

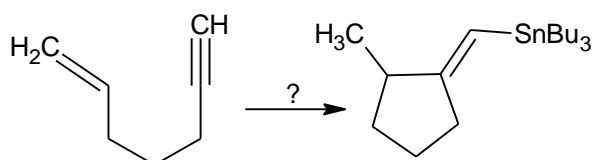
M.Sc. Part-II

Semester-III, Paper-II-Synthetic Organic Chemistry

SAMPLE QUESTIONS SET

1. Biginelli reaction starting reactants are-----
 - a) β -keto ester, Aryl aldehyde, Urea
 - b) β -keto ester, Acetaldehyde, Thiourea
 - c) β -keto ester,Urea,Naphthalene
 - d) β -keto ester,Acetaldehyde, Thiourea
2. Which of the following does not undergo conjugate addition with butanamine?
 - a) propenal
 - b) but-2-enal
 - c) ethyl but-3-enoate
 - d) butanone
3. Which of the following predominantly gives the conjugate addition product with pent-3-en-2-one?
 - a) PhMgBr
 - b) PhLi
 - c) Ph₂CuLi
 - d) CH₃MgI
4. Which of the following does not selectively give the product of conjugate addition with ethyl but-2-enoate?
 - a) NaCN / H₂O
 - b) BuLi / THF
 - c) BuNH₂
 - d) PhSNa / EtOH
5. Which of the following predominantly gives the carbonyl addition product with pent-3-en-2-one?
 - a) PhMgBr
 - b) PhLi
 - c) Ph₂CuLi
 - d) CH₃MgI
6. Biginelli reaction is favoured in ----- medium
 - a) Basic
 - b) Acidic
 - c) Alcoholic
 - d) Neutral
7. In Ritter reaction nitrile is converted into -----
 - a) nitrilium ion
 - b) N-aryl amide
 - c) Amide
 - d) N-alkyl amide
8. In Strecker reaction product of reaction is

- a) Amino acid
 - b) α , β unsaturated ketone
 - c) N-alkyl amide
 - d) Phenylethyl amine
9. The -----is the chemical reaction of an aliphatic carboxylic acid and 2,4,6-trichlorobenzoyl chloride to form a mixed anhydride
- a) Mitsunobu reaction
 - b) Yamaguchi esterification
 - c) Ugi 4CC reaction
 - d) Huisgen 1,3-Dipolar Cycloaddition
10. Which of the following statements regarding the reaction of cyanide with pent-3-en-2-one in aqueous ethanol is wrong?
- a) An initial product is the cyanohydrin formed by the addition of cyanide to the carbonyl.
 - b) Formation of a cyanohydrin is reversible.
 - c) At higher temperatures, the main product is by conjugate addition.
 - d) Conjugate addition gives 4-cyanopentan-2-ol as the thermodynamic product.
11. The reaction in which silver salts of carboxylic acids react with a halogens to produce an organic halides is known as
- a) Pinacol coupling
 - b) Acyloin condensation
 - c) Hunsdiecker reaction
 - d) McMurry coupling,
12. Find out the reagent for following transformation.



- a) TBTH/ALBN
 - b) PhSH/AIBN
 - c) NaH
 - d) NaBH₄
13. Which of the following reaction proceeds through free radical process?
- a) Pinacol coupling
 - b) Reformatsky reaction
 - c) Dickman condensation
 - d) Hofmann rearrangement
14. Sandmeyer reaction is a type of substitution reaction that is widely used in the production of aryl halides by use of reagents-----
- a) Copper salts
 - b) Mercury salts
 - c) Tin salts
 - d) Aluminium salts

15. The intermediates formed in Nucleophilic Aromatic Substitution are known as
- Sigma complexes
 - Pi complexes
 - Transition state
 - Carbonium ion
16. The correct stability order of following radical compounds is _____
- Allyl radical > vinyl radical > Alkynyl radical
 - Allyl radical < vinyl radical < Alkynyl radical
 - Allyl radical > Alkynyl radical > vinyl radical
 - Allyl radical < Alkynyl radical < vinyl radical
17. The stability of the triphenyl methyl radical is mainly due to _____
- Electron withdrawing groups
 - Electron donating groups
 - Sterically shielding of phenyl groups
 - Conjugation
18. Cyclohexane on reaction with chlorine gas in the presence of light gives _____ as major product
- Chlorocyclohexane
 - Benzyl chloride
 - 1,2-dichloro cyclohexane
 - 1,4-dichloro cyclohexane
19. TEMPO is a radical in which single electron carried by _____ atom
- Oxygen
 - Carbon
 - Nitrogen
 - Hydrogen
20. The size of the coupling constant by ESR indicates that the structure of Methyl radical is _____
- Planar
 - Linear
 - Tetrahedral
 - Pyramidal
21. Enamines are formed by reacting an aldehyde or a ketone with a _____.
- Primary amines
 - Secondary amines
 - Tertiary amines
 - Cyclic ethers
22. Acylation of an Enamines is used for the synthesis of a _____.
- Beta-keto ester
 - Alpha-amino acid
 - Beta-diketone
 - Alpha, Beta unsaturated Ketones
23. _____ involves the rearrangement of nitrogen ylide from ketoquaternary ammonium salt.
- Beckmann rearrangement
 - Stevens rearrangement
 - Cope rearrangement

d) Fries rearrangement

24. Order of decreasing Nucleophilic reactivity:

a) Enamine > Enolate > Enol

b) Enamine < Enolate < Enol

c) Enolate > Enol > Enamine

d) Enolate > Enamine > Enol

25. _____ reaction allows the preparation of an Alkene with the ylide generated from a phosphonium salt.

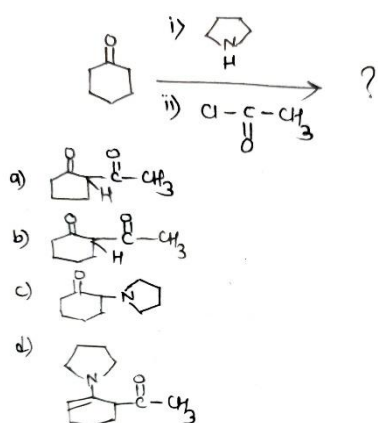
a) Stevens rearrangement

b) Bamford Stevens reaction

c) Wittig reaction

d) Julia olefination

26. Complete the following reaction:



Ans:

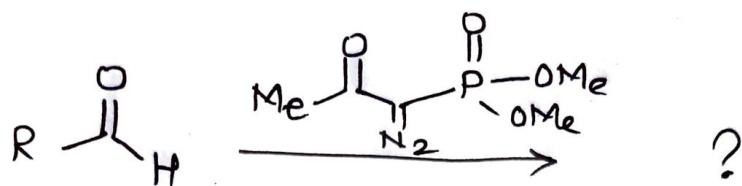
a) a

b) b

c) c

d) d

27. Complete the following reaction:



- a. $R-\text{C}\equiv\text{H}$
- b. $R-\text{C}\equiv\text{C}-R$
- c. $R-\text{CH}_2-\text{CH}_3$
- d. $R-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$

Ans:

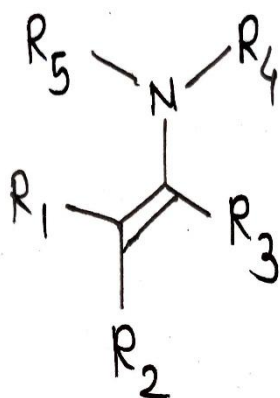
- a) a
- b) b
- c) c
- d) d

28. What is the type of following reaction?



- a. Condensation reaction
- b. Acylation reaction
- c. Rearrangement reaction
- d. Redox reaction

29. What is the name of the given compound?



Ans:

- a) Amine
- b) Imine
- c) Enamine
- d) Enol

30. Which cyclic ketone Enamine is most reactive?

- a) Five membered
- b) Six membered
- c) Seven membered
- d) Eight membered

31. Which of the following is true

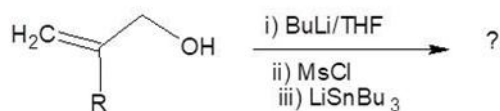
- a) Oxymercuration is highly regioselective and addition takes place according to Markownikoffs rule.
- b) Oxymercuration is highly regioselective and addition takes place according to Anti-Markownikoffs rule.
- c) Oxymercuration is not regioselective
- d) Oxymercuration addition takes place according to Anti-Markownikoffs rule.

32. Identify A and B from the following reaction

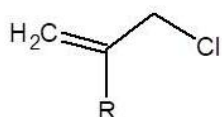


- a) A= Bu_3SnH B= HBr
- b) A= Bu_3CBr B= SnH
- c) A= Bu_3SnBr B= C_2H_6
- d) A= Bu_3Br B= C_3H_8

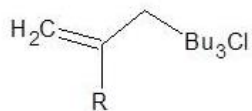
33. Major product formed in the reaction below is



- a.
- b.



c.



d.

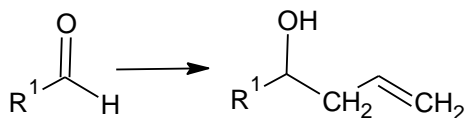
Ans:

- a) a
- b) b
- c) c
- d) d

34. Organosilicon compounds are synthetically important as

- a) Comparative bond dissociation energy, vacant d orbitals and relative electronegativity of silicon
- b) Comparative bond enthalpy, vacant p orbitals and relative electopositivity
- c) Covalent Character of silicon of silicon
- d) vacant d orbitals and relative metallic character of silicon

35. The most suitable reagent for carrying out transformation given below is



- a) $\text{R}_3\text{Sn}-\text{CH}_2-\text{CH}=\text{CH}_2$, BF_3/OEt_2
- b) Me_3SiCl , $\text{CH}_3\text{CH}_2\text{Cl}$
- c) Oxymercuration followed by hydrolysis
- d) $\text{Bu}_3\text{SnH/AIBN}$

Ans:

- a) a
- b) b
- c) c
- d) d

36. Which of the following statement is true

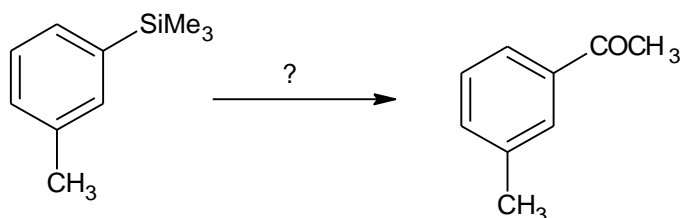
- a) Hydroboration is regioselective reaction and net result of hydroboration oxidation is Markownikoff addition
- b) Hydroboration is regioselective reaction and net result of hydroboration oxidation is anti-Markownikoff addition

- c) Hydroboration is not regioselective reaction
- d) Hydroboration is not regioselective reaction and net result of hydroboration oxidation is anti-Markownikoff addition

37. Which of the following statement is not correct about Organosilicon compounds?

- a) Vinyl silanes have C-Si bond orthogonal to the p orbital of adjacent carbon atom
- b) In vinyl silane there is no interaction between C-Si bond and pi bond
- c) Allyl silanes have C-Si bond orthogonal to the p orbital of adjacent carbon atom
- d) Allyl silanes reacts with electrophiles with greater regioselectivity than vinyl silanes

38. The most suitable reagent for carrying out transformation given below is



- a) $\text{CH}_3\text{COCl}/\text{AlCl}_3$
- b) $\text{PhCOOCH}_3/\text{AlBr}_3$
- c) $\text{CH}_3\text{CH}_2\text{Cl}/\text{AlCl}_3$
- d) $\text{PhCH}_2\text{Cl}/\text{AlBr}_3$

39. Which of the following is not boron reagent

- a) Silyl enol ether
- b) Ipc_2BH
- c) Thexylborane
- d) $\text{BH}_3 \cdot \text{THF}$

40. Alkyl halide and disodium diselenide reacts with each other to give a product which on reduction with NaBH_4 gives _____

- a) Selenol
- b) Selenoxide
- c) Silyl enol ether
- d) Dialkyl diselenide