)

iii) Benzene + Cl_2 $\xrightarrow{FeCl_3}$ only one type of mona substituted product (1 mark)

iv) Benzene does not decolourise alkaline $KMnO_4$ (1 mark)

21. Write the postulates of Baeyer's Strain Theory. — K Recall

1. Planar structure
2. Angle strain
3. Higher the strain lesser is stability
4. Higher the stability easier is formation

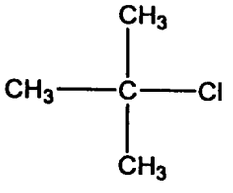
22. What are mono haloalkanes? — K Recall Easy

Mono halogen derivatives of alkane

23. Give one example for secondary mono haloalkane. — K Recall Easy

Any suitable example

24. Give the IUPAC name of — A Predict Average



2-chloro-2-methyl propane

25. Name the reagent used for dehydrohalogenation. K Recall

Alcoholic potassium hydroxide

26. What is the final product formed when haloalkanes are heated with alcoholic ammonia? U Identify Average

Quaternary ammonium salt

27. Name the product formed when haloalkanes are heated with alcoholic silver cyanide. U Identify Average

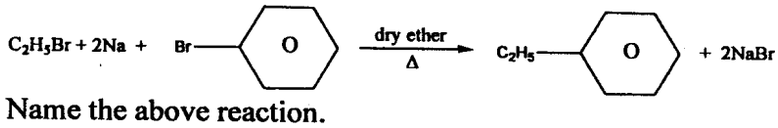
Alkyl isocyanides OR alkyl carbylamine

28. Name the catalyst used in the Friedel-Crafts reaction. K Name Easy

Anhydrous aluminium chloride

29. Write the general formula of Grignard's reagent. K Recall Easy

$R - Mg - X$

30. 

A Interpret Difficult

Name the above reaction.

Wurtz – Fittig reaction

31. Which is the chief product formed in the following reaction? U Identify Easy

$C_2H_5Br + 2Na + BrC_2H_5 \xrightarrow{dry\ ether}$ .....+ 2NaBr

C_4H_{10} n-butane

32. $C_2H_5Br + A \xrightarrow{\Delta} C_2H_4 + KBr + H_2O$. Identify 'A'. U Identify Easy

Alc. KOH (1 mark)

33. $R - OH + \underline{X} \longrightarrow R - Cl + POCl_3 + HCl$. Identify 'X'. — U Identify

$X \rightarrow PCl_5$

34. When alcohols are heated with thionyl chloride in presence of pyridine form haloalkanes. Write equation for the reaction. — A Translate Average

$R - OH + SOCl_2 \xrightarrow{Pyridine} R - Cl + SO_2 + HCl$

35. Explain Wurtz reaction with an example. — U Explain Average

Explanation (1 mark)
Example (1 mark)

36. Explain Wurtz – Fittig reaction with an example. — U Explain Average

Explanation (1 mark)
Example (1 mark)

37. Explain Friedel-Crafts reaction with example. — U Explain Average

Explanation (1 mark)
Equation (1 mark)

38. Explain dehydrohalogenation reaction with an example. — U Explain Average

Explanation (1 mark)
Equation (1 mark)

39. Write any two differences between SN^1 and SN^2 mechanisms. — U Distinguish Average

Any two (one mark each)

40. What happens when haloalkanes are heated with magnesium in dry ether? — U, Explain, Difficult

Explanation (1 mark)
Equation (1 mark)
Or self explanatory equation (2 marks)

41. Explain SN^1 mechanism with example. Mention rate equation. — U, Explain, Average

1. Formation of carbocation (1 mark)
2. Attack of nucleophile on carbocation (1 mark)
3. Rate = k [Alkyl halide] (1 mark)

42. What is SN^2 mechanism? Explain it with hydrolysis of methyl bromide with aq. NaOH. — U, Explain, Average

Definition (1 mark)
Attack of nucleophile (OH^-) from rear side (½ mark)
Transition state in which C – OH is partially formed (½ mark)
And C – Br bond is partially broken (½ mark)
Final product with inverted figure
Rate = k [RX] [OH^-] (½ mark)

Chapter 18 : Organic Compound containing Oxygen Atom II

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	Give an example for Dihydric Phenols.	K, Recall, Easy
	Catechol or Resorcinof or Quinol	
2.	What is the IUPAC name of cumene?	K, Recall, Easy
	Isopropyl benzene	

3. Arrange phenol, p-Cresol and p-nitropenol with increasing order of acidic strength.

A
Classify
Average

P – Nitrophenol > Phenol > P – Cresol

4. Name the fraction of coal-tar which contains phenol.

K
Recall
Easy

Middle oil fraction

5. What is IUPAC name of picric acid?

K
Recall
Average

2,4,6 Trinitrophenol

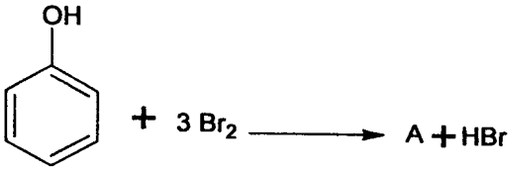
6. What is the product obtained when phenol is treated with hot nitrating mixture?

U
Describe
Average

Picric acid or 2,4,6 – Trinitrophenol.

7. Identify A in the given reaction.

S
Solve
Easy



8. Name the product obtained when phenol is heated with carbon – tetrachloride and sodium hydroxide followed by acidification.

K
Recall
Difficult

Salicyclic acid

9. How is phenol obtained from sodium benzene sulphonate and give its reactions?

U
Describe
Average

Statement : 1 mark
Reaction with condition : 1 mark

10. Give any two applications of Phenol. — K Recall Easy

Any two uses (1 + 1)

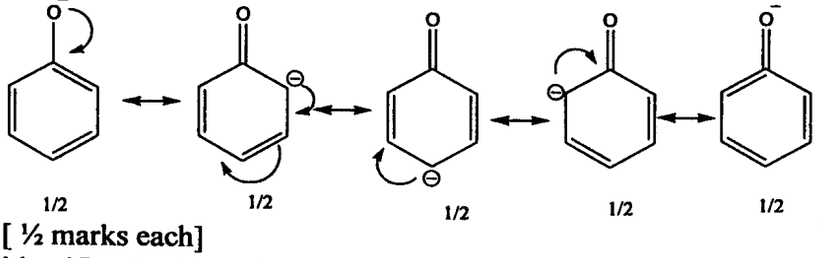
11. Explain Riemer-Tiemann reaction for the conversion phenol to salicylic dehyde and give the chemical equation. — U Describe Average

Explanation – 1 mark, balanced equation with condition – 1 mark

12. How is phenol converted into salicylic acid by Kolbes reaction? Give the chemical equation. — U Describe Average

Explanation (1 mark)
Equation with reaction condition (1 mark)

13. Write the possible resonation of structures of phenoxide ion, among them which is relatively more stable. — A Predict Difficult



[½ marks each]
identification ½ mark

14. How does phenol react with bromine water give its chemical equation? — K Recall Average

Statement in words – 1 mark
Reaction with condition – 1 mark

15. How does phenol react with dil. Nitric acid? Give its chemical equation. — K Recall Average

Explanation (statement) – 1 mark and reaction – 1 mark

16. Explain the effect of the following substituents on the acidity of phenol.
a) - CH_3 group b) – NO_2 group. — U Describe Average

e^- withdrawing / releasing, acidity increases;/ decreases. Explain 2 marks.

17. How does phenol react with bromine in CS_2 or CCl_4 ? Give its equation. — K Recall Average

Statement – 1 mark, reaction equation – 1 mark

18. Name the major product obtained when aq. Solution of benzene diazonium chloride is boiled and give the reaction involved in it. — A Predict Average

Name – 1 mark, Reaction – 1 mark.

19. How is phenol converted to a mix of ortho and para cresol? Name the chemical reaction and give its equation. — A Predict .

Statement – 1 mark, name – 1 mark, balance chemical equation – 1 mark.

20. Which class of phenols, the following compounds belong to ? O-Cresol, Pyrogallol, Quinol, Resorcinol. — K Recall

½ marks each.

21. How is phenol manufactured by cumene process? Give its chemical equation. — U Describe Average

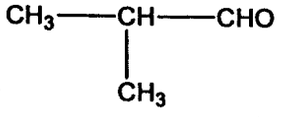
Explanation – 1 mark
Step I : Conversion of benzene to cumene – 1 mark
Step II : Conversion of cumene to phenol – 1 mark

22. How is phenol isolated from coal – tar? Give its chemical equation. — U Describe Average.

Upto Naphthalein separation – 1 mark
Separation of impurities and purification of phenol – 1 mark
Two chemical reactions – 1mark

23. Name the reducing reagent used in Clemmenson's reaction. K Recall Easy

Zn Hg/ conc. HCl

24. Give the IUPAC name of  K Naming Easy

2-methyl propanal

25. Give an example of aldehyde which does not reduce Fehling's solution. U Cite example Easy

Benzaldehyde

26. Name the catalyst used in the dehydrogenation of alcohol. U Example Easy

Copper

27. Name the product when anhydrous calcium acetate is dry distilled. K Name Easy

Acetone

28. Give an example of an aldehyde containing only α hydrogen atom. U Cite example Easy

Acetaldehyde containing only α hydrogen atom

29. Propionaldehyde does not undergo cannizalo's reaction. Why ? A Analyse Easy

Lack of α - hydrogen atom.

30. Which of the following reacts with sodium bisulphate to give white precipitate?
Autophenol / Acetone

Acetone

A
Predict
Easy

31. Mention the reagent used to distinguish HCHO and C_6H_5CHO.

Fehling solution or Benedict solution

A
Mention
Easy

32. Name the condensation product of formaldehyde and ammonia which is used for urinary infection.

Urotropine

A
Analyse
Easy

33. Write IUPAC name of $CH_3 - CH_3 - CO - CH_3$.

2-Butanone

K
Name
Easy

34. Give an example for cannizzaro's reaction with equation.

$2C_6H_5CHO + KOH \longrightarrow C_6H_5CH_2OH + C_6H_5COOK$ Example – 1
or
$2HCHO + NaOH \longrightarrow CH_3OH + HCOONa$.

U
Cite
example
Average

35. What is an aldol condensation reaction? Give an example.

Definition – 1 mark, with equation – 1 mark

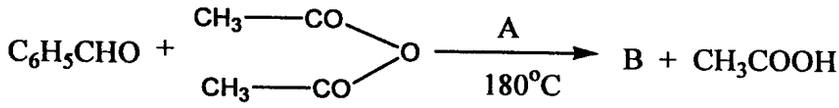
U
Explain
Average

36. How is acetaldehyde converted to acetaldoxime?

Explanation –1 mark, equation – 1 mark

A
Interpret
Average

37. Identify the catalyst A and product B in the following conversion. U Identify Difficult



A → CH_3COONa - 1 mark
B → $C_6H_5CH = CH - COOH$ - 1 mark

38. Give reason. Benzaldehyde does not give precipitate with Felhing's solution. A Reason Average

Because it undergoes cannizzaro reaction with NaOH present in Fehling's solution.

39. What happens when ethanol vapours are passed over copper at 300°C? Write its equation. K Recall Average

Explanation – 1 mark, equation- 1 mark

40. Explain Clemmensen's reduction with suitable example. U Explain Average

Explanation with suitable reducing reagent – 1 mark
Example – 1 mark

41. How is acetaldehyde obtained from calcium formate and calcium acetate? Write equation. A Interpret Average

Explanation – 1 mark
Balanced chemical equation – 1 mark

42. Write any two uses of Acetophenone. K Recall Average

Write any two uses. (2 marks)

43. What happens when acetone reacts with phenyl hydracine? Write its equation.

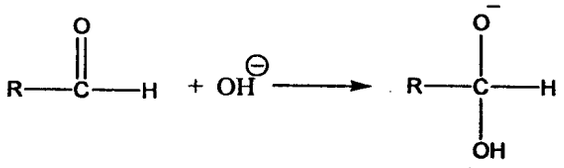
K
Mention
Average

Explanation – 1 mark
Balanced chemical equation – 1 mark

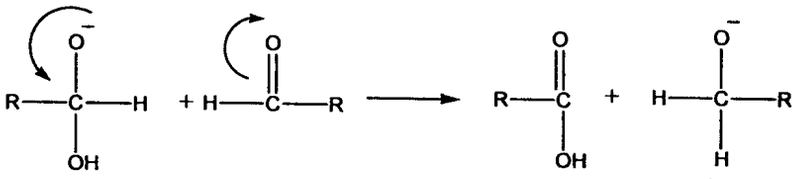
44. Explain the mechanism of Cannizzaro's reaction.

K
Recall
Average

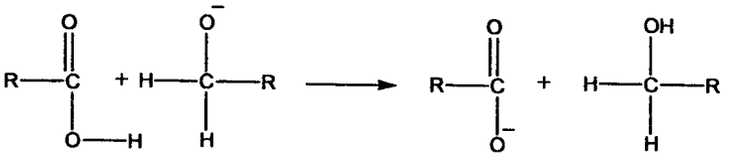
Step I : Formation of Nucleophile (OH^-) and Nucleophile attacks the first molecule of the aldehyde to give complex anion. (1 mark)



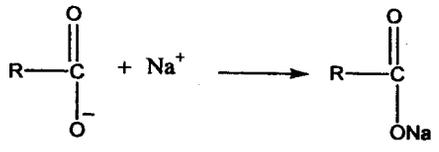
Step II : The anion interacts with the second molecule of the aldehyde. (1 mark)



Step III : The carboxylic acid molecule donates a proton to the anion giving a carboxylate ion and an alcohol. (1 mark)

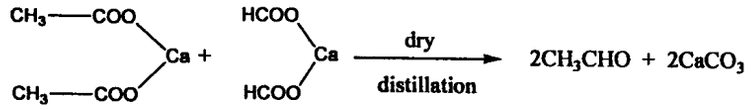


alcohol

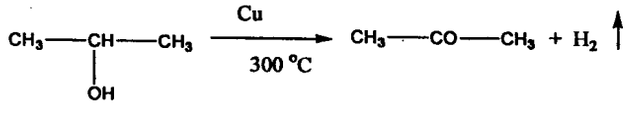


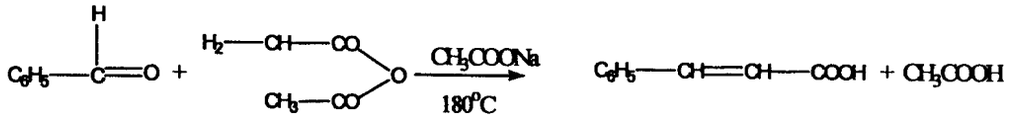
45. Write the equations for the following reaction. U Cite example Difficult

1. Mixture of calcium formate and calcium acetate is dry distilled.
2. Vapour of isopropyl alcohol are passed over heated copper.
3. benzaldehyde is heated with acetic anhydride in the presence of fused sodium hydroxide.

1. 

1 mark

2. 



46. Give the IUPAC name of Formic acid. K Naming Easy

Methanoic acid – 1 mark

47. Write the general formula of Monocarboxylic acid. U Generalize Average

R – COOH - 1 mark

48. Name the product formed when CH_3MgI reacts with CO_2 followed by acid hydrolysis. K Recall Easy

Formic acid – 1 mark

49. Identify A in the reaction given below : U Cite example

$R - COOH + HO - R' \xrightarrow{A} R - COOHR' + H_2O$

Conc. H_2SO_4 - 1 mark

50. Name the gas evolved when carboxylic acids react with sodium bicarbonate. U Identify Easy

CO_2 or carbon dioxide – 1 mark

51. Identify 'A' in the reaction given below. U Identify Average

$$R - COOH + R' - OH \xrightarrow[\Delta]{A} R\,COOR' + H_2O$$

Concentrated sulphuric acid.

52. Name the product obtained when acetic acid is heated with ammonia followed by heating. U Identify Average

Acetamide

53. Write the formula of catalyst used in decarboxylation of mono carboxylic acids. U Identify Average

[NaOH + CaO]

54. Name a substituent group which decreases the acid strength of the carboxylic acids. U Example Average

Methyl group or any alkyl group name

55. Which among the following groups increases acidic strength of carboxylic acid? U Identify Average

I (Iodine)

56. Arrange the following carboxylic acids in decreasing order of acid strength. Formic acid, propionic acid, Acetic acid A Average

Formic acid > Acetic acid > Propionic acid

57. Among monochloro acetic acid and monobromo acetic acid, which is stronger? U Identify Average

Mono chloro acetic acid

58. Give any two uses of methanoic acid. K Recall Easy

Any two correct uses – 1 + 1 mark

59. Identify the compound A in the following reaction and give its molecular formula. A Recall Average

$A + 2[O] \xrightarrow[KMnO_4]{Alkaline} CH_3COOH + H_2O$

Ethyl alcohol – 1 mark
$CH_3CH_2 - OH$ – 1 mark

60. Name the product formed when ethane nitrite is heated with dilute hydrochloric acid. Write the reaction equation. A Recall Average

Acetic acid – 1 mark
Correct chemical equation – 1 mark

61. How are alkyl magnesium halides converted into Monocarboxylic acids? Give reaction equation. K Recall Easy

Explanation – 1 mark
Chemical equation – 1 mark

62. Define esterification. Give its chemical equation. K Recall Easy

Definition – 1 mark, Equation- 1 mark

63. How is acetic acid converted to methane? Name the reaction. U Average

Acetic acid heated with soda lime (or chemical equation) – 1 mark
Decarboxylation – 1 mark

64. Acetic acid reacts with 'X' in presence of pyridine to give acetyl chloride. Identify the reactant 'X' and write reaction equation. A Average

PCl_5 or phosphorus penta chloride – 1 mark, Chemical equation – 1 mark

65. Acetic acid is weaker than formic acid. Why ?

A
Reasoning
Average

- CH_3 group in acetic acid is electron donating – 1 mark
Stability of carboxylate anion decreases – ½ mark
Lower the stability of carboxylate anion weaker will be the acid – ½ mark.

66. Mention any two uses of ethanoic acid.

K
Recall
Easy

Any two correct uses. (2 marks)

67. What happens when monocarboxylic acid reacts with sodium bicarbonate? Give chemical equation.

Sodium salt of the carboxylic acid is formed with liberation of CO_2 gas – 1 mark
Reaction equation – 1 mark

68. Among 2 – chloropropanoic acid and 3-chlolropropanoic acid, which is stronger? Give reason.

. A
Reason
Average

2 – chloro acetic acid – 1 mark
Closer the chlorine (electron withdrawing group to – COOH group stronger is the acid – 1 mark.
- I effect of 'Cl' depends on distance. – 1 mark

69. Explain acidity of Aliphatic monocarboxylic acids using resonance.

S
Drawing
structures
Difficult

Resonance structures of carboxylic acid – 1 mark
Positive charge on oxygen atom helps the release of proton – ½ mark
Resonance structures of carboxylate anion – 1 mark
Resonance stabilization of carboxylate anion is more – ½ mark

70. Among the following carboxylic acids, which is strongest and which is the weakest acid?
$BrCH_2COOH$, $Cl - CH_2COOh$, CH_3COOH, $F - CH_2COOH$

A
Classify
Average

Strongest acid → $F - CH_2COOH$ – 1 mark
Weakest → CH_3COOH - 1 mark

71. Identify A and B in the following reaction:

$$CH_3 - Mg - I + A \xrightarrow[ether]{0^\circ C} O = \underset{\displaystyle CH_3}{\overset{\displaystyle |}{C}} - O\,MgI \xrightarrow{H_2O} B + MgIOH$$

A → CO_2 - 1 mark
B → CH_3COOH - 1 mark

72. Glucose reduces Tollen's reagent to black precipitate and it gives penta acetyl derivatives with active anhydride. What inference can be drawn from above reactions?

U
Drawing inference
Average

Glucose contain an aldehyde gp – 1mark
Glucose contain five –OH groups – 1 mark

73. What happens when Formic acid reacts with sodium bicarbonate? Give chemical equations.

U
Explain
Average

It gives sodium formate with liberation of carbon dioxide gas – 1 mark
Chemical equation – 1 mark

Chapter 19 : Amines

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	What are amines?	K Recall Very easy
	Derivatives of ammonia, formed by replacing hydrogen atoms by alkyl or aryl radicals.	
2.	What is the general formula of primary amines?	K Recall Very easy
	$R - NH_2$ R-alkyl or aryl group	

3. Name the reaction for the conversion of an acid amides into primary amine. K Identify Average

Hoffmann's Bromamide reaction

4. Why amines are basic in nature? A Assign reason

Due to the presence of lone pair of electrons on nitrogen.

5. Name the product missing in the equation. K Name Average
$C_6H_5CONH_2 + br_2 + 4KOH \rightarrow \ldots\ldots + 2KBr + K_2CO_3 + H_2O$

Benzamide

6. When aniline is heated with chloroform and alcoholic potash, a foul smelling gas is liberated. Recognize the compound. K Recognize Average

Phenyl isocyanide

7. Methylamine reacts with sodium nitrite and hydrochloric acid liberating a colourless gas. Identify the gas. U Identify Average

Nitrogen gas

8. Name the test used for primary amines. K Name Easy

Carbylamine

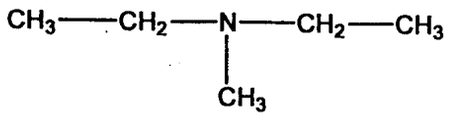
9. Give the general equation for the conversion of alkane nitriles into alkanamines. A Generalize Average

$R - CN + 4(H) \xrightarrow{LiAlH_4} R - CH_2NH_2$

10. Between methyl amine and aniline which has lower $_pK_b$ value? A Predict Difficult

Methyl amine

11. Give the IUPAC name of



N-ethyl, N-methyl ethanamine

K
Name
Average

12. Which among the following is the strongest base?
CH_3NH_2, NH_3, $C_6H_5NH_2$

CH_3NH_2

U
Identify
Average

13. Explain Hoffmann's bromamide reaction with an example.

Explanation (1 mark)
Example (1 mark)

U
Explain
Average

14. Explain diazotisation reaction with an example.

Explanation (1 mark)
Example (1 mark)

U
Explain
Average

15. When nitrobenzene is heated with Tin and conc. HCl, it forms primary amine. Write the equation for the reaction. Give the IUPAC name of the primary amine formed.

$$C_6H_5NO_2 + 6\,[H] \xrightarrow{Sn + HCl} C_6H_5NH_2 + 2H_2O$$

Benzenamine

A
Translate
Difficult

16. Explain carbyl amine reaction with an example.

Explanation (1 mark)
Equation (1 mark)

U
Explain
Average

17. Why is methyl amine stronger base than ammonia?

A
Assign
reason
Average

1. CH_3 is electron releasing group or (+I effect).
2. Electron density on nitrogen increases

18. What is the action of nitrous acid ($NaNO_2$ + HCl) on methyl amine? Give equation. — U Explain Average

Statement (1 mark)
Equation (1 mark)

19. Give any two uses of aniline. — K Recall Easy

Two uses (1 + 1 marks)

20. Explain Alkylation of primary amines with an example. — U Explain Average

General statement (1 mark)
Statement of example (1 mark)
Equation (1 mark)

21. Explain the test to distinguish primary, secondary and tertiary amines. — U Distinguish Average

Observation for the test for primary, secondary and tertiary amines.
(3 marks)

Chapter 20 : Carbohydrates

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	What are polysaccharides?	K Recall Easy
	Contain many number of monosaccharides. – 1 mark	
2.	Give an example for a disaccharide.	U Cite example Easy

Sucrose or Maltose or Lactose – 1 mark

3. What are monosaccharides? K Recall Easy

Simple carbohydrates which cannot be hydrolysed – 1 mark

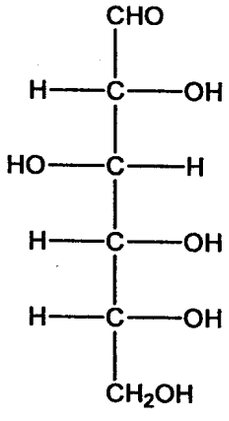
4. What are oligosaccharides? K Recall Easy

On hydrolysis give two to nine or few monosaccharides. (1 mark)

5. Name a carbohydrate which on hydrolysis give two molecules of same monosaccharide. U Name Easy

Maltose – 1 mark

6. Write the open chain structure of Glucose. S Draw Average



1 mark

7. How many hydroxyl groups are present in a glucose molecule? K Recall Easy

5 or five (1 mark)

8. Give an example for aldohexose. K Recall Average

Glucose or Galactose – 1 mark

9. How many primary alcoholic groups are present in a glucose molecule? U Recall Easy

One – 1 mark

10. Name the aldohexose present in grapes. K Recall Easy

D-glucose – 1 mark

11. Among Glucose and fructose, identify ketohexose. U Identify Average

Fructose – 1 mark

12. What is the name given to a monosaccharides containing 6 – carbon atom and kenotic group? U

Ketohexose

13. Write the structure (Haworth's) for α - maltose. S Drawing Average

14. Give reactions to confirm the presence of
    a) – CHO group in glucose
    b) Five hydroxyl groups in glucose

    A Drawing inference Average

    a) One test for –CHO group (1 mark)
    b) One test for five –OH groups (1 mark)

15. Give the Haworth's structure of sucrose. S Drawing Difficult

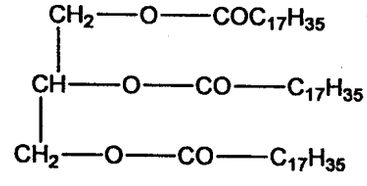
Correct structure – 2 marks

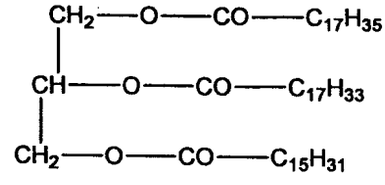
16. Carbohydrates act as a source of energy. Explain. A Illustrate/ defend Difficult

Explanation in two sentences with equation.
Experiment – 1 mark
Equation – 1 mark

Chapter 21 : Oils and Fats

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	Which catalyst is used in hydrogenation of oils and fats?	U Recall Easy
	Finely divided Nickel.	
2.	Between oils and fats, which are highly unsaturated in nature?	U Compare Easy
	Oils	
3.	Give an example of saturated fatty acids.	U Cite example Easy
	Example of any saturated fatty acid.	
4.	Identify the simple triglycerides of the following.	U Identify Easy

a) 

b) 

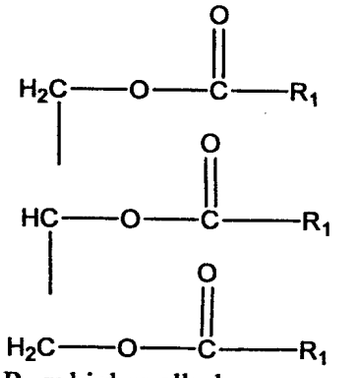
a)

5.	Name the substance used to decolourise oils.	K Recall Easy

Animal charcoal or Fuller's earth.

6. Write the general formula of simple triglycerides.

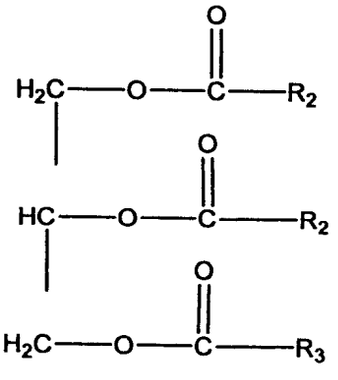
U
Recognize
Easy



R_1 = higher alkyl group

7. Write the general formula of mixed triglycerides.

U
Recall
Easy



R_1, R_2, R_3 are different highest alkyl groups.

8. Define iodine value of an iol.

K
Recall
Easy

It is the number of grams of iodine which combines with 100 grams of an oil or a fat.

9. What are drying oils? Give an example.

K
Recall
Average

Definition – 1 mark, example – 1 mark

10. Write a note on hydrogenation of oils.

U
Explain
Average

Explanation with catalyst – 1 mark
Temperature, unsaturated fatty acids to saturated fatty acids – 1 mark

11. Name the products formed when an oil is subjected to acid hydrolysis and give its equation.

U
Recall
Average

Glycerol – ½ mark
Fatty acids – ½ mark
Equation – 1 mark

12. Write a note on refining of oils.

U
Describe
Average

Explanation with alkali, temperature, animal charcoal – 1 + 1 mark

13. What is rancidity of oils? Mention its types.

K
Define
Average

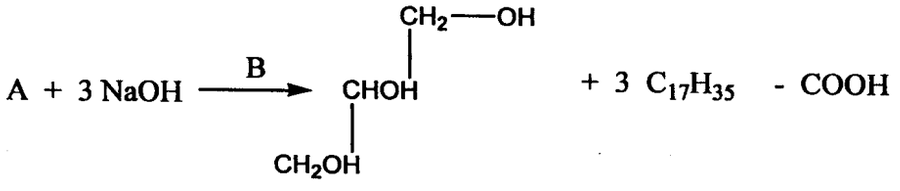
Statement of rancidity – 1 mark
Types – ½ + ½ marks

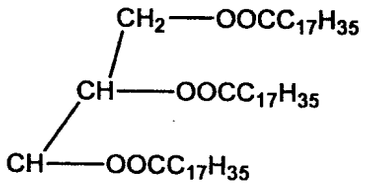
14. Mention the biological importance of oils and fats.

K
Mention
Average

Explanation with suitable examples (1 + 1 marks)

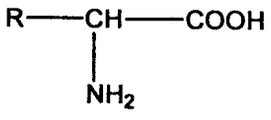
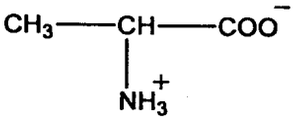
15. Identify the reactant (A) and catalyst (B) in the following conversions.



a) 

b) H_2SO_4

Chapter 22 : Amino Acids and Proteins

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	Give the general formula of α - amino acids.  (1 mark)	K Recall Easy
2.	Which of the following amino acids contains sulphur? Cysteine – 1 mark	U Identify Average
3.	Mention the type of linkage present between the polypeptide chains of Insulin. Disulphide linkage – 1 mark	K Mention Average
4.	Write the Zwitter ion structure for alanine.  1 mark	S Drawing Average
5.	Define Zwitter ion. At isoelectric point any amino acid exists as a dipolar ion due to internal salt formation. The dipolar is called Zwitter ion. 1 mark	K Recall Easy

6. Mention the monomer unit of proteins or polypeptides.

K
Mention
Easy

α - amino acids ((1 mark)

7. Mention the number of α - amino acids present in Insulin harmones.

K
Mention

Fifty one.

8. Which one among the following α - amino acids, contains benzene ring? Protein, Tyrosine.

U
Identify
Average

Tyrosine – 1 mark

9. Name a harmone which regulates blood sugar level.

K
Name
Easy

Insulin – 1 mark

10. There are two peptide linkages in a peptide. Mention the type of peptide.

K
Mention
Average

Tripeptide

11. Name the structural protein present in hair.

K
Naming
Easy

α - keratin

12. Write the structures of alanine and also its Zwitterion.

U
Structure
Average

Alanine structure – 1 mark
Alanine Zwitter ion structure – 1 mark

13. Name the following :
    a) a type of protein which fights against diseases in the body
    b) give the biological function of haemoglobin.

U
Identify
Average

a) Antibodies – 1 mark
b) Transport agent – 1 mark

14. Define isoelectric point of α - amino acids.

K
Recall
Average

Correct definitions – 2 mark

15. Explain amphoprotic nature of α - amino acids with reaction.

U
Average

One reaction for – NH_2 group – 1 mark
One reaction for –COOH – gp – 1 mark

16. Explain denaturation of proteins.

U
Explain / example
Average

Definition – 1 ½ marks
Example – ½ marks

17. Give any two biological importance of proteins.

K
List
Average

One importance – 1 mark
One importance – 1 mark

18. What are transport agents? Give an example.

K
Recall, cites example
Average

Definition – 1 mark, example – 1 mark

19. What are biochemical messengers? Give an example.

K
Define
Average

Definition – 1 ½ marks
Example – ½ mark

PRACTICALS

Sl. No.	Question	Obj/ Spec./ Diff. Level
1.	Glucose + Benedict's reagent $\xrightarrow{boil}$ = What is the observation ? What is the inference? Red precipitates – 1 mark, Glucose is a reducing sugar – 1 mark.	U Infer Average
2.	Give a test to show that egg contains proteins. 1 cm^3 egg. Albumin solution gives violet colour + 2 drops very dilute $CuSO_4$ + NaOH (2 marks)	K Recall Difficult
3.	A sugar gives deep red colour when warmed with Seliwanoff's reagent. What type of sugar it is? Ketose sugar	U Identify Average
4.	A sugar is boiled with Benedict's reagent. A red ppt. is obtained. What is the inference drawn? Sugar is a reducing sugar.	U Infer
5.	Glucose solution + $\xrightarrow{A}$ + conc. H_2SO_4 gives violet ring. Identify A and name the list. A is alcoholic solution of L – naphthol Molisch's test.	U Identify Average
6.	Give a test to show that glucose is a reducing sugar. Glucose + Benedict's reagent, boil – 1 mark Red precipitate – 1 mark	K Recall Average
7.	a) Name the reagents to prepare m-dinitro benzene from nitrobenzene. b) Give the equation for the reaction. c) How is the product purified?	U Explain Average