

ENGINEERING CHEMISTRY (06CHE 12/22)

PART-A

Unit-I

CHAPTER-1

CHEMICAL ENERGY SOURCES & SOLAR ENERGY

1. A carbonaceous material which serves particularly as a source of heat and light is,
A) Fuel B) Plastic C) Rubber D) Paper
2. Coal is an example for,
A) Secondary solid fuel B) Primary solid fuel C) Primary liquid fuel D) Secondary Gaseous fuel
3. Biogas is an example for,
A) Secondary solid fuel B) Primary gaseous fuel C) Primary liquid fuel D) Secondary Gaseous fuel
4. Good fuel should have,
A) High calorific value B) Low calorific value C) Moderate calorific value D) Either low or High calorific value
5. The SI unit to express the calorific value of solid fuel is,
A) J/Kg B) J/m³ C) Cal/Kg D) Joules
6. The amount of heat released when unit quantity of a fuel is burnt completely in air and the combustion products are cooled to room temperature is known as,
A) Gross calorific value B) Net calorific value C) Either gross or net calorific value D) None of these
7. Bomb calorimeter is used for determining the calorific value of,
A) Solid fuel B) Liquid fuel C) Gaseous fuel D) Both solid fuel and liquid fuel
8. The formula to calculate GCV OR HCV is,
A) $GCV = \frac{(W+w) \times (t_2+t_1)}{M}$ B) $GCV = \frac{(W+w) \times (t_2-t_1)}{M}$ C) $GCV = \frac{(W-w) \times (t_2-t_1)}{M}$
D) $GCV = \frac{(W-w) \times (t_2+t_1)}{M}$
9. The formula to calculate NCV OR LCV is,
A) $NCV = GCV - 0.09 \times \%H_2 \times \text{Latent heat of water formed}$
B) $NCV = GCV + 0.09 \times \%H_2 \times \text{Latent heat of water formed}$
C) $NCV = GCV - \text{Latent heat of water formed}$
D) $NCV = GCV - 0.09 \times \text{Latent heat of water formed}$
10. The process by which the higher hydrocarbons are broken into lower hydrocarbons by the application of heat is,
A) Combustion B) Cracking C) Sparking D) Jetting

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11. The process of bringing structural modification ie conversion of straight chain hydrocarbon into branched or cyclic or aromatic hydrocarbon is known as,
A) Thermal Cracking B) Catalytic cracking C) Knocking D) Reforming
12. The objective of reforming process is to,
A) Increase Octane number of petrol B) Decrease Octane number of petrol
C) Either to increase or decrease Octane number of petrol D) change no of carbon atoms
13. Knocking in IC engine is due to formation of,
A) Carbondioxide B) Peroxides C) oxygen D) water vapour
14. MTBE example for unleaded petrol is,
A) Methyl tertiary butyl ether B) Methyl tetra butyl ether C) Methyl tertiary butyl ethane D) Methyl tertiary bromo ether
15. Octane number is related to the petroleum product
A) Diesel B) Kerosene C) Petrol D) Lubricating oil
16. Quality of diesel fuel is determined by,
A) Octane rating B) Percentage of carbon C) Length of hydrocarbon chain D) Cetane number
17. Power alcohol is a mixture of,
A) 99% alcohol+ Petrol B) 25% alcohol+Petrol C) 50% alcohol+ Petrol D) alcohol+Petrol
18. The raw material used for manufacture of synthetic petrol is,
A) Petrol B) Carbon C) Coal D) Kerosene
19. A semiconductor device which inverts sunlight directly into electricity is,
A) Bomb calorimeter B) PH meter C) Photovoltaic cell D) Conductivity cell
20. The Preferred semiconductor material that can be used in construction of solar cell is,
A) Silicon B) Germanium C) Copper D) Boron
21. The major content of fuel is
a) sulphur & Carbon b) Hydrogen & Sulphur c) Hydrogen & Carbon d) None of the above
22. The Meaning of Combustion is
a) burns in presence of Hydrogen b) burns in presence of Oxygen c) burns in presence of sulphur d) none of the above
23. Primary fuel is
a) naturally occurring fuel b) synthesized fuel c) common fuel d) none of the above
24. Secondary fuel is
a) naturally occurring fuel b) derived from primary fuel c) common fuel d) none of the above
25. the performance of a fuel is expressed as
a) calorific value b) HCV c) NCV d) None of the above
26. HCV is
a) combustion product is escapes in the air b) combustion product is cooled to room temperature c) no combustion product is released d) none of the above
27. NCV is
a) combustion product are cooled to room temperature b) combustion product are let off in the atmosphere c) no combustion product will be released d) none of the above

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28. The SI units of CV for solid fuel is
a)J/Kg b)K/Kg c) G/cal d) none of the above
29. The Si units of CV for Liquid fuel is
a)J/cal b)cal/J c)J/m³ d)g/cal
30. The CV of a solid fuel is determined by using
a)boys calorimeter b)bombs calorimeter c)fisher calorimeter d)raman calorimeter
31. The value of LHS is
a)583cal/g b)487cal/g c)587cal/g d)427cal/g
32. One calorie is equals to
a)4.317J b)4.187J c)4.217J d)none of the above
33. Reforming process is
a)arrangement of aromatic rings b)arrangement of aliphatic compounds
c)arrangement of Hydro carbons
d)none of the above
34. isomerisation is
a)conversion of straight chain into branched chain b)conversion of branched chain into straight chain c)conversion of Hydrocarbons into aromatic rings d)none of the above
35. Dehydrogenation means
a)removal of C-atom
b)removal of Hydrogen molecules
c)removal of sulphur atom
d)none of the above
36. Which of the following compound is n-hexane
a)C₆H₁₇ b)C₆H₁₉ c)C₆H₁₂ d) C₆H₆
37. who discovered the benzene structure
a)eienstene b) C.V.Raman c)Kekule d) faraday
38. Hydrocracking menas
a)in presence of nitrogen and catalyst b)in presence of sulphur and catalyst
c)in presence of oxygen and catalyst d)in presence of Hydrogen and catalyst
39. Cracking means
a)breaking of hydrogen and sulphur compounds b)breaking of hydrocarbons
c)breaking of Hydrogen and oxygen molecule d)none of the above
40. Thermal cracking means
a)in presence of high tempr,low pressure and in presence of catalyst
b)in presence of high tempr , high pressure and in absence of catalyst
c)in presence of low tempr, low pressure and in presence of catalyst
d)none of the above
41. Catalytic cracking means
a)in presence of high tempr,low pressure and in presence of catalyst
b)in presence of high tempr , high pressure and in absence of catalyst
c)in presence of low tempr, low pressure and in presence of catalyst
42. berguis process is
a)preparation of synthetic petrol from water gas
b)preparation of synthetic petrol from charcoal
c)preparation of synthetic petrol from coal powder
d)none of the above

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43. Fisher process is
a)preparation of synthetic petrol from water gas
b)preparation of synthetic petrol from charcoal
c)preparation of synthetic petrol from coal powder
d)none of the above
44. Leaded petrol is
a)petrol blend with pb
b)petrol blend with TEL
c)petrol blend with PbO
d)none of the above
45. Power alcohol means
a)75% of petrol blend with 10% of alcohol
b)75% of petrol blend with 15% of alcohol
c)75% of petrol blend with 25% of alcohol
d) none of the above

KEY ANSWERS FOR OBJECTIVE QUESTIONS

PART A
CHEMICAL
ENERGY SOURCES

1. (A) 2. (B) 3. (D) 4. (A) 5. (A) 6 (A) 7. (D) 8. (B) 9. (A)
10. (B) 11. (D) 12. (A) 13. (B) 14. (A) 15. (C) 16. (D) 17. (B) 18. (C)
19. (C) 20. (A)

21.	22.	23.	24.	25.	26.	27.
28.	29.	30.	31.	32.	33.	34.
35.	36.	37.	38.	39.	40.	
41.		42.	43.	44.	45.	

UNIT-II

CHAPTER-2

ELECTRODE POTENTIALS AND CELLS

1. Calomel electrode is reversible with respect to
A)Mercury ion B) Chloride ion C) Both ions D) None of these
- 2) A metal rod is dipped in a solution of its ions. Its electrode potential is independent of,
A) Temperature of the solution B) Concentration of the solution C) Area of the metal exposed D) Nature of the metal
- 3) A galvanic cell converts
A)Electrical energy into chemical energyB)Chemical energy into electrical energy
C)electrical energy into heat energyD)Chemical energy into heat energy
- 4) The potential of the standard Hydrogen electrode is taken as
A) 1 volt B) 0 volt C) 10 volt D) None of these
- 5) Daniel cell is an example of
A) Galvanic cell B) Electrolytic cell C) Concentration cell D) Secondary cell
- 6) At anode ----- reaction takes place
A) Oxidation B) Reduction C) Substitution D)Elimination
- 7) Origin of electrode potential is mainly due to
A) Development of Helmholtz double layer B) Development of thin layer
C) Development of ionsD) None of these
- 8) Nearnst equation is mainly used to calculate
A) E.M.F. B) Single electrode potential C) TemperatureD) Both A & B
- 9) In concentration cells Anode and cathode are made up of
A) Similar metals B) Dissimilar metals D) Polymers D) None of these
- 10) In concentration cells electrolytes in both the half cells
A) Dissimilar concentration B) Similar concentration C) Highly concentrated
D) Highly diluted
- 11) Calomel electrode is an example of
A) Primary reference electrode B) Secondary reference electrode
C) Indicator electrode D) None of these
- 12) The electrolyte used in calomel electrode is
A) KCl B) NaCl C) AgCl D) KOH
- 13) A saturated Calomel electrode develops a potential of
A) +0.241 V B) +0.199 V C) +1.5 V D) +3 V
- 14) Ion selective electrodes responds to
A)Specific ions B) All the ions C) Both A & B D)None of these
- 15) Glass electrode is an example of
A) Membrane electrode B) PH-sensitive electrodeC) Both A & B D) None of these
- 16) PH determination of the given solution is done by coupling glass electrode with
A) Calomel electrode B) Platinum electrodeC) Silver electrode D) Standard Hydrogen electrode

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- 17) The value of $E_{Zn^{2+}/Zn}$ when $E^0_{Zn^{2+}/Zn} = -0.76$ V and $[Zn^{2+}] = 0.1$ M is
A) -0.7895 V B) 0.456 V C) 0.89 V D) None of these
- 18) The e.m.f. of the Daniel cell at 298K, if the free energy change of the cell reaction is -212.3 KJ/mol is ($F=96.5$ KJ/V/mol)
A) 1.10 V B) 2.5 V C) 3.6 V d) 8 V
- 19) The e.m.f. of the given concentration cell at 298K $Ag/AgNO_3(0.018) // AgNO_3(1.2)/Ag$ is
A)0.1078 V B) 3.5 V c) 4.0 V D) 5.8 V
- 20) PH of the given solution is mainly due to
A) H^+ ions B) Na^+ ions C) Cl^- ions D) None of these

KEY ANSWERS
ELECTRODE POTENTIAL AND CELLS

- 1(c) 2(c) 3(B) 4(B) 5(A) 6(A) 7(A) 8(D) 9(A) 10(A)**
11(B) 12(A) 13(A) 14(A) 15(c) 16(A)
17(A) 18(A) 19(B) 20(A)

UNIT-III
CHAPTER-3
BATTERY TECHNOLOGY

1. In which battery, a key component is separated from the rest of the battery prior to activation
A) Primary battery B) Secondary battery C) Reserve battery D) None of these
2. In hydrogen-oxygen fuel cell, which of the following electrolyte is used,
A) KOH B) NH_4OH C) CH_3COOH D) None of these
3. The reaction that takes place at anode of a battery,
A) Reduction B) Oxidation C) Neutralization D) None of these
4. Which of the following is a rechargeable battery
A) Zn- MnO_2 battery B) Li- MnO_2 battery C) Lead-acid battery
D) None of these
5. A primary battery is one which is
A) Rechargeable B) Non-rechargeable C) Both A & B D) None of these
6. The electrolyte used in Lead-storage battery is
A) H_2SO_4 B) KOH C) NaCl D) KCl
7. In Lead-storage battery the cell reactions are
A) Reversible B) Irreversible C) No reaction takes place D) None of these
8. In lead storage battery anode is made up of
A) Spongy lead B) Lead oxide C) H_2SO_4 D) Mn
9. Each electrode pair in lead-storage battery develops a potential of
A) 2V B) 4V C) 10V D) 12V
10. Recharging of a secondary battery can be done by
A) Connecting to DC power supply B) Connecting to AC power supply
C) By adding fresh active materials at each electrodes D) By adding fresh electrolyte solution
11. In Ni-Cd battery electrolyte used is
A) H_2SO_4 B) KOH C) NaCl D) KCl
12. Zn-air battery is a
A) Secondary battery B) Primary battery C) Rechargeable battery D) Both A & C
13. Li- MnO_2 battery is
A) Non-rechargeable B) rechargeable C) Both A & B D) none of these
14. In fuel cells
A) The chemical energy is stored B) The chemical energy is not stored
C) The electrical energy is stored D) None of these
15. The potential developed by SHE is
A) 0 V B) 1 V C) 3 V D) 5 V
16. In Hydrogen-Oxygen fuel cell towards anode
A) Hydrogen is passed B) Oxygen is passed C) Mixture of H_2 and O_2 is passed
D) None of these
17. In Hydrogen-Oxygen fuel cell anode is made up of
A) Graphite electrode B) Copper electrode C) Silver electrode D) Polymer
18. The water formed in the Hydrogen-Oxygen fuel cell is removed by

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- A) Evaporation B) Filtration C) Distillation D) Sublimation
19. In Methanol-Oxygen fuel cell anode and cathode is made up of
A) Copper B) Platinum C) Magnesium D) Graphite
20. In Methanol-Oxygen fuel cell electrolyte is made up of
A) H_2SO_4 B) KOH C) NaCl D) KCl
21. To derive maximum potential from a battery over potential must be
A) Less B) More C) Optimum D) None of these
22. Cycle life is applicable for
A) Secondary battery B) Primary battery C) Both A & B D) None of these
23. Separator is used in battery
A) To avoid internal short circuiting between electrodes
B) To avoid the contact of electrolyte and electrode
C) To avoid the contact of contents of the battery with the environment
D) None of these
24. In a battery----- reaction takes place
A) Redox B) Oxidation C) Substitution D) Addition

KEY ANSWERS

BATTERY TECHNOLOGY

- | | | | | |
|-----------------|--------------|--------------|--------------------|--------------------|
| 1. (c) | 2(A) | 3(B) | 4(c) | 5(B) |
| | 6(A) | | 7(A) 8(A) | 9(A) |
| | 10(B) | | 11(D) | 12(A) 13(B) |
| | 14(A) | | 15(A) | 16(A) |
| | 17(A) | 18(B) | 19(A) | 20(A) |
| | 21(A) | | 22(A) 23(A) | 24(A) |

UNIT-IV
CHAPTER-4
CORROSION AND ITS CONTROL

1. Meaning of corrosion is

- a) Destruction of metals
- b) Breaking of metals
- c) Cracking of metals
- d) None of the above

2. Dry corrosion is due to

- a) Moisture and air
- b) Attack of atmospheric gases
- c) Attack of hydrogen
- d) None of the above

3. Wet corrosion is due to

- a) Reaction between metal and acid
- b) Reaction between metal and air
- c) Reaction between metal and metallic ion
- d) None of the above

4. Example for differential metallic corrosion

- a) Zn and Cu
- b) Cu and Sn
- c) Zn and Sn
- d) Fe and Sn

5) Water line corrosion occurs due to

- a) Differential oxygen concentration
- b) Differential hydrogen concentration
- c) Differential chlorine concentration
- d) None of the above

6) Corrosion occurs at anodic area due to

- a) Consuming of electrons
- b) Liberating of electrons
- c) Addition of electrons
- d) None of the above

7) Oxidation is

- a) Liberation of electrons
- b) Consuming of electrons
- c) Addition of electrons
- d) None of the above

8) Reduction is

- a) Consuming of electrons
- b) Liberating of electrons
- c) Addition of electrons
- d) None of the above

9) Cathodic area is always protected from corrosion process due to

- a) Consuming of electrons from anode
- b) Liberation of electrons
- c) Addition of electrons

10) Electrochemical series is

- a) Arrangement of metals in the increasing order of their standard reduction potential values
- b) Arrangement of metals in the decreasing order of their standard reduction potential values
- c) Neither decreasing nor increasing order of their standard reduction potential values
- d) None of the above

11) Corrosion current flows from

- a) Anodic area to cathodic area
- b) Cathodic area to anodic area
- c) Neither anodic area nor cathodic area
- d) None of the above

12) If the metal has more anodic i.e. above hydrogen in ECS

- a) Corrosion will be fast
- b) Corrosion will be slow
- c) Corrosion won't take place
- d) None of the above

13) Galvanization means

- a) Zn on Sn
- b) Zn on Al
- c) Zn on Fe
- d) Fe on Zn

14) Tinning means

- a) Sn on Fe
- b) Fe on Sn
- c) Zn on Sn
- d) Sn on Zn

15) From which method underground pipes can be protected

- a) Sacrificial anodic method
- b) Impressed current method
- c) Anodic method
- d) None of the above

16) By passing an external source in reverse direction is called as

- a) Sacrificial method
- b) Impressed current method
- c) Anodic method
- d) None of the above

17) Passivation means

- a) Formation of thick film oxide layer
- b) Formation of thin film oxide layer
- c) Formation of Zn layer
- d) None of the above

18) Inhibitor is used to

- a) Stop the corrosion
- b) Increase the corrosion
- c) Decrease the corrosion
- d) None of the above

19) Anodic inhibitor used to

- a) Stop the cathodic reaction
- b) Stop the anodic reaction
- c) Neither stops the anodic nor cathodic reactions

20) Cathode inhibitor used to

- a) Stop the anodic reaction
- b) Stop the cathodic reaction
- c) Neither stops the anodic nor cathodic reaction
- d) None of the above

21) Larger the anodic area, smaller the cathodic area

- a) Corrosion rate will be faster at cathodic area
- b) Corrosion rate will be slower at anodic area
- c) Corrosion rate will be faster at anodic area
- d) Corrosion rate will be slower at cathodic area

22) Smaller the anodic area, larger the cathodic area

- a) Corrosion rate will be faster at cathodic area
- b) Corrosion rate will be slower at anodic area
- c) Corrosion rate will be faster at anodic area
- d) Corrosion rate will be slower at cathodic area

23) When Zn and Al are coupled each other and exposed to environment

- a) Zn undergoes corrosion
- b) Al undergoes corrosion
- c) Both Al and Zn undergoes corrosion
- d) None of the above

24) If P^H is less than 7.0

- a) Corrosion will be fast
- b) Corrosion will be slow
- c) Metal doesn't undergoes any corrosion process
- d) None of the above

25) If temperature is increases

- a) The corrosion rate increases
- b) The corrosion rate decreases
- c) The corrosion rate neither increase nor decreases
- d) None of the above

KEY ANSWERS
CORROSION AND ITS CONTROL

- 1) 2) 3) 4) 5) 6) 7) 8) 9) 10) 11) 12)**
13) 14) 15) 16) 17) 18) 19) 20) 21) 22) 23)
24) 25)

**PART-B
UNIT-V
METAL FINISHING**

1.The meaning of “metal finishing” is

a)scrap the metal b)metal is finished c)modify the surface property d)none of the above

2.electroplating process is a method of depositing a metal by

a)electrolysis b)dialysis c)decomposition d)all of the above

3.during electroplating process the anode metal will

a)react with cathode metal b)react with electrolytic solution c)dissolves in the solution

4.the function of a conducting salt is

a)to provide metal b)to provide metal ions c)to provide solution

5.function of a organic additives is

a)improve the quality of deposits b)improve the cathode metal c)improve the anode metal

6.in which of the following cell consists of two cathodes and an anode

a)peterson-haring cell b)haring-blum cell c)raman-einstien cell d)none of the above

7.if the C.D increases during electroplating process

a)movement of electrons will be fast b)movement of electrons will be slow c) no electrons will be moving during electroplating process

8.brighteners is used for

a)bright surface on the metal b)bright and reflecting surface on the metal c)only for reflecting surface on the surface of the metal d)none of the above

9.wetting agent is used for

a)to release hydrogen gas b)to release oxygen gas c)to release nitrogen gas

10.cathodic reaction in electroplating process is

a) $Mn + ne \rightarrow Mn$ b) $Mn + ne \rightarrow M$ c) $m + Mn \rightarrow M$ d)none of above

11.Anodic reactant in electroplating process is

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a)M b)E c)S d)all of the above

12.reducing agent is used in

a)immersion method b)electroplating method c)electroless plating method d)all of the above

13.insulators can be plated by

a)electroplating process b)painting process c)electroless plating process d)none of the above

14.the main advantages of electroless plating is

a)power supply is not required b)insulators can be plated c)complex shapes can be plated d)all of the above

15.the anodic reactant in electroless plating is

a)oxidising agent b)reducing agent c)both a and b d)none of the above

16.the role of reducing agent is

a)convert metal ions to metal ions b)convert metal ions to metal c)convert metal to metal ions d)none of the above

17.oxidising product will be formed in

a)electroplating process b)electroless plating process c)both a and b d)none of the above

18.nature of the deposit in electroless plating is

a)pure metal b)impure metal c)contaminated with reducing agent d)all of the above

KEY ANSWERS
METAL FINISHING

1) 2) 3) 4) 5) 6) 7) 8) 9) 10) 11)

12) 13) 14) 15) 16) 17) 18)

UNIT-VI

CHAPTER-6

Liquid crystals & Instrumentation Analysis

1. The class of compounds that exhibit liquid crystalline behaviour on variation of temperature alone are referred to as,
A) Lyotropic liquid crystals B) Thermotropic liquid crystals
C) Isotropic liquids D) none of these
2. The liquid crystals exhibits the property
A) Between solid and liquid B) Liquid alone
C) Solid alone D) none of these
3. Twisted Nematic phase of liquid crystal phase is exhibited by
A) Optically active compounds B) Optically inactive compounds
C) Both A & B D) none of these
4. Liquid crystal phase texture can be detected by using
A) Polarized microscope B) Simple microscope
C) Electron microscope C) Compound microscope

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5. Nematic phase of liquid crystals are exhibited by the which are
A) Optically inactive B) Optically active
C) Both A & B C) none of these
6. Lyotropic liquid crystals are obtained by mixing of
A) 2 compounds B) 3 compounds
B) Without mixing C) 4 compounds
7. Helical arrangement of liquid crystal molecules are observed in
A) Nematic phase B) Cholesteric liquid phase
B) Smectic phase C) none of these
8. The tilt angle of 45° can be observed in
A) Smectic-A B) Smectic-B
C) Smectic-C C) Both A & B
9. Numerical L.C.D. system is made up
A) 7 segments B) 8 segments
B) 5 segments C) 10 segments
10. ----- compound exhibit liquid crystal property
A) Polythene B) p-azoxy anisole
C) Teflon D) Wax
11. An ion selective electrode used in the determination of PH is
A) Calomel electrode B) Silver-Silver chloride electrode
B) Glass electrode D) none of these
12. Instrumental methods of analysis are widely adopted when compared to classical methods of analysis because,
A) The methods are much faster B) Applicable at concentrations
C) The analysis process can be automated D) All the above
13. Colorimetry involves the measurement of absorbance using monochromatic light in the,
A) UV range B) IR range C) Visible range D) All the above
14. Indicator electrode used in potentiometer determination is
A) Platinum electrode B) Glass electrode C) S.H.E.
D) none of these
15. ----- is an example of reference electrode in determination of PH
A) Platinum electrode B) Glass electrode
C) Calomel electrode D) All of these
16. Colorimetric estimation of copper is performed at the wave length of,
A) 620nm B) 600nm C) 520nm D) 540nm
17. Beer-lamberts law principle is adopted in
A) Colorimeter B) PH meter C) Potentiometer
D) Conductometer
18. Colorimetric estimation of copper is performed at 620nm because absorbance of cupramonium complex is
A) Maximum B) Minimum C) Optimum D) Intermediate

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19. The peak value is produced in the plot of $\Delta E/\Delta V$ is due to
A) Neutralization reaction B) Ionization reaction
C) Reduction reaction D) Oxidation reaction
20. Equivalence point obtained in the conductometer experiment is due to
A) Neutralization reaction B) Ionization reaction
C) Reduction reaction D) Oxidation reaction
21. Conductometer cell is made up of
A) Pair of platinum electrodes B) Pair of silver electrodes
C) Pair of conducting polymers C) none of these
22. In colorimeter the light source is obtained from
A) Tungsten filament lamp B) UV- lamp
B) IR-lamp D) none of these
23. Using conductometer mixture of acids,
A) Can be titrated accurately B) Cannot be titrated accurately
C) Can be titrated with little accuracy
D) Both A & B
24. Colorimetric estimation can be applicable for those compounds which are
A) Colored B) Colorless C) Both A & B D) none of these
25. Conductometric and potentiometric titrations can be performed
A) With indicator B) Without indicator C) Both A & B
D) None of these

KEY ANSWERS

Liquid crystals & Instrumentation Analysis

- | | | | | | |
|---------------|--------------|--------------|--------------|--------------|--------------|
| 1. (B) | 2(A) | 3(A) | 4(A) | 5(B) | |
| | 6(A) | 7(B) | 8(c) | 9(A) | 10(B) |
| | 11(B) | 12(D) | 13(c) | 14(A) | |
| | 15(c) | 16(A) | 17(A) | 18(A) | 19(A) |
| | 20(A) | 21(A) | 22(A) | 23(A) | |
| | 24(A) | 25(B) | | | |

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UNIT-VII
CHAPTER-7
HIGH POLYMERS

1. The polymer Polystyrene is obtained by linking large number of monomer called,
A) Styrene B) Ethylene C) Propylene D) Sulphur

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2. The example for condensation polymerization is,
A) Polyvinylchloride B) Poly propylene C) Nylon-6,6 D) Nylon-6
3. The suspension polymerization is also known as pearl or bead polymerization because,
A) Monomer used is form of pearl B) Product obtained is in form of pearl C) Both monomer used and product obtained is in form of pearl D) The initiator used for polymerization is in form of pearl
4. Emulsion polymerization method for production of polymer is for,
A) Water insoluble monomer B) Water soluble monomer C) Both water soluble and water insoluble monomer D) Without monomer
5. The temperature at which a polymer abruptly transforms from glassy to viscoelastic state is known as,
A) Melting temperature B) Flow temperature C) Glass transition temperature D) None of these
6. The addition of plasticizer to polymer chain,
A) Reduces the T_g value B) Increases the T_g value C) No effect on T_g value D) Either reduces or increase T_g value
7. The process of converting resins into plastic is known as,
A) Manufacture of Buna-S B) Compounding of resin C) Corrosion control D) Vulcanisation of raw rubber
8. Tetrafluoro ethylene is the monomer of,
A) Nylon-6,6 B) Neoprene C) Teflon D) PVC
9. The monomer used for manufacture of Plexi glass is,
A) Methyl meth acrylate B) Poly methyl meth acrylate C) Propylene D) Acrylic acid
10. The application of Polyurethanes are in,
A) Electronic industry B) Textile industry C) Automobile industry D) Aeronautic industry
11. Phenol-formaldehyde resin is commercially,
A) PVC B) Bakelite C) Elastomer D) Nylon
12. Bakelite can be manufactured by condensation polymerization of,
A) Excess of Phenol and formaldehyde B) Phenol and excess of formaldehyde C) Equal amount of Phenol and formaldehyde D) Only Phenol
13. Sulphur is used particularly in,
A) Manufacture of Buna-S B) Compounding of plastics C) Corrosion control D) Vulcanisation of raw rubber
14. Isoprene is a monomer of,
A) Natural rubber B) Synthetic rubber C) Starch D) PVC
15. The monomer used for manufacture of Neoprene is,
A) 2-chloro-1,3-butadiene B) Isoprene C) 4-chloro-1,3-butadiene D) 2-chloro-2,3-butadiene
16. The polymer which acts as binding agent is,
A) Elastomers B) Adhesives C) Plastics D) Conducting polymer
17. The trade name of epoxy resin is,
A) Araldite B) Bakelite C) Glue D) PVC
18. The common epoxy resins are made by condensation polymerization of,

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A) Phenol and chlorine B) Bisphenol and epichlorohydrin C) Bisphenol and chlorohydrins

D) Phenol and epichlorohydrin

19. The example which is not a conducting polymer is,

A) Polyacetylene B) Polypyrrole C) Polyaniline D) Plexiglass

20. The combination of a charge site and a radical is referred as,

A) Positive charge B) Negative charge C) Polaron D) Bipolaron

KEY ANSWERS
HIGH POLYMERS

- | | | | | | |
|----------------|----------------|----------------|----------------|----------------|---------------|
| 1. (A) | 2. (C) | 3. (B) | 4. (A) | 5. (C) | 6. (A) |
| 7. (B) | 8. (C) | 9. (A) | 10.(B) | 11. (B) | |
| 12. (B) | 13. (D) | 14. (A) | 15. (A) | 16. (B) | |
| 17. (A) | 18. (B) | 19. (D) | 20. (C) | | |

UNIT-VIII
CHAPTER-8
WATER TECHNOLOGY

1. Hard water is
 - a) Which does not give lather with soap
 - b) Which will give lather with soap
 - c) Which does not give precipitate with soap
 - d) None of the above
2. There are ____types of hardness in water
 - a) Four b) two c) three d) five
3. Temporary hardness is due to the presence of _____ in water
 - a) CaCO_3 and MgCO_3
 - b) $\text{Ca}(\text{HCO}_3)_2$ and $\text{Mg}(\text{HCO}_3)_2$
 - c) CaCl_2 and MgCl_2
 - d) CaSO_4 and MgSO_4
4. Permanent hardness in water is due to the presence of
 - a) Carbonates of calcium and magnesium
 - b) Bicarbonates of calcium and magnesium
 - c) Chlorides and Sulphates of calcium and magnesium
 - d) None of the above
5. Temporary hardness in water can be removed by
 - a) Heating water b) Boiling water c) Filtering water d) Cleaning water
6. Hardness of water can be estimated by
 - a) Volumetry b) Gravimetry c) Instrumental analysis d) none of these
7. In the estimation of total hardness, hard water sample is titrated against
 - a) E D T A b) NH_4OH c) HCl d) NaOH
8. Indicator used in the estimation of total hardness is
 - a) Patton Reeder's Indicator
 - b) Eriochrome black T
 - c) 1-10Phenanthroline iron complex
 - d) Starch
9. Buffer solution added during the estimation of total hardness is made up of
 - a) Sodium hydroxide and Sodium chloride
 - b) Acetic acid and sodium acetate
 - c) Ammonium chloride and Ammonium hydroxide
 - d) Benzene and toluene
10. End point of estimation of total hardness titration is
 - a) Bluish green to reddish brown
 - b) Disappearance of dark blue colour
 - c) Yellow to orange red
 - d) Wine red to pure blue

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11. Total hardness of water is expressed in terms of
 - a) Magnesium carbonate
 - b) Potassium carbonate
 - c) Calcium carbonate
 - d) Sodium carbonate
12. Unit of hardness is
 - a) gm / dm^3
 - b) mg / cm^3
 - c) mg / dm^3
 - d) None of these
13. Unit of hardness is
 - a) ppl
 - b) ppb
 - c) ppm
 - d) ppn
14. Temporary hardness in water is due to the presence of
 - a) CaCO_3
 - b) MgCO_3
 - c) $\text{Mg}(\text{HCO}_3)_2$
 - d) CaSO_4
15. Temporary hardness in water is due to the presence of
 - a) MgCO_3
 - b) Na_2CO_3
 - c) $\text{Ca}(\text{HCO}_3)_2$
 - d) None
16. Alkalinity of water is
 - a) Quantitative capacity of water to neutralize hydrogen ion
 - b) Qualitative capacity of water to neutralize hydrogen ion
 - c) Reaction capacity of to neutralize hydrogen ion
 - d) None of the above
17. Alkalinity in water is due to the presence of
 - a) OH^- CO_3^{--} and HCO_3^-
 - b) OH^- CO_3^{--} and Cl^-
 - c) OH^- CO_3^{--} and SO_4^{--}
 - d) OH^- CO_3^{--} and NO_3^-
18. Alkalinity in water is estimated by titrating water against
 - a) N/50 Nitric acid
 - b) N/50 Sulphuric acid
 - c) N/50 Phosphoric acid
 - d) N/50 Carbonic acid
19. Indicators used in the estimation of alkalinity of water is
 - a) Methyl red and Methyl orange
 - b) Methyl red and Ferroin
 - c) Phenolphthalein and Methyl orange
 - d) Methyl orange and Eriochrome Blaack T
20. Alkalinity of water is calculated with respect to
 - a) CaCO_3
 - b) CaSO_4
 - c) CaCl_2
 - d) $\text{Ca}(\text{OH})_2$
21. In the determination of alkalinity if the phenolphthalein titration burette reading is zero ($P=0$) then alkalinity of water is due to
 - a)
 - b)
 - c)
 - d)
22. In the determination of alkalinity if the phenolphthalein titration burette reading is equal to methyl orange burette reading ($P=M$) then alkalinity of water is due to
 - a)
 - b)
 - c)
 - d)
23. Unit of alkalinity is
 - a) ppb
 - b) ppl
 - c) ppm
 - d) pps

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24. Hydrolysable salt present in water is
a) CaCl_2 b) MgCl_2 c) KCl d) NaCl
25. Chloride in water is estimated by
a) Potentiometry b) Conductometry c) Gravimetry d) Argentometry
26. To estimate chloride in water, water is titrated against
a) Potassium Nitrate b) Silver nitrate c) calcium Nitrate d) Magnesium Nitrate
27. Indicator used in the estimation of chloride in water
a) Methyl orange b) Methyl red c) Phenolphthalein d) Potassium chromate
28. End point in the estimation of chloride in water
a) Wine red to pure blue
b) Colourless to pale pink
c) Yellow to red
d) Greenish yellow to reddish brown
29. The red colour obtained at the end point of the estimation of chloride in water is
a) Silver Nitrate b) Silver Chromate c) Silver chloride d) Silver sulphate
30. Solubility of _____ in water decreases with increase in temperature
a) Sodium sulphate b) Potassium sulphate c) calcium sulphate
d) Magnesium sulphate
31. Sulphate in water is estimated by
a) Gravimetry b) Colourimetry c) Volumetry d) Conductometry
32. To precipitate sulphate present in water the reagent added is
a) Barium nitrate b) barium Chloride c) Barium oxide d) barium oxalate
33. Barium sulphate precipitate is filtered through
a) Filter paper b) Filter flask c) Sintered glass crucible d) Filter cloth
34. The disease caused by the consumption of water with more nitrate by infants is
a) Red baby syndrome b) blue baby syndrome
c) Yellow baby syndrome b) none of these
35. The disease caused by the consumption of water with more nitrate by infants is
a) Methanoglobinaemia b) blood anemia
c) Methyl alcohol anemia b) none of these
36. Nitrate in water is estimated by
a) Potentiometry b) Conductometry c) Gravimetry d) Colourimetry
37. Colouring agent added in the determination of nitrate in water is
a) Diphenyl butyric acid b) Methyl Butyl Acetate c) Phenyl Di sulphonic Acid d) Deoxy ribose Nucleic acid
38. The colour obtained after the addition of colouring agent to water containing nitrate is
a) Blue b) green c) Yellow d) orange
39. The wavelength of the light used in the colourimetric determination of nitrate is
a) 410nm b) 420 nm c) 430nm d) 440nm
40. If fluoride content in water is minimum, then it will help in the curing of the disease
a) Dental cancer b) Mouth ulcer c) Dental flu d) Dental caries

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- 41. If fluoride content in water is more than the percentage normally allowed then if that water is orally consumed then there will be
 - a) Paralysis b) Fluorosis c) Anaemia d) Dental caries
- 42. Fluoride in water is estimated by
 - a) Potentiometry b) Conductometry c) Gravimetry d) Colourimetry
- 43. Colouring agent added in the determination of Fluoride in water is
 - a) MANDS b) SPANDS c) RANDS d) BANDS
- 44. The colour obtained after the addition of colouring agent to water containing Fluoride is
 - a) Blue b) green c) Yellow d) orange
- 45. The wavelength of the light used in the colourimetric determination of nitrate is
 - a) 530nm b) 560nm c) 570nm d) 580nm
- 46. Indicator used in the determination of the COD of water is
 - a) Starch b) Methyl orange c) Methyl red d) Ferroin
- 47. The titration to determine COD is called
 - a) Complexometric titration b) Redox titration c) Acid base titration d) Iodometric titration
- 48. The unit of chemical oxygen demand is
 - a) ppl b) ppb c) ppm d) ppn
- 49. Indicator used in the determination of Biological oxygen demand is
 - a) Starch b) Methyl orange c) Methyl red d) Ferroin
- 50. . The titration to determine BOD is called
 - a) Complexometric titration b) Redox titration c) Acid base titration d) Iodometric titration
- 51. The unit of biological oxygen demand is
 - a) ppl b) ppb c) ppm d) pp

KEY ANSWERS
WATER TECHNOLOGY

- | | | | | | |
|------------|------------|------------|------------|------------|------------|
| 1. | 2. | 3. | 4. | 5. | 6. |
| 7. | 8. | 9. | 10. | 11. | |
| 12. | 13. | 14. | 15. | 16. | |
| 17. | 18. | 19. | 20. | 21. | 22. |
| 23. | 24. | 25. | 26. | 27. | 28. |
| 29. | 30. | 31. | 32. | 33. | 34. |
| 35. | 36. | 37. | 38. | 39. | 40. |
| 41. | 42. | 43. | 44. | 45. | 46. |
| 47. | 48. | 49. | 50. | 51. | |
