

Laxminarayan Institute of Technology

Fourth Semester B. Tech (Surface Coating Technology) Sp. Tech- I (Chemistry of Drying Oils and Polymerization) Question Bank

1. Name the first artificially prepared pigment with a known chemistry
 - A. Titanium dioxide
 - B. Lead Oxide
 - C. Prussian Blue
 - D. None of above
2. Film-former used in the coating formulation is usually of:
 - A. Low molecular weight
 - B. Moderate molecular weight
 - C. High molecular weight
 - D. All of these
3. Film-former used in the formulation of coatings should possess the property called:
 - A. Adhesion
 - B. Flexibility
 - C. Drying
 - D. All of the above
4. Thermoplastic is a high molecular weight polymer is
 - A. It hardens on heating
 - B. It softens on heating
 - C. No effect of heating
 - D. None of above
5. Thermoplastic polymer melts and flow when heat.
 - A. True
 - B. False
6. Linear polymers are usually Thermoplastic type.
 - A. True
 - B. False
7. Thermoplastic resins are also called as non-convertible.
 - A. True

B. False

8. True pigments are responsible for contributing:
 - A. hardness to the coatings
 - B. hiding power to the coating
 - C. flexibility to the coatings
 - D. None of above.
9. Binder is used as the main component in the conventional solvent borne coating formulation. When it is used in the coating formulations, it is available in the form of continuous phase.
 - A. True
 - B. False
10. In the number of formulations, fillers/extenders in are used in the large quantity. The use of fillers/extenders in the formulation of paint is responsible for the
 - A. Increase of volume of paint
 - B. Reduce the gloss of paint
 - C. Reduce the cost of the paint
 - D. Above all
11. The most important step in any coating process is film formation. This is the conversion of the coating from a liquid into an integral solid film after application.
 - A. True
 - B. False
12. The ability of a film-former to flow depends on how close its temperature is to the:
 - A. Melting point of film-former
 - B. Softening point of film-former
 - C. Glass Transition temperature of film-former
 - D. None of these
13. Some organic coating materials produce clear, transparent coatings, and other produce black, white, or coloured opaque coatings.
 - A. True
 - B. False
14. The opaque coatings require _____ in addition to the film-former, solvent, driers, etc.
 - A. Polymer
 - B. Extender

- C. Pigment
 - D. None of these
15. What is the method by which film-formers changes from liquid to the solid state?
- A. Evaporation of the solvent
 - B. Oxidation
 - C. Polymerization
 - D. None of these
16. The _____ method applies to drying oils, oleoresinous varnishes, oxidizing alkyds resins and many other film forming materials.
- A. Evaporation of the solvent
 - B. Oxidation
 - C. Polymerization
 - D. None of these
17. In condensation polymerization process a _____ molecule is split off between two film-forming molecules, thereby producing a chemical bond between them.
- A. Large
 - B. Small
 - C. Very large
 - D. None of these
18. In contrast to the processes of film formation from solutions of thermoplastic or thermosetting polymers, dispersions of insoluble polymer particles form films by coalescence (fusion) of particles.
- A. True
 - B. False
19. The glass transition temperature (T_g) of poly(methyl methacrylate) (PMMA) is about _____, and one cannot form a useful film from a PMMA latex at room temperature.
- A. 100°C
 - B. 105°C
 - C. 110°C
 - D. None of these
20. Cross-linked films have better mechanical properties and increased resistance to solvents.
- A. True

- B. False
21. Highly unsaturated fatty acids present in the oils are responsible for the autoxidation a process for converting the liquid film of oil to solid adherent film on substrate. A reactive center present in this molecule is:
- A. Ethylenic linkage
 - B. Methylenic linkage
 - C. Double bond
 - D. All of them
22. In the saponification reaction of oils, the ester group which is present in the oil is responsible to undergo the reaction.
- A. True
 - B. False
23. Saponification reaction is used to determine the saponification value of the oils. The significance of determination of saponification value is to know the:
- A. Equivalent weight
 - B. Molecular weight
 - C. No. of double bonds
 - D. None of them.
24. When Wij's method used in determine the iodine value of Tung oil, the iodine value will give the true indication of degree of unsaturation present in the Tung Oil.
- A. True
 - B. False
25. In case determining theoretical iodine value of linoleic acid, the average iodine value will be _____, considering the molecular weight of the linoleic acid is 278.
- A. 90
 - B. 180
 - C. 270
 - D. 210
26. Monoglyceride is prepared from the triglyceride by reacting it with the glycerol. The _____ moles of glycerol theoretically will be required to add in the triglyceride.
- A. Three
 - B. Two
 - C. One
 - D. Four

27. What will be the mass of the glycerol requires to prepare the 1000 kg of diglyceride by reacting triglyceride with glycerol considering the molecular weight of the triglyceride is 878 molecular weight of glycerol is 92?
- A. 136
 - B. 146
 - C. 156
 - D. None of these
28. What will be the amount of Iodine required to react with the 500 gm of linolenic fatty acid?
- A. 486
 - B. 476
 - C. 466
 - D. 500
29. Acid value is used to determine the amount to KOH required to neutralize the free fatty acids present in 1 gm of oil. If acid value of an oils is 10, then what will be amount of KOH required to neutralized 100kg of oil?
- A. 1 kg
 - B. 2 kg
 - C. 1.5kg
 - D. 0.5 kg
30. A major disadvantage associated with the extraction of oil by mechanical extraction method is:
- A. Loss of oil
 - B. Highly skilled manpower requires
 - C. Expensive
 - D. Not used for high oil containing oilseed
31. Drying of oils containing conjugation dries much _____ than non-conjugated type of drying oils.
- A. Slower
 - B. Faster
 - C. Much slower
 - D. None of these

32. One can predict the rate of drying of oils on basis of iodine value. Iodine value of oil determines the
- A. Degree of conjugation
 - B. Degree of non-conjugation
 - C. Degree of unsaturation
 - D. None of these
33. Conjugated oils dry much more slower than the non-conjugated oils
- A. True
 - B. False
34. The _____ methylenic group are present when fatty acid contain three double bonds in it molecule.
- A. Three
 - B. One
 - C. Two
 - D. Four
35. During the autoxidation polymerization, a period of induction at the beginning is observed and also no visible change in physical or chemical properties in the oil is noticed. This phenomenon is due to the
- A. presence of sterols
 - B. presence of tocopherols
 - C. presence of phosphatides
 - D. None of these
36. _____ Linkage is found in the autoxidative polymerization of oils containing conjugation.
- A. Ether
 - B. Ester
 - C. Oxygen
 - D. None of these
37. In the case of thermal polymerization of drying oils, the predominant reaction is Diels -Alder reaction. This reaction leads to the formation of large molecule having:
- A. Linear structure
 - B. Ring structure
 - C. Epoxide structure

- D. None of these
38. Both non-conjugated and conjugated oils are modified by thermal and oxidative polymerization process.
- A. True
 - B. False
39. Heat-bodying is usually carried out at temperature between 230 to 330°C. Conjugated oils body quite rapidly while linseed and soy require the higher temperatures.
- A. True
 - B. False
40. During the dehydration of Castor oil, ricinoleic acid present in the Castor oil will be converted to:
- A. 9, 12-Octadecadienoic acid
 - B. 9, 11-Octadecadienoic acid
 - C. Both 9,11 & 9,12-Octadecadienoic acid
 - D. None of these
41. As you know that during the addition polymerization, the polymerization of monomer proceeds through the various stages. The correct sequence of stages through which addition polymerization is accomplished.
- A. Propagation, initiation and termination
 - B. Initiation, termination and propagation
 - C. Initiation, propagation, and termination
 - D. Termination, propagation and initiation.
42. In the addition polymerization, initiator is added to initiate the polymerization reaction. The first step in the addition polymerization is the formation of reactive free radicals by the homolytic fission of covalent bond.
- A. True
 - B. False
43. In the addition polymerization, initiator is added to initiate the polymerization reaction. The first step in the addition polymerization is the formation of reactive free radicals by the homolytic fusion of covalent bond
- A. True
 - B. False

44. For a monomer, $\text{CH}_2=\text{C}(\text{X})\text{Y}$, its preference for free radical, anionic or cationic initiation will depend on the nature of groups 'X' and 'Y'. If 'X' and/or Y are electron-releasing, the monomer will favour anionic initiation
- A. True
 - B. False
45. The acrylates, methacrylates and acrylonitrile can be initiated by
- A. Cation initiation
 - B. Free radicals
 - C. Both Cation and free radicals
 - D. None
46. Termination of the growing polymer chains can be caused by the transfer of a hydrogen-atom from one chain to another. As this will result in a non-reactive chain and another molecule which will be unsaturated, this method is termed termination by Combination or coupling.
- A. True
 - B. False
47. Termination of the growing polymer chains can be caused by the transfer of a hydrogen-atom from one chain to another. As this will result in a non-reactive chain and another molecule which will be unsaturated, this method is termed termination by Disproportionation
- A. True
 - B. False
48. The substances are called inhibitors or retarders often added to the monomer to prevent premature polymerization. They are usually:
- A. Phenolic compounds
 - B. Non-phenolic compounds
 - C. Alcoholic compounds
 - D. All
49. Condensation polymerization based on the acid and alcohol will have a relatively slow rate of reaction initially, it is necessary to add the catalyst of type:
- A. Acidic
 - B. Basic
 - C. Both acidic and basic
 - D. All

50. Condensation polymerization based on the acid and alcohol will have a relatively slow rate of reaction initially, it is necessary to add the basic type of catalyst.
- A. True
 - B. False