



الإجابة النموذجية لامتحان كيمياء و تكنولوجيا البويات

416 ك  
(ورقة امتحانية كاملة)

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قسم : الكيمياء  
كلية : العلوم

- 1) .....are macromolecular products with a molecular mass between 500 and 30000.  
**A- Binders.** B. Plasticizers. C. Wetting agents. D. Pigments.
- 2) The basic constituent of paint is a .....  
A. Pigments. B. Plasticizers. C. Additives. **D. Binders.**
- 3) .....is natural polyunsaturated oils used in paints.  
**A. Drying oils.** B. Nondrying oils. C. Triglycerides. D. Polyesters.
- 4) ..... paints consist of natural drying oils.  
A. Alkyd resins. **B. Oil.** C. Poyesters. D. Resins.
- 5) The autoxidative polymerization of polyunsaturated oils in the presence of catalytic driers and .....  
A. styrene. B. oil. **C. oxygen.** D. water.
- 6) The term "industrial resins" refers to any ..... polymer resin made for commercial use.  
**A. synthetic.** B. ester. C. oxygen. D. normal.
- 7) Cellulose acetate esters have ..... solubility and compatibility with other resins.  
**A. limited.** B. medium. C. highest. D. normal.
- 8) Chlorinated rubber and related chlorinated polymers are forming coating films by ..... drying.  
**A. physical.** B. medium. C. chemical. D. normal.
- 9) Increasing molecular mass of vinyl resins is accompanied by ..... mechanical properties.  
**A. improved.** B. decreased. C.no change. D. reduced.
- 10) Vinyl resins of high molecular mass can therefore only be used in the form of dispersions or ..... for paint applications.  
**A. powders.** B. solvents. C. no change. D. reduced.
- 11) Polyacrylates do not absorb above.....and are therefore not degraded by UV radiation.  
A. 100 nm. **B. 300 nm.** C. 400 nm. D. 7000 nm.
- 12) Polyacrylates are only slightly attacked by.....  
A. water. **B. chemicals.** C. atmospheric. D. pollution.
- 13) Polyacrylates as binders consist of copolymers of ..... and methacrylate esters.  
A. acetate. **B. acrylate.** C. butyrate. D. formate.
- 14) The drying of Oil-Based Coatings may be accelerated by the addition of small quantities of.....  
A. ions. **B. metals.** C. oxygen. D. resins.
- 15) The drying mechanism of Oil-Based Coatings is .....mechanism.  
A. ionic. B. nonionic. **C. free radical.** D. homogenous.
- 16) Cellulose butyrate is ..... compatible and soluble than cellulose acetates.  
A. less. B. not. **C. more.** D. almost.
- 17) Free ..... groups along the cellulose chain are necessary to provide solubility, flexibility, compatibility, and toughness.  
A. carboxyl. B. amino. **C. hydroxyl.** D. methyl.
- 18) ..... is an example for low molecular mass resins, which are chemically hardened after application.  
A- Binder. B. Polyacrylate. **C. Alkyd resins.** D. Celluse resin.
- 19) Natural or synthetic rubber such as polyethylene, polypropylene or.....  
**A. polyisoprene.** B. polyhydroxy. C. polyalcohol. D. cellulose.
- 20) Almost all..... coatings are based on emulsions of vinyl acetate copolymers, copolymers of vinyl chloride and vinyl acetate, and polyvinyl chloride.  
**A. vinyl.** B. cellulose. C. polyalcohol. D. oil.
- 21) Alkyd resins are known as ..... polyesters.  
**A. oil-modified.** B. oil. C. polyesters. D. rubber.
- 22) The most common polyols used in alkyd resins are: glycerol and.....  
A. ethanol. B. butanol. C. ethylene glycol. **D. pentaerythritol.**
- 23) Styrene is used as additives to alkyd resins to ..... the drying time.  
A. stabilized. B. raise. C. increasing. **D. reducing.**
- 24) The manufacture of the alkyds proceeds in ..... stages.  
A. three. B. four. C.one. **D. two.**
- 25) ..... is the first step for the manufacture of alkyd resin.  
**A. Monoglycerolysis.** B. Estrification. C. oxidation. D. reduction.

- 26) ..... considers as the last step for the manufacture of alkyd resin.  
 A. Monoglycerolysis. **B. Esterification.** C. oxidation. D. reduction.
- 27) The reaction of alkyd resins was monitored by .....and viscosity measurements.  
 A. density. **B. acidity.** C. Iodine value. D. saponification.
- 28) Drying of alkyds depends up on high amount of ..... fatty acids in its structure.  
 A. saturated. **B. unsaturated.** C. long chain. D. short chain.
- 29) Medium oil linseed alkyds is used in automotive refinishing which have ..... of fatty acids.  
 A. 35-45%. **B. 46-55%.** C. 56-70%. D. more than 70%.
- 30) Alkyd resins can be classified according to its drying into ..... types.  
 A. one. **B. two.** C. three. D. four.
- 31) Long oil length alkyds are always prepared from drying and semidrying oils, with ..... being the preferred polyol.  
**A. pentaerythritol.** B. butanol. C. isoprpanol. D. ethanol.
- 32) Nondrying oil alkyds do not form films and, they are mainly used as ..... for other binders.  
**A. plasticizers.** B. automotive coatings. C. powder coatings. D. light stabilizer.
- 33) The ..... of the unsaturated fatty acids in alkyd resins permit copolymerization with vinyl compounds.  
 A. carboxylic group. B. hydroxyl group. **C. double bonds.** D. rubber.
- 34) The drying of alkyd resins takes place by ..... of the fatty acid chain of an alkyd resin binder unit.  
 A. catalyzed. B. condensation. **C. autoxidation.** D. polymerization.
- 35) Neutralized of alkyd resins with amines are used to produce ..... alkyd resins.  
 A. drying. B. modified. **C. waterborne.** D. nondrying.
- 36) ..... is an example for higher molecular mass resins, which are suitable for physical film formation.  
 A- Binder. **B. Polyacrylate.** C. Alkyd resins. D. Epoxy resins.
- 37) Health risks of alkyd resins depend on the nature of the ..... and their concentration in the paint.  
 A. oil. B. acids. **C. solvents.** D. esters.
- 38) Alkyd resins have been developed for producing high-solids paints to ..... solvent emission.  
 A. stabilize. B. raise. C. increase. **D. reduce.**
- 39) Problems of environmental pollution also followed from the introduction of ..... in paint industry.  
 A. oil. B. acids. **C. organic solvents.** D. esters.
- 40) **Oil-modified polyesters** prepared by reacting together polyols, ..... and oil.  
 A. resins. B. amines. C. polyesters. **D. dibasic acids.**
- 41) The drying process of polyunsaturated oils is a complex one of polymerization, probably catalyzed by.....  
 A. acids. B. alcohols. C. oxygen. **D. peroxides.**
- 42) The .....is the length of time that paint can be used after necessary preparations for application have been made.  
 A. falsh point. B. half time. C. indentation. **D. pot life.**
- 43) The ..... of a liquid is a measure of the flammability of its vapors on application of an external flame.  
**A. flash point.** B. half time. C. indentation. D. pot life.
- 44) ..... is one of the important mechanical properties should be measured in paint industry.  
**A. Adhesion.** B. Density. C. Viscosity. D. Gloss.
- 45) Nonvolatile matter left when the product is heated at an elevated temperature for a definite period under prescribed test conditions known as .....  
**A. Solid content.** B. resins. C. hard matter. D. solvents.
- 46) The hiding power is the ability of paint to .....a surface over which it has been uniformly applied.  
**A. hide.** B. adsorb. C. colour. D. tinting.
- 47) The Damping test can be used to measure the ..... of paint film.  
 A. Adhesion. **B. Hardness.** C. Viscosity. D. Gloss.

- 48) The degree to which the coating allows bending of a substrate without cracking or peeling is measured to determine .....
- A. adhesion.                      B. hardness.                      C. viscosity.                      **D. flexibility.**
- 49) ..... is an important property in selecting a pigment for any particular product.
- A. color                      B. Reduce glass                      **C. Tinting strength**                      D. cost
- 50) Pigments should be ..... in the medium which they are used.
- A. soluble                      B. sparingly soluble                      **C. insoluble**                      D. miscible
- 51) Solvents should be ..... during the drying step.
- A. evaporate**                      B. react                      C. sediment                      D. coagulate
- 52) Wetting additives accelerate the wetting of pigment agglomerates by.....
- A. water                      B. organic solvent                      **C. binders**                      D. inorganic solvent
- 53) Driers can be classified into ..... types.
- A. one                      **B. two**                      C. three                      D. four
- 54) Biocides are one classes of paint .....
- A. additives**                      B. binders                      C. extenders                      D. composition
- 55) Solvents used in paint production should generally have .....
- A. an acceptable odor                      B. constant physical properties                      C. reactivity                      **D. A & B**
- 56) Solvents used in paint industry divided into ..... classes.
- A. four                      **B. three**                      C. two                      D. One
- 57) Defoamers are liquid of a ..... surface tension.
- A. high                      **B. low**                      C. No                      D. moderate
- 58) Cobalt is a metal used as active part in ..... driers.
- A. primary**                      B. secondary                      C. tertiary                      D. Normal
- 59) ..... are added to paints as antiskinning additives.
- A. Alkyl phenol                      B. Oils                      C. Oximes                      **D. A & C**
- 60) Antifoaming additives must have .....
- A. positive value of E & S**                      B. equal values of E & S                      C. Negative E                      D. Negative S
- 61) Flocculation is a ..... caused in the pigment grinding.
- A. defect**                      B. feature                      C. action                      D. property
- 62) ..... is one of oxygenated solvent.
- A. Glycol**                      B. Xylene                      C. Toluene                      D. A & B
- 63) ..... vapors are atmospheric pollutant.
- A. Organic solvent**                      B. Inorganic solvent                      C. Nitrogen                      D. Water
- 64) Pigments are used in paint to .....
- A. hide substrates and obliterate previous colors.                      B. improve the adhesion of the paint film.  
C. improve the strength of the paint film.                      **D. all of them**
- 65) Solvents are volatile liquids added to constituents of paint production to .....
- A. adjust coating viscosity**                      B. reduce adhesion                      C. increase hardness                      D. inhibit corrosion
- 66) Solvents should be chemically .....
- A. active                      **B. inert**                      C. colorless                      D. A & C.
- 67) The pigment dispersion must be stabilized in order to .....
- A. prevent flocculates.**                      B. accelerate the wetting.                      C. reduce viscosity.                      D. adjust viscosity.
- 68) Driers can cause.... formation during paint storage and if the can or container has been opened.
- A. skin**                      B. foam                      C. dispersion                      D. solid / liquid interface
- 69) .....of the radicals formed during polymer degradation by radical scavengers is an method for light stabilizer.
- A. Formation                      B. Activation                      C. Dispersion                      **D. Trapping**
- 70) Drying of the paint on the substrate takes place .....
- A. physically                      B. chemically                      C. electrically                      **D. A & B**
- 71) Evaporation of the organic solvents from solvent-containing paints known as ..... drying.
- A. physical**                      B. chemical                      C. electrical                      D. stove
- 72) Using Solvent-Free and Low-Solvent (High-Solids) paints as a paint system to.....
- A. reduce of atmospheric pollution**                      B. soluble in water                      C. improve properties                      D. A & B
- 73) Plasticizers are..... of high viscosity and low volatility.
- A. inorganic compounds                      B. soluble in water                      **C. organic liquids**                      D. binders

- 74) Plasticizers improve ....., flexibility, and adhesion properties.  
 A. drying                      B. chemical properties    **C. flow**                      D. skinning
- 75) Pigments are insoluble..... compounds  
 A. organic                      B. inorganic                      C. electrically                      **D. A & B**
- 76) The solids level that influence film thickness can be adjusted by using .....  
 A. binders                      **B. solvents**                      C. pigments                      D. additives
- 77) .....are substances that are added in small quantities to a paint to improve or to modify certain properties  
 A. Binders                      B. Solvents                      C. Pigments                      **D. Additives**
- 78) Defoamers are liquids used to prevent foam formation while they are.....in the medium.  
 A. soluble                      B. sparingly soluble                      **C. insoluble**                      D. miscible
- 79) Using pigments without using wetting and dispersing additives it can be .....  
 A. flocculated                      B. settling                      C. shift color                      **D. all of them**
- 80) Wetting additives can be defined as substances which are designed to ..... interfacial tension.  
**A. reduce**                      B. increase                      C. produce                      D. has no effect on
- 81) ..... is one of the fundamental parameters used in the formulation of paint.  
**A. Solid contents**                      B. Drying                      C. Hardness                      D. Viscosity
- 82) Hardness of the drying films can be measured by..... methods.  
 A. four                      **B. three**                      C. two                      D. One
- 83) Styrene is used as..... solvent with acrylic coatings.  
 A. volatile                      B. inorganic                      **C. nonvolatile**                      D. oxygenated
- 84) The most important solvent should be used in paint industry is.....  
 A. organic                      **B. water**                      C. oxygenated                      D. hydrocarbon
- 85) Using of wetting and dispersing additives with pigments in paints can be influence on its .....  
 A. wetting                      B. stabilizing                      C. colour                      **D. A & B**
- 86) Oil paints consist of natural drying oils and the most common oil used is..... oil.  
 A. rice bran                      B. linseed                      C. soybean                      **D. B & C**
- 87) Waterborne alkyd resins can be obtained by addition of .....  
 A. acids                      B. esters                      **C. emulsifying agents**                      D. wetting agents
- 88) Glyptal resins is one of the saturated polyester coatings formed from .....and phthalic anhydride.  
**A. glycerol**                      B. ethylene glycol                      C. pentaerythritol                      D. phenol
- 89) Polyurethanes coatings result from the reaction of a polyalcohol and an organic.....  
 A. urea                      B. dibasic acid                      **C. di-isocyanate**                      D. styrene
- 90) The commonest starting products for epoxy resins are .....and bisphenol A.  
 A. maleic acid                      B. phthalic acid                      C. adipic acid                      **D. epichlorhydrin**
- 91) .....are used to kill bacteria, which attack waterborne paints.  
 A. Organic solvents                      B. Pigments                      C. Rheology                      **D. Biocides**
- 92) Solvent should generally have the following properties.....  
 A. clear                      B. neutral reaction                      C. leaving a residue                      **D. A & B**
- 93) Critical pigment volume concentration is the right amount of .....to wet the pigment particles and to fill the voids between them.  
 A. solvent                      B. plasticizers                      C. additives                      **D. binder**
- 94) For fire-resistant or fire retarding paints it must be structurally contains some .....atoms.  
 A. oxygen                      **B. halogen**                      C. nitrogen                      D. sulfur
- 95) Cellulose acetate, the simplest organic cellulose ester, offers excellent.....  
 A. flame resistance                      B. toughness                      C. clarity                      **D. all of them**
- 96) ..... is the most important composition in paint industry.  
**A. Binders.**                      B. Plasticizers.                      C. Wetting agents.                      D. Pigments.