ORGANIC REACTION

1. Write notes on of the following: a) Inductive effect b) Carbocation c) Resonance d) Mesomeric effect e) Hypercojugation.
2. What is electrophilic substitution reaction? Show the reaction mechanism of nitration in benzene.
3. Write down the structure and state of hybridisation of different types of carbocations, carbanions and radicals.
4. What is carbonium ion, carbenium ion, carbanion, free radical and mention their hybridization.
5. What is Markonikov and anti- Markonikov rule? Give example. HBr undergo anti-Markonikov reaction in presence of peroxide where as HCl and HI give Markonikov product.
6. Give reaction and mechanism of nitration in benzene ring.
7. Aniline is a weaker base than methyl amine. Why?
8. Explain that alcohols are weaker acids than phenols but are stronger nucleophiles.
9. Write comparative short note on S_N2 and S_N1 reaction covering i) rate equation ii) mechanism iii) potential energy diagram and iv) implication of stereochemistry if any.
10. Explain the order of acid strength HCOOH, CH_3COOH, phenol, ethanol.
11. Write down the product of the following reaction with mechanism $(CH_3)_3C\text{-}CH_2OH$ + Conc. H_2SO_4.
12. Compare the C−Cl bond lengths in CH2 = CH−Cl and CH3−CH2−Cl.
13. Arrange the molecules in their increasing acidity order: Phenol, 2,6-dimethyl-4-nitrophenol, 3,5-dimethyl-4-nitrophenol.
14. Predict all possible products of neopentyl bromide that undergo solvolysis in aqueous alkali medium.
15. Explain why *p*-nitrophenol has much higher boiling point than *o*-nitrophenol although both have same molecular weight.
16. What do you mean by hybridization? How is it related to structure and acidity of ethane, ethylene and acetylene?
17. Explain the order of acid strength HCOOH > ClCH2COOH > CH3COOH > Phenol > Ethanol.
18. What is solvolysis reaction? What will be the product when solvent is methanol?
19. Why does benzene undergo electrophilic substitution rather than addition reaction?
20. Hydrogen bonding and its effect on properties of compounds.