Uka Tarsadia University(Diwaliba Polytechnic)
Diploma in Chemical Engineering
Objective Type Questions (Chemical Engineering Materials)

UNIT 1 PROPERTIES OF MATERIALS

1. The permanent mode of deformation of a material known as _____.
   a) Elasticity
   b) Plasticity
   c) Slip deformation
   d) Twinning deformation
2. The ability of materials to develop a characteristic behavior under repeated loading known as _____
   a) Toughness
   b) Resilience
   c) Hardness
   d) Fatigue
3. Unit of tensile strength of the material is kg/cm^2.
   a) True
   b) False
4. Which of the following factors affect the mechanical properties of a material under applied loads?
   a) Content of alloys
   b) Grain size
   c) Imperfection and defects
   d) Shape of material
5. Electric current is measured by ammeter and which is connected in series.
   a) True
   b) False
6. The ability of a material to be formed by hammering or rolling is known as _____
   a) Malleability
   b) Ductility
   c) Harness
   d) Brittleness
7. What type of wear occurs due to an interaction of surfaces due to adhesion of the metals?
   a) Adhesive wear
   b) Abrasive wear
   c) Fretting wear
   d) Erosive wear
8. Rubber is inorganic material.
   a) True
   b) False
9. The response of a material due to the function of heat is known as _____
   a) Mechanical property
   b) Electrical property
   c) Chemical property
   d) Thermal property
10. The heat capacity of a material defined as _____
    a) C = (dQ/dT)
    b) C = (dT/dQ)
    c) C = (1/m) (dE/dT)
    d) C = m (dE/dT)
11. Specific heat of materials is expressed in terms of _____
    a) W/m K

b) J/K
c) J/kg K
d) m^3/kg

12. What effect does the addition of thermal energy have on a material?
    a) Thermal contraction
    b) Thermal expansion
    c) No change
    d) Reproduction
13. Which term is used to define the temperature at which a substance changes its status from solid to liquid?
    a) Boiling point
    b) Melting point
    c) Condensation point
    d) Freezing point
14. 14) The melting point of Iron (Fe) is _____
    a) 660^oC
    b) 1084^oC
    c) 419^oC
    d) 1538^oC
15. The ability of a body to withstand sudden and severe temperature changes is known as_____
    a) Thermal shock resistance
    b) Thermal resistance
    c) Thermal transmittance
    d) Deployment
16. What is the attribute of a material which resists the flow of electricity known?
    a) Conductivity
    b) Thermoelectricity
    c) Dielectric strength
    d) Resistivity
17. Thermal conductivity is the ability of the material to pass _____
    a) Electric Current
    b) Heat
    c) Electric Voltage
    d) None of the above
18. Work is the product of force and displacement.
    a) True
    b) False
19. Wood is a
    a) transparent materials
    b) translucent material
    c) opaque materials
    d) abstract materials
20. The insulating capacity of material against high voltages is known as _____.
    a) Dielectric strength
    b) Thermoelectricity
    c) Electromechanical effect
    d) Electrochemical effect
21. The quantity or effectiveness of the energy emitted known as _____
    a) Refraction
    b) Reflectivity
    c) Emissivity
    d) Luminance

22. What is the emissivity of aluminum foil?
    a) 0.03
    b) 0.9
    c) 0.02
    d) 0.04
23. The ability of a substance to neutralize the acidic nature of the material is known as _____
    a) Corrosion resistance
    b) Chemical composition
    c) Alkalinity
    d) Chemical equilibrium
24. The ability of a metal which helps it to form a smooth cast is known as _____
    a) Machinability
    b) Formability
    c) Solderability
    d) Castability
25. Which property helps a material to absorb lubricants?
    a) Density
    b) Porosity
    c) Soldering
    d) Absorptivity
26. Fiberglass materials have a usable temperature up to _____
    a) $50^{o}C$
    b) $100^{o}C$
    c) $200^{o}C$
    d) $500^{o}C$
27. Boiling point of water is _____ ^{0}C.
    a) 0
    b) 50
    c) 100
    d) 15
28. Melting point of Ice is _____ ^{0}C.
    a) -50
    b) 0
    c) 5
    d) 10
29. pH of distilled water is _____ pH.
    a) 2
    b) 4
    c) 7
    d) 10
30. Molecular weight of hydrochloric acid is_____ gm/mole.
    a) 15.5
    b) 26.5
    c) 36.5
    d) 46.5
31. Molecular weight of Sulfuric acid is_____ gm/mole.
    a) 98
    b) 108
    c) 158
    d) 78
32. When the salt dissolved in the water, the property of material is known as
    a) Viscosity
    b) Solubility
    c) Density

d) Molecularity

33. Rubber is _____ Material.
    a) Elastic
    b) Non elastic
    c) Malleable
    d) Non malleable
34. Unit of density is _____.
    a) m/s
    b) m/kg
    c) kg/m^3
    d) m/kg^2
35. In terms of which of the following properties, metals are better than ceramics?
    a) Hardness
    b) Ductility
    c) Toughness
    d) Yield Strength
36. Steels mainly contain iron and carbon. Under which of the following categories do they belong?
    a) Metallic Solid
    b) Polymer
    c) Composites
    d) Ceramics
37. Plasticity increases with temperature.
    a) True
    b) False
38. Which of the following is the property because of which a material can be drawn into wires?
    a) Ductility
    b) Elasticity
    c) Malleability
    d) Strength
39. The unit of viscosity is _____.
    a) kg/m^3
    b) Poise
    c) m/kg^3
    d) m/s
40. Which of the following material is costly?
    a) Copper
    b) Aluminum
    c) Iron
    d) Nickel
41. Which of the following material having high pH value ?
    a) Sulfuric Acid
    b) Hydrochloric Acid
    c) Sodium Hydroxide
    d) Nitric Acid
42. Copper is known as non-ferrous metal.
    a) True
    b) False
43. Brass is ferrous metal.
    a) True
    b) False
44. Cast iron is known as non-ferrous metal.
    a) True
    b) False
45. Wrought iron is ferrous metal.

a) True
b) False

46. The unit of surface tension is _____.
    a) N/Kg
    b) N/m
    c) m/s
    d) m/kg

47. Hydrometer is an instrument used to measure the _____.
    a) specific gravity
    b) surface tension
    c) acidity
    d) pH
48. Glass is known as organic material.
    a) True
    b) False
49. Nylon is a carbonic material.
    a) True
    b) False
50. Electrical conductivity of copper is very low.
    a) True
    b) False

UNIT 2 METALS AND ALLOY

1. Pig iron is a product of _____
   a) Cupola
   b) Bessemer converter
   c) Open hearth furnace
   d) Blast furnace
2. Cast iron is a product of _____
   a) Cupola
   b) Bessemer converter
   c) Open hearth furnace
   d) Blast furnace
3. Wrought iron is a product of _____
   a) Cupola
   b) Bessemer converter
   c) Puddling furnace
   d) Blast furnace
4. Steel is a product of _____
   a) Cupola
   b) Blast furnace
   c) Puddling furnace
   d) Bessemer converter
5. Red hardness of an alloy steel can be improved by adding _____
   a) Tungsten
   b) Vanadium
   c) Manganese
   d) Titanium
6. Abrasion resistance of an alloy steel can be improved by adding _____
   a) Tungsten
   b) Vanadium
   c) Manganese
   d) Chromium
7. Wear resistance of an alloy steel can be improved by adding _____
   a) Tungsten
   b) Vanadium
   c) Manganese
   d) Titanium
8. Corrosion resistance of an alloy steel can be improved by adding _____
   a) Tungsten
   b) Vanadium
   c) Chromium
   d) Titanium
9. Tensile strength of an alloy steel can be improved by adding _____
   a) Nickel
   b) Vanadium
   c) Manganese
   d) Titanium

10. Which of the following induces fine grain distribution in alloy steel?
    a) Nickel
    b) Vanadium
    c) Manganese
    d) Titanium
11. How much carbon is present in cast irons?
    a) Less than 0.05%
    b) Up to 1.5%
    c) 1.5% to 2%
    d) More than 2%
12. Cast iron is a _____ alloy.
    a) Eutectic
    b) Eutectoid
    c) Peritectic
    d) Peritectoid
13. Iron obtained from broken _____ is known as white iron.
    a) Cementite
    b) Graphite
    c) Pearlite
    d) Bainite
14. If the iron surface contains graphite, it is known as _____
    a) Alloy cast iron
    b) White iron
    c) Grey iron
    d) Spheroidal graphite
15. Which element causes cementite to behave in a stable manner?
    a) Silicon
    b) Sulphur
    c) Manganese
    d) Carbon
16. An iron with high-silicon content is a _____
    a) White iron
    b) Grey iron
    c) Malleable iron
    d) Pig iron
17. What is the effect of phosphorus and sulphur in cast irons?
    a) Induces brittleness
    b) Increases strength
    c) Destabilizes cementite
    d) No effect
18. Decomposition of cementite to form ferrite and graphite is known as _____
    a) Decomposition of cast irons
    b) Production of cast irons
    c) Growth of cast irons
    d) Prevention of growth of cast irons
19. Which of these are applications of grey cast iron?
    a) Camshafts, engine blocks
    b) Wear plates, pump linings

c) Brake shoes, pedals
d) Gears, rocker arms

20. Which of the following cast irons cannot be machined?
    a) White cast iron
    b) Grey cast iron
    c) Malleable cast iron
    d) Spheroidal graphite cast iron
21. How are malleable cast irons designated for different grades?
    a) By tensile strength
    b) By six or seven-digit numbers
    c) By five-digit numbers
    d) By alphabets
22. What is the effect of Nickel on cast irons?
    a) Stabilizes carbides
    b) Increases hardness
    c) Refines grain structure
    d) Improves corrosion resistance
23. Aluminium is commercially produced from:
    a) Aluminium sulphate
    b) Alum
    c) Cryolite
    d) Bauxite
24. By which of the below process is Aluminium manufactured?
    a) Bayer process
    b) Ostwald process
    c) Mayer process
    d) Haber process
25. Which is the most important and useful alloy of Aluminium?
    a) Magnalium
    b) Silumin
    c) Duralumin
    d) Magnox
26. Aluminium has a higher maintenance cost.
    a) True
    b) False
27. Which of the following is a property of aluminium?
    a) Hard material
    b) Brittle
    c) Noise control
    d) Magnetic
28. Aluminium appears greyish in colour in pure form.
    a) True
    b) False
29. Aluminium finds its application in:
    a) Golf clubs
    b) Dehydrating agents
    c) Waste management
    d) Cricket field

30. What is the melting point of Aluminium?
    a) 250^{o}C
    b) 658^{o}C
    c) 700^{o}C
    d) 470^{o}C
31. Recycled Aluminium is called:
    a) Primary Aluminium
    b) Green Aluminium
    c) Secondary Aluminium
    d) Subsequent Aluminium
32. Presence of which material in aluminium alloy provides ductility to the alloy?
    a) Silicon
    b) Iron
    c) Copper
    d) Zinc
33. Which furnace is not used for heating aluminium alloys?
    a) Electric arc furnace
    b) Pot furnace
    c) Induction heating furnace
    d) Crucible furnace
34. Which of the following is not a purpose of fluxing and flushing the aluminium alloys?
    a) Removal of dissolved hydrogen
    b) Removal of dissolved oxygen
    c) Separation of dross from melt
    d) Entrapment of dross
35. What is the silicon composition present in an LM-17 cast aluminium alloy?
    a) 3%
    b) 12%
    c) 5.5%
    d) 11.5%
36. Which gas is not used for fluxing and flushing in aluminium alloys?
    a) Argon
    b) Chlorine
    c) Nitrogen
    d) Oxygen
37. Up to what length can the surface finish be achieved by green sand in aluminium alloys?
    a) 600 micro inch
    b) 650 micro inch
    c) 700 micro inch
    d) 750 micro inch
38. Which of the given metals is not counted among late additions in aluminium alloys?
    a) Boron
    b) Titanium
    c) Manganese
    d) Sodium
39. Aluminium alloys are not susceptible to which of the following?
    a) Macro shrinkage
    b) Drossing

c) Micro shrinkage
d) Solidification shrinkage

40. Pouring basins are used for reducing vortex formation.
    a) True
    b) False
41. For protection of copper alloys from corrosion, a special type of coating is applied on it.
    a) True
    b) False
42. Which of the following parts are mostly manufactured by using copper alloys?
    a) Pistons
    b) Engine blocks
    c) Journal bearings
    d) Aircrafts
43. Copper alloys generally have sparking nature due to its high ductility.
    a) True
    b) False
44. Copper alloys have low thermal conductivity but high electrical conductivity.
    a) True
    b) False
45. Copper alloys possess good mechanical properties even at high temperatures.
    a) True
    b) False
46. At zero level temperature of copper alloys, they become very hard and brittle in nature.
    a) True
    b) False
47. Castings or components of copper alloys have high machinability and recyclability.
    a) True
    b) False
48. Copper is generally a polymorphous material with body centered cubic (BCC) lattice structure.
    a) True
    b) False
49. It is very difficult to cast pure copper metal in mould cavity because of shrinkage problems.
    a) True
    b) False
50. Which one of the following metals is the best conductor of electricity?
    a) iron
    b) copper
    c) silver
    d) aluminium
51. Which of the following is the lightest metal?
    a) mercury
    b) copper
    c) aluminium
    d) lithium
52. Which two metals combine to form Bell metal?
    a) nickel and copper
    b) zinc and copper
    c) tin and copper
    d) brass and nickel

53. Pick up the wrong statement?
    a) aluminium in steel results in excessive grain growth
    b) manganese in steel induces hardness
    c) nickel and chromium in steel help in raising the elastic limit and improve the resilience and ductility
    d) tungsten in steels improves magnetic properties and hardenability
54. Bell metal contains_____?
    a) 70% copper and 30% zinc
    b) 90% copper and 10% tin
    c) 85-92% copper and rest tin with little lead and nickel
    d) 70-75% copper and rest tin

55. The correct sequence for descending order of machinability is _____?
    a) grey cast iron, low carbon steel, wrought iron
    b) low carbon steel, grey cast iron, wrought iron
    c) wrought iron,low carbon steel, grey cast iron
    d) wrought iron, grey cast iron, low carbon steel

56. In grey cast iron, carbon is present in the form of
    a) Cementite
    b) Free carbon
    c) Flakes
    d) Spheroids
57. Grey cast iron has
    a) Carbon in the form of free graphite
    b) High tensile strength
    c) Low compressive strength
    d) All of these
58. The product from blast furnace is called
    a) Cast Iron
    b) Wrought Iron
    c) Pig Iron
    d) Stee
59. Which is closest to the purest form of the iron?
    a) Cast Iron
    b) Wrought Iron
    c) Pig Iron
    d) Steel
60. Which of the following metal has lowest melting point?
    a) Antimony
    b) Tin
    c) Silver
    d) Zinc
61. Wear resistance of an alloy steel can be improved by adding Manganese-True
62. Tensile strength of an alloy steel can be improved by adding Nickel- True
63. If the iron surface contains graphite, it is known as Grey iron -True

UNIT 3 CERAMICS

1. Which of the following are a ceramics solids?
   a) Metallic, inorganic and amorphous solids
   b) Non-metallic, organic and amorphous solids
   c) Non-metallic, inorganic and amorphous solids
   d) Non-metallic, inorganic and crystalline solids
2. Which one of the following is not an acidic refractory?
   a) Quartz
   b) Sand
   c) Silica brick
   d) Dolomite
3. Which one of the following is not a basic refractory?
   a) Magnesite
   b) Sand
   c) Dolomite
   d) Alumina
4. Which one of the following is a neutral refractory?
   a) Quartz
   b) Sand
   c) Silica brick
   d) Silicon carbide
5. Which one of the following can act as a modifier in glass forming process?
   a) Silicon dioxide
   b) Sodium oxide
   c) Magnesium oxide
   d) Phosphorous oxide
6. The word ceramic stands for which of the following meaning?
   a) Soft
   b) Burnt
   c) Hard
   d) Tough
7. Which one of the following ceramics can be used as a pigment in paints?
   a) Silicon carbide
   b) Silicon oxide
   c) Aluminum oxide
   d) Titanium oxide
8. Which of the following is a property of ceramics?
   a) Low strength
   b) Low melting point
   c) Resistant to corrosion
   d) Bad insulation
9. Porcelain is a type of _____ ceramic.
   a) whiteware
   b) stone
   c) abrasive
   d) cement

10. Diamond and corundum are examples of _____ ceramics.
    a) Glass
    b) Stone
    c) Refractories
    d) abrasives
11. Which material is commonly used in electronic devices?
    a) Alumina
    b) Titania
    c) Silica
    d) Germanium
12. Which of the following carbides are used for cutting tools?
    a) Silicon carbide
    b) Tungsten carbide
    c) Vanadium carbide
    d) Chromium carbide
13. Which of the following is a characteristic of alumina?
    a) Excellent hardness
    b) Good tensile strength
    c) Good toughness
    d) Poor wear resistance
14. Which among the following exhibits the highest thermal conductivity?
    a) Alumina
    b) Silicon carbide
    c) Silicon nitride
    d) Sialon
15. Silicon carbides resist oxidation up to _____
    a) 100^{o}C
    b) 500^{o}C
    c) 1000^{o}C
    d) 1500^{o}C
16. On average, what is the maximum use temperature of engineering ceramics?
    a) 260^{o}C
    b) 815^{o}C
    c) 1200^{o}C
    d) 2760^{o}C
17. Firing temperature of magnesite bricks is about _____ °C.
    a) 800-1000
    b) 1000-1200
    c) 1600-1800
    d) 2400-2600
18. Hollow refractory bricks are made by
    a) slip casting
    b) hand moulding
    c) pressing/machine moulding
    d) extrusion
19. Quartz is
    a) stable form of silica upto 870°C.

b) converted to tridymite on firing between 870 to 1470°C.
c) transformed to crystoballite on heating above 1470°C.
d) all (a), (b) and (c)

20. Fireclay bricks are not used in the
    a) Beehive coke oven.
    b) By-product coke oven walls.
    c) Combustion chamber of B.F. stoves.
    d) coke oven regenerators.
21. Magnetite refractories are used for the construction of those furnaces, which are
    a) Not required to resist the corrosive action of basic slag.
    b) Not subjected to fluctuation in temperature.
    c) Used for raising & maintaining high temperature.
    d) both (b) and (c)
22. Roof of basic electric furnace is made of _____ bricks.
    a) Super duty fireclay
    b) Silica
    c) chromite
    d) none of these
23. Which is not a basic refractory ?
    a) Chrome magnesite
    b) Magnesite
    c) Dolomite
    d) Silicon carbide
24. Firing of refractory brick is done to
    a) dehydrate the dried refractory.
    b) develop stable mineral forms in them.
    c) form ceramic bonds necessary for development of high crushing strength in the finished product.
    d) all (a), (b) and (c).
25. High porosity refractory bricks have
    a) poor resistance to the peneration of molten slag, metal & flue gases.
    b) poor heat conductivity & low strength.
    c) better thermal spalling resistance.
    d) all (a), (b) and (c).
26. Which one expands on heating ?
    a) Silica bricks
    b) Fireclay bricks
    c) Both (a) & (b)
    d) Neither (a) nor (b)
27. Outer combustion chamber of blast furnace stove is lined with _____ bricks.
    a) Firecla
    b) Silica
    c) chome magnesite
    d) Zirconia
28. Firing temperature is minimum (1250-1400 °C) for _____ bricks.
    a) Fireclay
    b) direct bonded basic
    c) Silica

d) Magnesite

29. Refractories are dried in the
    a) rotary kilns
    b) tunnel kilns
    c) Sun
    d) none of these
30. Chromite refractories are
    a) acidic refractory.
    b) neutral refractory.
    c) basic refractory.
    d) fird at a temperature of 600°C only.
31. Which of the following is not an acidic refractory ?
    a) Silica bricks
    b) Fireclay bricks
    c) Bauxite bricks
    d) Magnesia bricks
32. Fireclay refractories have
    a) low co-efficient of thermal expansion.
    b) poor thermal spalling resistance.
    c) tendency to expand unduly high during firing.
    d) very high cost.
33. Which of the following is not a neutral refractory ?
    a) Silicon carbide
    b) Magnesite
    c) Chromite
    d) Graphite
34. Which is a basic refractory ?
    a) Fireclay
    b) Silica
    c) Chrome magnesite
    d) None of these

35. Basic bricks are not made of
    a) fireclay
    b) magnesite
    c) foresterite
    d) chromite
36. Glass is a mixture of:
    a) Non-metallic silicates
    b) Metallic silicates
    c) Metallic acetates
    d) Non-metallic acetates
37. Which of the following types of glass accounts for about 90% of manufactured glass?
    a) Potash-lime glass
    b) Soda-lime glass
    c) Potash-lead glass
    d) Soda-lead glass
38. Glass is not a single compound.

a) True
b) False

39. What changes are observed when a glass is heated?
    a) It becomes softer
    b) It bursts
    c) It solidifies
    d) It disintegrates
40. Chromatic glass is used in:
    a) ICU and meeting rooms
    b) Aquariums
    c) Mobile screen protectors
    d) Floors
41. The appearance of potash-lime glass in colour is:
    a) Black
    b) Green to colourless
    c) Reddish brown
    d) White
42. Which of the following is not a process involved in glass production?
    a) Extrusion
    b) Forming and shaping
    c) Heat treatment
    d) Finishing
43. What is the maximum usable temperature of soda like glass?
    a) 860 ^{0}F
    b) 941 ^{0}F
    c) 1084 ^{0}F
    d) 1324 ^{0}F
44. Major ingredients of traditional ceramics
    a) silica
    b) clay
    c) feldspar
    d) all of the above
45. Porcelain is made for making crockery which is itself being prepared by
    a) mud
    b) soil
    c) clay
    d) silicon
46. Alumina is crystalline ceramic.
    a) True
    b) False
47. Magnesite is not a crystalline ceramic.
    a) True
    b) False
48. Porosity should be very low for good quality of refractory.
    a) True
    b) False
49. General formula of dolomite is
    a) $CaMg(CO_3)_2$
    b) Ca_2MgCO_3

c) $CaMgCO_3$
d) Ca_3MgCO_3

50. Technical grade sheet of mica is used in electrical components.
    a) True
    b) False
51. Abestos is an organic material.
    a) True
    b) False
52. Magnesium oxide is not pure oxide ceramic.
    a) Tre
    b) False
53. Silicon dioxide is pure oxide ceramic.
    a) True
    b) False
54. Al_2O_3 is not pure oxide ceramic.
    a) True
    b) False

UNIT 4 ORGANIC MATERIALS

1. Which of the following is a thermosetting polymer?
   a) Polystyrene
   b) Polyolefins
   c) Nylons
   d) phenolic resins

a) The number of repeating units in a polymer is known as _____
   a) monomer
   b) degree of polymerization
   c) molecule
   d) chain

2. A polymer made of identical monomer units is called _____
   a) Homopolymer
   b) Linear polymer
   c) Copolymer
   d) Branched polymer

3. CH_2=CH_2 is known as
   a) Ethane
   b) Ethylene
   c) Propane
   d) Propylene

4. Which of the following is not a stage of addition polymerization?
   a) Initiation
   b) Propagation
   c) Termination
   d) Recrystallisation

5. Addition of different types of monomers to form polymer chains is known as _____.
   a) Chain reaction polymerization
   b) Copolymerization
   c) Combination
   d) Disproportionation

6. Which of the following is thermosetting polymer
   a) Neoprene
   b) PVC
   c) Nylon-6,6
   d) Bakelite

7. Caprolactum is used for preparation of
   a) Nylon-6
   b) Nylon-6,6
   c) Nylon 6, 10
   d) Nylon-2 – Nylon-6

8. The polymer which is used in manufacture of squeeze bottles is
   a) Polystyrene
   b) Teflon
   c) Polypropene
   d) Low density polythene

9. Which of the following is a biodegrable polymer?
   (a) Cellulose
   (b) Polyethene
   (c) PVC
   (d) Nylon-6
10. A polymer of butadiene and acrylonitrile is called
   (a) Buna-2
   (b) Buna-N
   (c) Buna-S
   (d) Buna-A
11. The manufacture of nylon-6,6 involves condensation of
   (a) Phenol and formaldehyde
   (b) Urea and formaldehyde
   (c) Adipic acid and hexamethylene diamine
   (d) Ethylene glycol and pthalic acid
12. $F_2C = CF_2$ is a monomer of
   (a) Teflon
   (b) Glyptal
   (c) Nylon-6
   (d) Buna-S
13. Which of the following statements is not true about low density polythene?
   a) Tough
   b) Hard
   c) Poor conductor of electricity
   d) Highly branched structure
14. Where among the following fields polypropylene cannot be used?
   a) insulating cables and wires
   b) home appliances
   c) automobile appliances
   d) furniture
15. Thermoplastics are formed by _____.
   a) Addition polymerization
   b) Copolymerization
   c) Condensation polymerization
   d) Isomerism
16. Which of the following is not a property of thermoplastics?
   a) Recyclable
   b) Soft and weak
   c) Easy to mold
   d) Can be used at high temperatures
17. Polystyrene is not a suitable polymer to be used for injection moulding and thermoforming.
   a) true
   b) false
18. Which of the following is not an example of a commodity thermoplastic?
   a) Polyethylene
   b) Polypropylene
   c) Polystyrene
   d) Phenolic

19. Which of these is not a type of polyethylene?
    a) Low-density polyethylene
    b) High-density polyethylene
    c) Linear high-density polyethylene
    d) Ultra-high molecular weight polyethylene
20. Which of the following are applications of polypropylene?
    a) Buckets, bottle crates
    b) CD cases, food boxes
    c) Wire insulation, piping
    d) Valves, fittings
21. Thermosetting plastics are formed by _____
    a) addition polymerization
    b) copolymerization
    c) condensation polymerization
    d) isomerism
22. Which of the following is a property of thermosetting plastics?
    a) Can be molded
    b) Soft
    c) Recyclable
    d) Can be used at high temperatures
23. Phenolics are otherwise commonly known as _____
    a) Bakelite
    b) Polyformaldehyde
    c) Urea formaldehyde
    d) Melamine formaldehyde
24. An addition polymer is a polymer that forms by simple linking of monomers without the co-generation of other products.
    a) True
    b) False
25. Condensation polymers are any kind of polymers formed through a condensation reaction, where molecules join together and losing small molecules as byproducts
    a) True
    b) False
26. Polyethylene is called a linear or straight-chain polymer
    a) True
    b) False
27. A linear polymer is simply a chain in which all of the carbon-carbon bonds exist in a single straight line.
    a) True
    b) False
28. HDPE is known as
    a) High Density Polyethylene
    b) High Definition Polyethylene
    c) Hexa Diamine Polyethylene
    d) None of Above
29. Epoxy resins are used in the manufacturing of:
    a) Glass
    b) Fabric

c) Plywood
d) Plastic

30. A monomer is a small molecule. When monomers connect to each other, they form a polymer
    a) True
    b) False
31. A copolymer is a polymer that is made up of two or more monomer species.
    a) True
    b) False
32. The most commonly used polyester is known as
    a) Terylene
    b) nylon
    c) fat
    d) protein
33. Nylon 6 and Nylon 6,6 are synthetic polymers called a
    a) Polyethers
    b) Polyesters
    c) Polyamides
    d) Polyolefins
34. A fiber that will float on water is
    a) Nylon
    b) Polyester
    c) Acrylic
    d) Polypropylene
35. Among the following, the fiber that has the lowest density is,
    a) Cotton
    b) Nylon
    c) Polyester
    d) Polypropylene

36. One of the raw materials of polyester is ……..
    a) Caprolactum
    b) terephthalic acid
    c) adipic acid
    d) citric acid
37. The density of polyester fibre is
    a) More than cotton
    b) Less than cotton but more than nylon
    c) Less than nylon but more than polypropylene
    d) Nearly equal to that of acrylic fibre
38. Teflon is known as the trademark name for _____
    a) Tetrafluoride
    b) Tetrafluoroethylene
    c) Fluorinated ether propane
    d) Fluoro ethyl propylene
39. Cross linked polymers are polymers in which monomer units are cross linked together to form a three dimensional network polymers .
    a) True
    b) False
40. Melamine formaldehyde is not an example of cross-linked polymer.
    a) True
    b) False
41. Bakelite cannot be used for making the handles of a variety of utensils.

a) True
b) False

42. Bakelite is _____
a) Good anion exchanging resin
b) Attacked by acids
c) Attacked by salts
d) Resistant to alkalis

43. TEFLON has _____
a) High melting point
b) Low melting point
c) Low density
d) Good conduction of electricity

44. TEFLON is used to make chemical carry pipes due to its _____
a) extreme chemical resistance
b) Resistance towards alkalis
c) Resistance towards strong acids
d) Resistance towards salts

45. Thermo plastics becomes _____ on heating.
a) Rigid
b) Moulded
c) Soft
d) Brittle

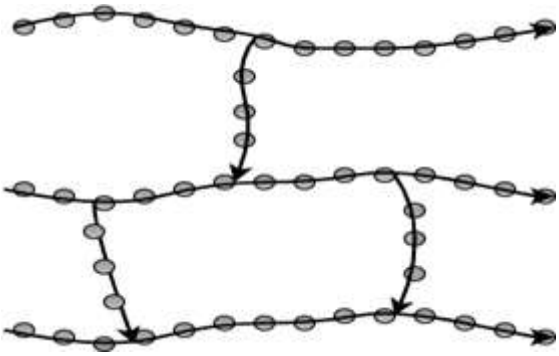
46. _____ increases the flexibility of the polymer.
a) Resins
b) Catalysts
c) Lubricants
d) Plasticizers

47. Epoxy resin
a) is an elastomer
b) is a good adhesive
c) is a polyester
d) cannot be used for surface coatings

48. LDPE is known as
a) Low Density Polyethylene
b) Low Definition Polyethylene
c) Large Density Polyethylene
d) None of the above

49. Bakelite cannot be moulded very quickly.
a) True
b) False

50. Which molecular structure does the below figure represent?



a) Linear
b) Branched
c) Cross-linked
d) Network

UNIT 5 PROTECTIVE COATING

1. In how many layers is oil paint applied to a surface?
   a) 3
   b) 4
   c) 2
   d) 1
2. Emulsion Paints contain:
   a) Nitro cotton
   b) Zinc white
   c) White lead
   d) Polyvinyl acetate
3. Anticorrosive paint is _____ in colour
   a) Blue
   b) White
   c) Black
   d) Yellow
4. In which of the below, it is not necessary to remove existing paint to apply a new one?
   a) Aluminium paints
   b) Cement paints
   c) Oil paints
   d) Enamel paints
5. Synthetic rubber paints are prepared from:
   a) Resin
   b) Rubber
   c) Synthetic fibres
   d) Polyvinyl Chloride
6. Cement paints require a smooth surface to be applied on.
   a) True
   b) False
7. What is used to make paints odourless to an extent?
   a) Flat latex
   b) Celluloid sheets
   c) Acrylic compound
   d) Plioway resins
8. Spray painting is used to:
   a) Apply paint without touching surface
   b) Apply large amount of paint
   c) Reach high areas
   d) Get textured paint
9. The open-time of paint can be extended by adding white spirit.
   a) True
   b) False
10. Which of the below has a sheen and is highly washable?
    a) Acrylic flat
    b) Acrylic eggshell

c) Acrylic satin
d) Acrylic gloss

11. _____ substances accelerate the process of drying.
    a) Solvent
    b) Distemper
    c) Drier
    d) Base
12. The sulphate of _____ is used with zinc paint so as to eliminate the risk of discoloration of a lead drier.
    a) Manganese
    b) Magnesium
    c) Potassium
    d) Calcium
13. The function of _____ is to make the paint thin so that it can be easily applied on the surface.
    a) Pigment
    b) Solvent
    c) Carrier
    d) Base
14. The protective coatings are used to _____
    a) Corrode the metal
    b) Prevent from corrosion
    c) Increase the corrosion
    d) Slightly increase the corrosion
15. The oxidation resistance is given by the protective coatings.
    a) True
    b) False
16. The cleaning methods before applying the protective coating are of _____ types.
    a) 3
    b) 4
    c) 5
    d) 6
17. The old paint coating cannot be removed by _____
    a) Soaps
    b) Caustic soda
    c) Trisodium phosphate
    d) Sulphuric acid
18. The process of coating iron or steel sheet with a thin coat of zinc to prevent iron from rusting is called _____
    a) Tinning
    b) Galvanisation
    c) Metal cladding
    d) Electroplating
19. _____ is suspended in either quick drying spirit varnish or slow drying oil varnish as per requirement.
    a) Aluminium paint
    b) Anti-corrosive paint

c) Asbestos paint
d) Cellulose paint

20. _____ essentially consist of oil and stronger drier.
    a) Asbestos paint
    b) Cellulose paint
    c) Cement paint
    d) Anti-corrosive paint
21. _____ is prepared by dissolving Asphalt or mineral pitches or Vegetable bitumen in any type of oil or Petroleum.
    a) Bituminous paint
    b) Asbestos paint
    c) Cement paint
    d) Colloidal paint
22. _____ is prepared from nitro cotton, celluloid sheets, photographic films, etc.
    a) Colloidal paint
    b) Emulsion paint
    c) Cellulose paint
    d) Enamel paint
23. _____ consists of white cement, pigment, accelerator and other additives.
    a) Colloidal paint
    b) Cement paint
    c) Emulsion paint
    d) Enamel paint
24. _____ contains binding material such as polyvinyl Acetate, synthetic resins, etc.
    a) Colloidal paint
    b) Emulsion paint
    c) Enamel paint
    d) Graphite paint
25. _____ contains white lead, zinc white, oil, Petroleum spirit and resinous matter.
    a) Graphite paint
    b) Inodorous paint
    c) Enamel paint
    d) Luminous paint
26. _____ contains calcium sulphide with varnish.
    a) Oil paint
    b) Plastic paint
    c) Inodorous paint
    d) Luminous paint
27. _____ contains the necessary variety of plastic and it is available in the market under different trade names.
    a) Oil paint
    b) Plastic paint
    c) Luminous paint
    d) Inodorous paint
28. Which of the following is not a type of protective coating?
    a) Metallic

b) Non-metallic
c) Organic
d) Inorganic

29. The mixture of oil and a pigment is known as _____
    a) Varnish
    b) Paint
    c) Lacquer
    d) Enamel
30. A varnish is a mixture of _____ and oil.
    a) Resin
    b) Pigment
    c) Turpentine
    d) Soybean
31. A mixture of oil and pigment in water is known as _____
    a) Enamel
    b) Emulsion
    c) Shellac
    d) Lacquer
32. How many ingredients are varnish composed of?
    a) 2
    b) 3
    c) 4
    d) 5
33. Driers in varnish are used as:
    a) Reducers
    b) Retarders
    c) Accelerators
    d) Oxidisers
34. The word varnish is derived from the word:
    a) Latin varne
    b) Latin Vernix
    c) Greek Vernix
    d) Green varne
35. Which of the below is an oil based varnish?
    a) Urethane
    b) Acrylic
    c) Polyurethane
    d) Urea
36. Which of the below is most commonly used resin in commercial varnishes?
    a) Alkyd
    b) Phenolic
    c) Polyurethane
    d) Satin Gloss
37. _____ Varnish is also called French varnish and used for furniture.
    a) Oil
    b) Water
    c) Acrylic
    d) Spirit

38. Water based finishes have a blue tint to it.
    a) True
    b) False
39. Solvents contain high levels of polyunsaturated fatty acids.
    a) True
    b) False
40. The term _____ is used to indicate the solution of resins or resinous substances prepared either in alcohol, oil or turpentine.
    a) Turpentine
    b) Varnish
    c) Oil
    d) Distemper
41. The Function of a _____ in varnish is to accelerate the process of drying.
    a) Solvent
    b) Resin
    c) Coolant
    d) Drier
42. _____ are specially adapted for exposed works which require frequent cleaning.
    a) Oil Varnish
    b) Spirit Varnish
    c) Water Varnish
    d) Turpentine Varnish
43. The methylated Spirits of wine are used as a solvent in _____
    a) Spirit Varnish
    b) Turpentine Varnish
    c) Water Varnish
    d) Oil Varnish
44. The French polish is a variety of _____ class of varnish.
    a) Oil
    b) Spirit
    c) Water
    d) Turpentine
45. The turpentine is used as a solvent in _____ type of Varnish.
    a) Turpentine
    b) Water
    c) Methylated
    d) Oil
46. The main objective of applying _____ to the plastered surfaces is to create a smooth surface.
    a) Gum
    b) Varnish
    c) POP
    d) Distemper
47. Which of the following varnishes is oxidizing in nature?
    a) Air-drying
    b) Polymerizing

c) Heat-reactive baking
d) Solventless

48. Dissolved resins in alcohol produce _____ varnishes.
a) Oleoresinous
b) Phenolic
c) Spirit
d) Alkyd

49. Which of the following is not a property of insulating varnishes?
a) Moisture resistance
b) Abrasion resistance
c) Electric strength
d) Oil receptive

50. Silicone varnishes have a _____ operation.
a) Class A
b) Class B
c) Class F
d) Class H

UNIT 6 UBRICANTS AND ADHESIVES

1. Lubrication is necessary to protect wear and tear caused due to _____
   a) Electrostatic force
   b) Gravitational force
   c) Frictional force
   d) Magnetic force
2. Lubricant act as a coolant to carry away heat.
   a) True
   b) False
3. Select the incorrect statement from the following option.
   a) Lubricant keeps out dirt
   b) Lubricant act as a seal
   c) Lubricant transmit fluid power
   d) Lubricant enhance corrosion
4. The viscosity of petroleum oil for hydraulic lifts is _____
   a) High
   b) Low
   c) Moderate
   d) Very high
5. The science of friction, lubrication and wear is called _____
   a) Endiology
   b) Geology
   c) Tribology
   d) Morphology
6. On increasing the lubrication, the efficiency of the machine _____
   a) Increases
   b) Decreases
   c) Remain same
   d) Does not get affected
7. The stearate ion has a _____ carbons long hydrocarbon chain.
   a) 17
   b) 19
   c) 21
   d) 23
8. A high temperature lubricants used may undergo _____
   a) vulcanization
   b) volatilization
   c) lubrication
   d) combustion
9. For heavy cutting, the effective lubricants are _____
   a) coconut oils
   b) cutting oils
   c) kerosene
   d) diesel
10. The reduction in friction is only when _____ of the oil film is _____ than that of the metal.
    a) shear strength, more

b) shear strain, less
c) shear strain, more
d) shear strength, less

11. The friction is needed to be reduced because _____
    a) will increase the load
    b) will increase the consumption electricity
    c) it will be reducing the excess heat generation
    d) will increase the excess the heat generation
12. Oil emulsions are the most effective lubricants in _____
    a) heavy cuttings
    b) light cutting
    c) engines
    d) gears
13. The lubricant in internal combustion is exposed to _____
    a) high pressure
    b) low pressure
    c) low temperature
    d) high temperature
14. In gears, the lubricants are exposed to _____
    a) high temperature
    b) high pressure
    c) low temperature
    d) low pressure
15. The lubricants for gears must possess _____
    a) less oiliness
    b) effected by centrifugal force
    c) resistance to oxygen
    d) low load carrying capacity
16. For, delicate instruments the suitable lubricants are _____
    a) light cutting oil
    b) sunflower oil
    c) heavy cutting oil
    d) thin vegetable oil
17. What are the lubricants used for railway tracks?
    a) graphite
    b) grease
    c) coconut oil
    d) vegetable oil
18. What is the best lubricant for tractor roller?
    a) graphite
    b) heavy oil
    c) grease
    d) vegetable oil
19. The lubricants for transformers must have quality of good _____
    a) dielectric strength
    b) less oiliness
    c) no resistance to oxygen
    d) low load capacity

20. In textile industries ____ are added to the lubricants.
    a) catalyst
    b) inhibitors
    c) oxygen
    d) carbon
21. The lubricants used in refrigerators will have _____
    a) no pour point
    b) high viscosity
    c) high pour point
    d) low cloud point
22. The lubricating oil is volatilises then the formed vapour _____
    a) Must be less
    b) Must be high
    c) Non- inflammable
    d) Flammable
23. For refrigerator system, the oils with the low viscosity, high cloud point and low pour point are used.
    a) True
    b) False
24. The _____ are obtained from the residual mass left during crude petroleum distillation.
    a) fatty oils
    b) synthetic lubricants
    c) mineral lubricating oils
    d) none of the mentioned
25. Olive oil is employed for lubricating textile machinery.
    a) True
    b) False
26. Which of the below adhesive is not attacked by water?
    a) Starch glue
    b) Albumin glue
    c) Vegetable glue
    d) Rubber glue
27. The process of applying an adhesive is:
    a) Speedy
    b) Slow
    c) Costly
    d) Cumbersome
28. Nitrocellulose glue is prepared from:
    a) Pyridine
    b) Benzene
    c) Pyroxylin
    d) Resin
29. Which of the following glues is used to join light metals?
    a) Metal glue
    b) Cycle weld
    c) Araldite glue
    d) Special glue

30. Epoxy adhesives are used in the manufacturing of:
    a) Glass
    b) Fabric
    c) Plywood
    d) Plastic
31. Which IS code gives details about tile adhesives?
    a) IS 14458
    b) IS 15477
    c) IS 15478
    d) IS 14557
32. Which of the below glue can be made plastic again by re-heating?
    a) Thermo-setting
    b) Rubber glue
    c) Animal protein glue
    d) Thermo-plastic
33. Which glue can bond a metal to wood?
    a) Contact cement
    b) Super glue
    c) PVC cement
    d) Gorilla glue
34. Gorilla glue is made up of:
    a) Resin
    b) Epoxy
    c) Polyurethane
    d) Animal protein
35. The word adhesive has its origin from:
    a) Greek Adhaerere
    b) Latin Adherae
    c) Greek Adherae
    d) Latin Adhaerere
36. Vegetable glue is used for:
    a) Labelling
    b) Joining glass
    c) Plastic adhesion
    d) Plywood manufacture
37. Adhesive becomes strong immediately after its application.
    a) True
    b) False
38. The substances which are capable of uniting two other materials together by adhering strongly to the surface of both are called _____
    a) Organic conducting polymers
    b) Biodegradable polymers
    c) Adhesives
    d) Composites
39. Select the incorrect statement from the following option.
    a) Two surfaces are rapidly, economically and easily joined to each other by adhesives
    b) The process of applying adhesives requires highly specialized workers or high heat

c) Adhesives bonding requires less after-finishing
d) Bonding by adhesives gives smoother finished surfaces

40. Corrosion of metals at the joints is minimized by joining dissimilar metals with adhesives because _____
    a) Direct metal to metal contact is avoided
    b) Adhesive act as a lubricator at the joints
    c) Metals are covered with adhesives
    d) Adhesives prevent the exposure to environment
41. Adhesives joints are leak-proof for _____
    a) Solids only
    b) Liquids only
    c) Gases only
    d) Both liquids and gases
42. Joining of labels to plastic cans or bottles is not possible without the use of adhesives.
    a) True
    b) False
43. The strength of adhesive joint is _____ than mechanical joint obtained by welding or riveting.
    a) More
    b) Less
    c) Equals to
    d) Very less
44. On increasing the temperature, the strength of adhesive _____
    a) Remain same
    b) Increases
    c) Decreases
    d) First increases than decreases
45. Which of the following adhesive is prone to brittle failure?
    a) Acrylic polyester
    b) PF resin
    c) UF resin
    d) Epoxy
46. The epoxy resins are the _____ products of epichlorohydrin and bisphenol.
    a) Free radical
    b) Addition
    c) Ion-exchange
    d) Condensation
47. Which of the following is used as curtain-wall sealants?
    a) Polyurethane
    b) Silicones
    c) Polyvinyls
    d) Cellulose derivatives
48. Epoxies are used in wide diversity of applications because of their strength, durability and great versatility.
    a) True
    b) False
49. In mineral lubricating oils, bubble towers are used for fractionalisation of oil into two or three fractions of different viscosities.

a) True
b) False

50. The types of synthetic lubricants are
a) dibasic acid esters
b) organo-phosphate esters
c) silicate esters
d) all of the mentioned