Government of Maharashtra's
Ismail Yusuf College of Arts, Science and Commerce Jogeshwari East
Mumbai-60
NAAC reaccredited A grade
Department of Chemistry

Sample Multiple Choice Question

1) Compound undergoing homolytic bond cleavage will lead to formation of which chemical species?

a) Anion

b) Cation

c) **Free radical**

d) Atoms

2) What will be the product formed when phenol reacts with Br_2 in CCl_4 ?

a) 3-Bromophenol

b) **4- Bromophenol**

c) 3,5-Dibromophenol

d) 2,4,6-Tribromophenol

3) Which of the following aromatic compounds undergo Friedel–Crafts alkylation with methyl chloride and aluminum chloride?

a) Benzoic acid

b) Nitrobenzene

c) **Toluene**

d) Aniline

4) Which of the following group is most benzene activating in electrophilic aromatic substitution?

a) $-NO_2$

b) $-NHCOCH_3$

c) -CN

d) **$-NH_2$**

5) Which of the following is not an electrophile?

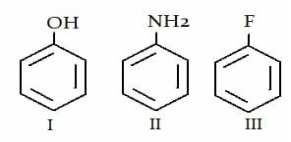
a) H^+

b) Cl_2

c) **Br^-**

d) Br_2

6) What is the correct order for the rate of reaction for the electrophilic attack of the given compounds?



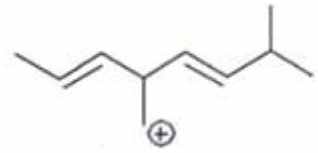
a) I > II > III

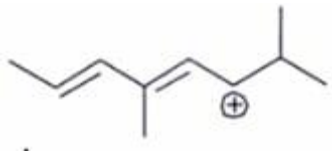
b) **II > I > III**

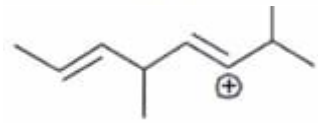
c) I < II < III

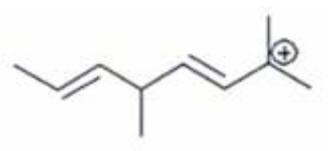
d) III > I > II

7) Which carbocation is the most stable?

1) 

2) 

3) 

4) 

8) Hyperconjugation involves the delocalization of ……..

a) **σ bond orbital**

b) π bond orbital

c) hydrogen bond

d) covalent bond

9) what is a "suitable" host?

a) anions

b) Zwitterions

c) free radical species

d) **Cation**

10) Which of the following is not one of the salivary glands?

a) Parotid

b) Submandibular

c) Sublingual

d) **Adenoids**

11) During the solid phase isolation technique, what property of nucleic acids makes it possible for the genetic material to be adsorbed onto the solid matrix?

a) **Hydrophilic property**

b) Positive Charge

c) Hydrophobic property

d) Large Size

12) Put the following types of naturally occurring RNA in order according to their abundance in cellular or total RNA. (First listed is most abundant)

a) **rRNA, tRNA, mRNA**

b) tRNA, rRNA, mRNA

c) mRNA, rRNA, tRNA

d) tRNA, mRNA, rRNA

13) In addition polymerisation……. is a requirement of monomers in order to undergo addition polymerization.

a) The presence of a lone pair

b) The presence of an oxygen atom

c) The presence of a carbon to carbon triple bond

d) **The presence of a carbon to carbon double bond**

14) Which artificial polyamide is often used in the manufacture of crash helmets and bullet proof vests?

a) Nylon

b) Satin

c) Wool

d) **Kevlar**

15) Which one of the following statements applies to Suzuki cross-coupling reactions?

a) The reactivity of aryl halides in Suzuki reactions is enhanced by elecron-donating substituents at the aromatic nucleus.
b) The boronate used as starting materials for Suzuki reactions can themselves be prepared in Suzuki-like reactions.
c) Catalytic amounts of base are sufficient by increasing the nucleophilicity of the boronic acid.

d) Exclusion of water is necessary to avoid poisoning of the Pd catalyst.

16) Which one of the following statements is true for non-covalent interactions involving aromatic rings?

a) to-face interactions are the most favorable ones between aromatics.
b) As opposed to aryl methyl ethers, aryl trifluoromethyl ethers adopt a dihedral angle C(Ar)C(Ar)OC(F_3) of ca. 90°.
c) Amide-NH...π interactions are stronger than most CH...π interactions and often observed in nature.
d) Primary ammonium ions bind particularly well to "aromatic boxes" in proteins.

17) Which one of the following statements is true for hydrogen bonding?

a) position of H-atoms is normally determined by X-ray diffraction.
b) Nitro groups (NO_2) are good H-bond acceptors.
c) Sulfonamides can be considered isosteres for peptides due to a similar ability to form H-bonds.
d) The strength of an H-bond depends on the acidity and basicity of donor and acceptor, respectively.

18) Protecting group for amino acid are……

a) glycol

b) **tosyl**

c) dithiane

d) none of the above

19) Racemisation is ……. Process.

a) **reversible**

b) Irreversible

c) cyclic

d) none of the above

20) When a racemic mixture is separated into its constituent enantiomer, the process is known as.....

a) Racemisation

b) **Resolution**

c) separation

d) None of the above

21) Method of resolution was initiated in 1848 by sir.....

a) **Pasture**

b) Linus

c) Lother Mayer

d) None of the above

22) Quinidine are .....resolving agent

a) Acidic

b) **Basic**

c) Neutral

d) Amphoteric

23) When resolution of alcohol occur can be directly converted into diastereo-matically _____ using optically active acids.

a) ester

b) ketone

c) aldehyde

d) lactone

24) Circular birefringence are…… properties.

a] chiroptical

b] Achiroptical

c] racemic

d] none of the above

25) Which of the following definitions of an asymmetric reaction is the most accurate?

a) A reaction that creates a new chiral centre in the product
b) A reaction that involves a chiral reagent.
c) A reaction which creates a new chiral centre with selectivity for one enantiomer/diasatereoisomer over another.
d) A reaction that is carried out on an asymmetric starting material

26) Which of the following doesn't affect asymmetric synthesis?

a) Chiral substrate
b) Chiral reagent
c) Circularly unpolarised light
d) Chiral solvent

27) L-Dopa (Knowles Masanto process) is……

a) First symmetric laboratory synthesis on small scale
b) First symmetric industrial synthesis on large scale
c) First asymmetric industrial synthesis on large scale
d) First asymmetric laboratory synthesis on small scale

28) Which rule is used for prediction of predominant stereoisomer in reaction of carbonyl compounds

a) CRAM's rule
b) Bredt's rule
c) Baldwin rule
d) Huckel's rule

29) In sharpless asymmetric epoxidation the most useful substrate for oxidation is an

a) Allylic alcohol
b) Vinylic alcohol
c) Allylic aldehyde
d) Vinylic aldehyde

30) Which if the following is enantiopure.

a) Sugars
b) Glycine
c) 1-propanol
d) acetaldehyde