SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
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QUESTION BANK

Subject with Code : Engineering chemistry (16HS604) **Course & Branch**: B.Tech (CSE &ECE)
Year & Sem: I-B.Tech & I-Sem **Regulation:** R16

FIRST CHAPTER- ELECTROCHEMISTRY,CELL & CORROSION

1. A)Write a note on Galvanic cell with suitable examples? [5]
   B) Discuss about Electrolysis? [5]
2. A)Define batteries? Write short notes on Ni-Cd Batteries? [5]
   B)Explain in detail about lithium ion batteries? [5]
3. Write a note on
   A) Lead acid battery [5]
   B) Hydrogen-Oxygen fuel cell [5]
4. Define fuel cell. Explain the construction and uses of Methanol-Oxygen fuel cell. [10]
5. A) Write a note on sacrificial anodic protection? [5]
   B) Discuss about Impressed Current Cathodic protection ? [5]
6. Define corrosion? Discuss in detail about electrochemical or wet corrosion? [10]
7. Discuss various factors influencing the rate of corrosion ? [10]
8. What are the consequences of corrosion ? Discuss in detail about chemical or dry corrosion. [10]
9. A) What is electroplating ? [5]
   B)Explain electroplating of Nickel and copper ? [5]
10. What is electroless plating ? Explain electroless plating of copper and nickel?[10]

SECOND CHAPTER - WATER AND ITS TREATMENT

1. A) Define temporary hardness and permanent hardness of water? [5]
   B) What are the units to express hardness of water? [5]
2. What is the principle of EDTA method ? Describe the estimation of hardness by EDTA method. [10]
3. A) How water gets hardness. Distinguish between hard water and soft water? [5]
   B) Boiler corrosion. [5]
4. A) What is Priming and Foaming? [5]
   B) Explain scale and Sludge formation in boilers ? [5]
5. Describe the Zeolite or permutit process for softening of water. what are the advantages and disadvantages of zeolite process. [10]
6. Describe the Ion exchange process for demineralization of water ?what are the advantages and disadvantages of ion exchange process ? [10]
7. Write a note on carbonate, calgon , phosphate ,colloidal,sodium aluminate conditioning. [10]
8. Discuss about External treatment methods to remove hardness of water? [10]
9. A) Write structure of EDTA and its reaction with calcium and magnesium? [5]
   B) What are different types of impurities present in water? [5]
10. Describe briefly boiler troubles and their treatment? [10]

THIRD CHAPTER- FUEL TECHNOLOGY & LUBRICANTS

1. Write short notes on:
   A) Producer gas & Water gas. [6]
   B) Units of Calorific value. [4]
2. A) Explain Bergius process for the manufacture of synthetic petrol. [6]
   B) Discuss about Cetane number. [4]
3. A) Write a note on synthetic petrol by Fischer-Tropsch process. [6]
   B) What are the characteristics of a good fuel? [4]
4. Describe the method employed for the refining of petroleum with neat sketch.[10]
5. A) Explain the manufacture, advantages and disadvantages of power alcohol. [6]
   B) Define Octane Number and Knocking? [4]
6. A) what are the advantages and Disadvantages of Liquid fuels and Gaseous fuels. [5]
   B) Natural gas and Biogas. [5]
7. Discuss the mechanism of different types of lubrication. [10]
8. Write short notes on:
   A) Flash and Fire point [5]
   B) Aniline point & Neutralization number. [5]
9. A) Define Lubricants? Discuss the important functions of Lubricants. [5]
   B) Cloud and pour point. [5]
10. Define Viscosity? Determine the viscosity of lubricating oil by Redwood Viscometer[10]

FOURTH CHAPTER- POLYMERS

1. A) Distinguish between Thermoplastics and thermosetting plastics? [5]
   B) Explain the procedures used in the processing of natural rubber. [5]
2. What are conducting polymers? How are they classified? Write important engineering application? [10]
3. Write the preparation, properties and uses of
   A) Polyurethane rubber [$2^{1/2}$]
   B) Nitrile rubber [$2^{1/2}$]
   C) Thiokol rubber [$2^{1/2}$]
   D) Buna-S rubber [$2^{1/2}$]
4. Discuss the following
   A) Silicones [5]
   B)Polyphosphazines [5]
5. Explain the following mechanism
   A) Free radical addition polymerization [5]
   B) Cationic addition polymerization . [5]
6. Discuss the preparation, properties and uses of polyvinyl chloride and nylons. [10]
7. A) Define the functions of various ingredients used in the compounding of rubber? [5]
   B) Discuss the preparation and uses of Bakelite. [5]
8. Explain different types of Polymerization process with suitable examples? [10]
9. Explain the following mechanism.
   A) Anionic addition polymerization. [5]
   B) Co-ordination or Zieglar-Natta polymerization. [5]
10. A) What is polymer? Discuss the Preparation, Properties and uses of Teflon, [5]
    B) Classify the plastics and its properties ? [5]

FIFTH CHAPTER- ENGINEERING MATERIALS

1. Explain detailed about manufacture of Portland Cement? [10]
2. What is the refractoriness? Explain thermal spalling, porosity, dimensional stability and thermal conductivity of the refractories? [10]
3. A) What are Refractories? Write their classification? [5]
   B) Write a note on the conditions leading to failure of refractory materials? [5]
4. Define Refractories ? Explain the R efractoriness & Chemical inertness ,RUL test ? [10]
5. A) What is meant by setting and hardening of cement? [5]
   B) Chemical composition of Portland Cement? [5]
6. A) Discuss the Fullerenes and Carbon nano tubes? [5]
   B) Define Doping? [5]
7. Explain in detail about principles and application of semiconductors? [10]
8. Discuss about quantum dots and their applications ? [10]

9. Discuss about Super conductors and their applications? [10]
10. A) What is cement? How do you classify the cement? [5]
    B) Write a short note on properties of carbon nano tubes and Fullerenes. [5]

UNIT-I
ELECTROCHEMISTRY, CELL & CORROSION

1. A galvanic cell converts_____ [ ]
   A) Electrical energy into Chemical energy
   B) Chemical energy into Electrical energy
   C) Electrical energy into Heat energy
   D) Chemical energy into Heat energy
2. One of the most popular uses of galvanic cells are_____ [ ]
   A) Battery B) Electrolyte preparation C) Potentiostat D) None of these
3. Which of the following is a primary cell [ ]
   A) Mercury battery B) Lithium battery C) Daniel cell D) NICAD
4. _____is a secondary cell or battery [ ]
   A) NICAD B) Daniel cell C) Voltaic cell D) Laclanche cell
5. The cathode of Ni-Cd battery is composed of_____ [ ]
   A) Cadmium B) Nickel C) Paste of NiO(OH) D) Paste of $Cd(OH)_2$
6. A fuel cell converts_____ [ ]
   A) Chemical energy of fuel directly to electricity
   B) Chemical energy of fuel directly to Heat
   C) Chemical energy of fuel directly to Pressure
   D) None
7. Lead-acid storage cell, the anode is made of _____ [ ]
   A) Lead dioxide B) Lead C) Both A&B D) None of these
8. Which of the following is proton exchange fuel cell [ ]
   A) H_2-O_2 B) Methanol-oxygen C) Phosphoric acid D) All of these
9. Hydrogen-Oxygen fuel cells are used as auxillary energy source in____ [ ]
   A) Trains B) Aeroplanes C) Space vehicle D) Automobile engine
10. What is the voltage produced by H_2-O_2 fuel cell, operating under standard conditions [ ]
    A) 1.0 V B) 1.23V C) 2.0V D) 0.5V
11. When iron/zinc is added to $CuSO_4$ solution, copper is precipitated, it is due to__ [ ]
    A) Oxidation of Cu^{2+} B) Hydrolysis of $CuSO_4$ C) Ionization of $CuSO_4$ D) Reduction of Cu^{2+}
12. The tendency of an electrode to lose or gain electrons, when it is contact with its own ions is called_____ [ ]
    A) Hydration B) Oxidation C) Reduction D) Electrode Potential
13. The main purpose of salt bridge in the voltaic cell is _____ [ ]
    A) To maintain flow of electrons B) To maintain charge neutrality of solution
    C) Barrier for electron transfer D) None of these
14. Corrosion is an example of_____ [ ]
    A) Reduction B) Oxidation C) Electrolysis D) Electrolysis

15. The rusting of iron is catalysed by which of the following_____ [ ]
    A) O_2 B) Zn C) H^+ D) Fe
16. The rate of corrosion of iron in atmosphere depends on_____ [ ]
    A) Frequency of rainfall B) Humidity of air C) Intensity of atmosphre pollution D) All
17. Electrochemical corrosion can occur only when_____ [ ]
    A) Air is in contact with metal B) Liquid medium is in contact with metal
    C) Oxygen is in contact with metal D) None
18. Chemical corrosion always takes place in_____ [ ]
    A) Anodic and Cathodic area B) Anodic area C) Cathodic area D) Interior of metal
19. Which of the following metal oxide film is protective from corrosion__ [ ]
    A)Porous B) Non-porous C) Volatile D) unstable
20. Which type of the metal oxide film causes rapid and continuous corrosion_[ ]
    A) Non-porous and Adherent B) Stable and Non-porous C) Porous or Volatile D) None of these
21. Electrochemical corrosion in acidic environment is carried with_____[ ]
    A) O_2 evolution B) O_2 absorption C) H_2 evolution D) H_2 absorption
22. During galvanic corrosion, the most noble metal acts as_____ [ ]
    A) Anode as well as Cathode B) Cathode C) Anode D) Both B & C
23. Iron corrodes faster than aluminium due to_____ [ ]
    A) Al reacts with medium B) Al forms protective oxide film C) Al is lighter than Fe D) None
24. Impure metal corrodes faster than pure metal due to_____ [ ]
    A) Homogeneity B) Heterogeneity C) Both D) None
25. When Zn and Cu alloy is placed in moisture environment, then undergo corrosion [ ]
    A) Cu B) Zn C) Zn-Cu D) None of these
26. In electrochemical corrosion, if the corrosion product is insoluble in the medium then the corrosion rate further_____ [ ]
    A) Increase B) Decrease C) Both D) None
27. Which of the following is volatile oxidation corrosion product of a metal_____ [ ]
    A) CuO B) Fe_2O_3 C) MoO_3 D) PbO
28. If the corrosion product is volatile, then the rate of corrosion of base metal will be_____ [ ]
    A) Decrease B) Increase C) Unchanged D) Not expected
29. The corrosive resistance of stainless steel is mainly due to passive nature of__metal [ ]
    A) Zn B) Sn C) Cr D) Fe
30. The chemical formula of rust_____ [ ]
    A) Fe_2O_3 B) FeO C) $Fe_2O_3.xH_2O$ D) Fe_2O_4
31. In Lead-acid storage cell, the cathode is made of _____ [ ]
    A)Lead dioxide B) Lead C) Both A&B D) None of these

32. The cathode of Nicad battery is composed of_____ [ ]
A) Nickel B) Cadmium C) Paste of NiO(OH) D) Paste of $Cd(OH)_2$

33. Lower is pH, Corrosion is_____ [ ]
A) Greater B) Lower C) Constant D) None of the above

34. Smaller the Grain size, Corrosion is_____ [ ]
A) Greater B) Lower C) Constant D) Does not affect

35. Process of Corrosion enhanced by_____ [ ]
A) Air & Moisture B) Electrolytes in Water C) Metallic impurities D) All of the above

36. In oxygen concentration type corrosion, the corrosion occurs at [ ]
A)Less oxygenated part B)Cathode part C)More oxygenated part D)None of these

37. Wet corrosion, if the corrosion product is insoluble in the medium then the corrosion rate further_____ [ ]
A) Increase B) Decrease C) Both D) None

38. Rusting is an example of_____ [ ]
A) Reduction B) Oxidation C) Electrolysis D) Electrolysis

39. ___ Batteries the chemical reaction are reversed by passing direct electric current in opposite direction [ ]
A) Primary B)Secondary C) Both A& B D)None of these

40.The rate of corrosion accelerates when the temperature of environment___ [ ]
A)Decreases B)Increases C)Both A &B D) None of these

UNIT-II
WATER AND ITS TREATMENT

1. Purest form of natural water is_____ [ ]
   A) Sea water B) River water C) Rain water D) Lake water
2. Blow down operation causes the removal of [ ]
   A) Sludges B) Scales C) Both of them D) Cold water
3. Hard water is containing_____ [ ]
   A) $Ca^{2+} and Mg^{2+}$ B) $K^{+} and\ Li^{+}$ C) $CO_2 and\ O_2$ D) $NO_2 and N_2O$
4. Hardness of water is expressed in terms of equivalents of ____ [ ]
   A) $MgCO_3$ B) $CaCO_3$ C) Na_2CO_3 D) K_2CO_3
5. Full name of EDTA [ ]
   A)Ethyne diamine tetra aceticacid B) Ethylene diamine tetra aceticacid
   C)Ethylene di ammine tri acetic acid D) Ethylene diamine tetra aldehyde
6. The exhausted cation exchange resin can be regenerated by washing with ___ [ ]
   A) Dil.NaOH B) Dil. HCl C) Distilled water D) Brakish water
7. Calgon is a trade name given to_____ [ ]
   A) Sodium hexa Meta phosphate B) Magnesium phosphate
   C) Calcium silicate D) Sodium sulphate
8. Loose and slimy precipitate formed within the boiler is called_____ [ ]
   A) Scale B) Sludge C) Priming D) Corrosion
9. Temporary hardness of water can be removed by_____ [ ]
   A) Filtration B) Screening C) Boiling D) Sedimentation
10. Water containing $CaCl_2$ and $MgSO_4$ is_____ [ ]
    A) Temporary hardness only B) Permanent hardness only C) Both of them D) Soft only
11. Priming and foaming in boilers produce steam of_____ [ ]
    A) Wet B) Dry C) Soft water D) None of these
12. The exhausted anion exchange resin can be regenerated by washing with ___ [ ]
    A) Dil.NaOH B) Dil. HCl C) Distilled water D) Brakish water
13. A hard ,sticky precipitate formed on the inner surface of the boiler is called____ [ ]
    A) Sludge B) Oil C) Grease D) Scale
14. Which of the following is responsible for temporary hardness _____ [ ]
    A) $MgCl_2$ B) $CaSO_4$ C) $MgSO_4$ D) $Ca(HCO_3)_2$
15. The water which is fit for drink is called_____ [ ]
    A) Hard water B) Brakish water C) Potable water D) Moderately hardness
16. ___indicator is used for determination of hardness by EDTA method [ ]

A) Methyl orange B) Methyl red C) EBT D) FSB-F

17. Water is hard, when it contains_____ [ ]
A) Alkalinity B) Acidity C) Dissolved K salts D) Dissolved Ca and Mg salts
18. Dissolved CO_2 in water can be removed by adding _____ [ ]
A) Ammonia B) NaCl C) HCl D) H_2SO_4
19. Estimation of hardness water by EDTA method is used to determine ____ [ ]
A) Total hardness B) Temporary hardness C) Permanent hardness D) All the above
20. Tannins and agar-agar are used for [ ]
A) Phosphate conditioning B) Carbonate conditioning
C) Colloidal conditioning D) Calgon conditioning
21. Sodium sulphite is used to remove which type of boiler trouble [ ]
A) Dissolved O_2 B) Dissolved CO_2 C) Scale D) Sludge
22. Best method of removing temporary hardness of water is [ ]
A) Ion exchange B) Permutit C) Lime-Soda D) Boiling
23. Ion exchange process using _____ resins [ ]
A) Anion exchange resin B) Cation exchange resin
C)BothA & B D) Zeolite bed.
24. The process of wet steam is called [ ]
A) Foaming B) Corrosion C) Priming D)Caustic embrittlement
25. The exhausted zeolite is regenerated by [ ]
A) NaOH B) HCl C) NaCl D) All
26. ___ indicator is used for determining Hardness of water [ ]
A) EBT B) FSB-F C) Starch D) Diphenylamine
27. In EDTA method buffer used is [ ]
A) Ammonical chloride B) Ammonia C) Both A & B D) None
28. Another name of priming and Foaming is [ ]
A) Carry over B) Wet steam C) Both A & B D) None
29. Foaming can be avoided by adding antifoaming agent like [ ]
A) $NaAlO_2$ B) NH_4OH C) Cotton seed oil D) NH_2-NH_2
30. Dissolved Oxygen can be removed from boiler feed water by adding [ ]
A) Na_2S B) Na_2SO_3 C) NH_2-NH_2 D) All of these
31. Calgon conditioning is used for the removal of_____scales [ ]
A) $Ca(HCO_3)_2$ B) $CaSO_4$ C) $CaCl_2$ D) $Ca(NO_3)_2$
32. A good amount of dissolved oxygen in water at room temperature and pressure is about ____ [ ]
A) 16 mg / L B) 10 mg / L C) 8mg /L D) 20 mg / L
33. Water which forms Scum with soap is called [ ]
A) Hard water B) Soft water C) Distilled water D) Undistilled water
34. Hardness which can be removed by boiling is called [ ]
A) Permanent hardness B) Temporary hardness C) Stiffness D) Toughness
35. Hardness which can't be removed by boiling is called [ ]
A) Permanent hardness B) Temporary hardness C) Stiffness D) Toughness

36. Rain is an example of [ ]
A) Perspiration B) Respiration C) Precipitation D) Evaporation
37. Which one of the following compounds does NOT cause hardness in water? [ ]
A) Magnesium sulfate B) Magnesium chloride C) Sodium chloride D) Calcium chloride
38. ppm stands for ____ [ ]
A)Parts per millimeter B)parts per meter c)parts per million D)None of these
39. P^H of neutral water is_ [ ]
A) 7 B)More than 7 C)Less than 7 D)14
40. Soft water gives _____with soap [ ]
A) Lather B) Oil C) Impurities D) Sludge

UNIT-III
FUEL TECHNOLOGY

1. Which of the following is a Natural gas_____ [ ]
   A) Petrol B) Oil gas C) Coal D) Coke
2. The calorific value of a gaseous fuel is expressed as_____ [ ]
   A) K.Cal/cm^3 B) Cal/cm^3 C) K.Cal/m^3 D) K.Cal/cm
3. The catalyst used in Bergius process is_____ [ ]
   A) Nickel Oxalate B) Nickel Oleate C) Platinum D) Iron
4. The calorific value of Water gas is_____ [ ]
   A) 2800 K.Cal/m^3 B) 1800 K.Cal/m^3 C) 1300 K.Cal/m^3 D) 2000 K.Cal/m^3
5. Composition of Producer gas is_____ [ ]
   A) $CO + H_2$ B) $CO + CH_4$ C) $CO + N_2$ D) $CH_4 + N_2$
6. Gobar gas mainly contains_____ [ ]
   A) Propane B) Methane C) Butane D) Ethane
7. A good fuel should possess_____ [ ]
   A) High calorific value B) Low calorific value C) Moisture D) High ash
8. The boiling range of petrol fraction is found to be_____ [ ]
   A) 120-180^{0}C B) 250-320^{0}C C) 40-120^{0}C D) 180-250^{0}C
9. The highest ranking coal is_____ [ ]
   A) Anthracite B) Peat C) Lignite D) Bituminous
10. By alternatively passing air and steam on to the red hot coke we get____ [ ]
    A) Producer gas B) Water gas C) Biogas D) Oil gas
11. The calorific value of Producer gas is_____ [ ]
    A) 2800 K.Cal/m^3 B) 1800 K.Cal/m^3 C) 1300 K.Cal/m^3 D) 2000 K.Cal/m^3.
12. The total heat liberated by the complete combustion of one unit of fuel with oxygen is called_____ [ ]
    A) Calorific value B) Centigrade heat unit C) Calorie D) Kilocalorie
13. Which of the following fuel gases possess highest calorific gas_____ [ ]
    A) Water gas B) Producer gas C) Natural gas D) Coal gas
14. The boiling range of Diesel fraction is found to be_____ [ ]
    A) 120-180^{0}C B) 250-320^{0}C C) 40-120^{0}C D) 180-250^{0}C
15. An example of primary liquid fuel is_____ [ ]
    A) Diesel B) Kerosene C) Naphtha D) Petroleum
16. The calorific value of Diesel is_____ [ ]
    A) 11250 K.Cal/Kg B) 11200 K.Cal/Kg
    C) 11000 K.Cal/Kg D) 11000 K.Cal/Kg
17. The raw materials used in Bergius process for production of synthetic petrol are____ [ ]
    A) Coal and Hydrogen B) Coke and Oil
    C) Water gas and Hydrogen D) Producer gas and Oil
18. For improving anti-knock property to petrol, it is mixed with_____ [ ]
    A) Lead bromide B) Allyl bromide
    C) Tetra ethyl lead D) Tetra ethyl lead + Ethyl bromide

19. Which of the following is used as a jet engine fuel_____ [ ]
A) LPG B) Power alcohol C) Kerosene D) Coal
20. Hydrocarbon content in gasoline is_____ [ ]
A) C_1-C_4 B) C_5-C_9 C) C_{15}-C_{23} D) C_{20} above
21. Main constituent of LPG is_____ [ ]
A) Propane B) Ethane C) Methane D) Butane
22. Composition of Water gas is_____ [ ]
A) $CO + H_2$ B) $CO + CH_4$ C) $CO + N_2$ D) $CH_4 + N_2$
23. The boiling range of kerosene fraction is found to be_____ [ ]
A) 120-180^{0}C B) 250-320^{0}C C) 40-120^{0}C D) 180-250^{0}C
24. Gobar gas mainly contains_____ [ ]
A) Propane B) Methane C) Butane D) Ethane
25. The anti-knock value of iso-octane is fixed as_____ [ ]
A) 0 B) 1 C) 100 D) 80
26. Ethyl alcohol can be manufactured by the following process___ [ ]
A) Oxidation B) Reduction
C) Fermentation D) None.
27. For a good lubricant, viscosity index should be [ ]
A) Low B) High C) Normal D) Unpredictable
28. Neutralisation number is also called_____ [ ]
A) Acid number B) Base number C) Saponification number D) None of these
29. The oils with additives are called_____ [ ]
A) Mixed oils B) Mineral oils C) Blended oils D) Natural oils
30. For determination of viscosity of thin lubricating oils ____is used [ ]
A) Redwood viscometer-2 B) Redwood viscometer-1
C) Viscometer D) Able apparatus
31. ___ type of a lubrication is involved in delicate machines like watches, sewing machines etc [ ]
A) Fluid film B) Thin film C) extreme pressure D) None of these
32. Lubricant used to reduce the [ ]
A) Viscosity B) Friction C) Stability D) None
33. Lubricants for internal combustion engines should have_____ [ ]
A) Low Viscosity B) High Viscosity Index C) Low Viscosity Index D) All of these
34. Which of the following possess least oiliness [ ]
A) Mineral Oils B) Animal Oils C) Vegetable Oils D) Greases
35. Lubricants are mainly employed to reduce _____ [ ]
A) Abrasion B) Corrosion C) Wearing D) All of these
36. The most suitable Lubricant for Watches and Clocks is _____ [ ]
A) Bazel nut oil B) Grease C) Palm Oil D) Tallow Oil
37. The Viscosity of Liquids Changes with respect to the temperature, which is expressed in terms of _____ [ ]

A) Flash Point B) Fire Point C) Viscosity Index D) Pour Point

38. Which of the following oil is suitable for thick film lubrication [ ]

A) Petroleum Oils B) Mineral Oils C) Vegetable Oils D) None of these

39. Which of the following possess least Oilness [ ]

A) Mineral Oil B) Animal Oils C) Vegetable Oils D) Greases

40. Machines operating under high temperature and loads are lubricated by [ ]

A) Synthetic Oils B) Mineral Oil C) Grease D) Solid Lubricant

UNIT-IV
POLYMERS

1. Polymer commonly used in textile industry_____ [ ]
   A) Rubber B) Nylon C) PVC D) Bakelite
2. Molecular mass of polymer is_____ [ ]
   A) Large B) Small C) Negligible D) Very small
3. Which of the following is an Elastomer_____ [ ]
   A) PVC B) Nylon C) Polystyrene D) Butyl rubber
4. The common catalyst used in co-ordination chain polymerization_____ [ ]
   A) Nickel B) Ziegler-Natta catalyst C) Zeolite D) Platinum
5. Polyurethane rubber is also known as_____ [ ]
   A) Isoprene B) Thiokol C) Neoprene D) Isocyanate rubber
6. Vulcanization of rubber is mainly done by addition of_____ [ ]
   A) Oxygen gas B) MgO_2 C) Sulphur D) ZnO
7. A good example of condensation polymerization is_____ [ ]
   A) Polythene B) Teflon C) Bakelite D) Polypropylene
8. Fluorine atoms are present in_____ [ ]
   A) Nylon B) Styrene C) Polythene D) Teflon
9. Bakelite is chemically called_____ [ ]
   A) Polybutylene B) Phenol-Formaldehyde resin
   C) Polystyrene D) Polypropylene
10. Buna-S rubber is made up of the monomers_____ [ ]
   A) Butadiene + Phenol B) Butadiene + Styrene
   C) Butadiene + Acrylonitrile D) Styrene + Phenol
11. Homopolymer is made up of _____ [ ]
   A) Different kinds of monomer units B) Same monomer units
   C) Both of these D) None
12. An example of Thermoplastic is_____ [ ]
A) Polystyrene B) PVC C) Polythene D) All of these
13. Phenol-Formaldehyde resin is commercially known as_____ [ ]
 A) Nylon B) PVC C) Bakelite D) Teflon
14. Which of the following is Synthetic rubber _____ [ ]
   A) PVC B) Nylon C) Polystyrene D) Butyl rubber
15. Nylon is a_____ [ ]
   A) Polyester B) Polyamide C) Vinyl polymer D) PVC
16. Nitrogen atoms are present in_____ [ ]
   A) Teflon B) Polythene C) Nylon D) Polypropylene
17. The process of vulcanization makes rubber_____ [ ]
   A) Soft B) Hard C) Elastic D) Swells oils
18. Natural rubber is made up of_____ [ ]
   A) Cis-Polyisoprene B) Trans-Polyisoprene

C) Cis-Butadiene D) Cis-Butadiene

19. Plasticizers are materials which are added to resin to increase their_____ [ ]
A) Strength B) Corrosion resistance
C) Stability D) Plasticity and flexibility

20. Styrene rubber is produced by co-polymerization of_____ [ ]
A) Butadiene + Phenol B) Butadiene + Styrene
C) Butadiene + Acrylonitrile D) Styrene + Phenol

21. Hetero polymer is made up of _____ [ ]
A) Different kinds of monomer units B) Same monomer units
C) Both of these D) None

22. An Example of Condensation -polymer is_____ [ ]

A) PVC B) Polythene C) Terylene D) Teflon

23. Bakelite is made up of_____ [ ]
A) Addition polymerization B) Co- polymerization
C) Condensation polymerization D) None

24. An example of thermosetting plastic is_____ [ ]
A) Polystyrene B) PVC C) Bakelite D) All of these

25. The number of bonding sites in a monomer is known as_____ [ ]
A) Degree of polymerization B) Tacticity C) Functionality D) Silicones

26. Vulcanization process involves the formation of____ [ ]
A) Vander walls forces B) Covalent bonds
C) Ionic bond D) All of the above

27. Buna- S rubber is also known as _____ [ ]
A) Styrene-butadiene B) Nytrile C) Thikol D) Vulcanized rubber

28. Thiokol rubber is made up of the monomers_____ [ ]
A) 1,2-Dichloroethane and Sodium polysulphide B) Thio alcohol +Vinyl chloride
C) Thio alcohol + Sodium poly sulphide D) None

29. Natural rubber is a polymer of _____ [ ]
A) Isoprene B) Vinyl chloride C) Styrene D) Propylene

30. Which one of the following is an inorganic polymer_____ [ ]
A) Terylene B) Silicone rubber
C) Buna-S D) Isocyanate rubber

31. The number of repeating units present in a polymer chain is known a_____ [ ]
A) Degree of polymerisation B) Functionality
C) Tacticity D) Tetramers

32. An Example of co-polymer is_____ [ ]
A) PVC B) Polythene C) Teflon D) Buna-S

33. Tetraflouro ethylene is the monomer of_____ [ ]
A) Nylon-6,6 B) Polythene C) Teflon D) PVC

34. An example of Thermoplastic is_____ [ ]
A) Polystyrene B) PVC C) Polythene D) All of these

35. The number of bonding sites in a monomer is known as_____ [ ]
A) Degree of polymerization B) Tacticity C) Functionality D) Silicones

36. Which of the following has cross-links_____ [ ]
A) PVC B) Polythene C) Phenol-Formaldehyde resin D) Teflon
37. The repeating units present in a polymer chain are known a_____ [ ]
A) Monomer B) Dimers C) Polymer D) Tetramers
38. Polyurethane rubber is made up of the monomers _____ [ ]
A) Phenol + Formaldehyde B) Phenol + Styrene
C) Ethylene glycol + Ethylene diisocyanate D) Ethylene glycol + Styrene
39. Natural rubber is a polymer of _____ [ ]
A) Isoprene B) Vinyl chloride C) Styrene D) Propylene
40. Buna-N rubber is made up of the monomers_____ [ ]
A) Butadiene + Phenol B) Butadiene + Styrene
C) Butadiene + Acrylonitrile D) Styrene + Phenol

UNIT-V
CHEMISTRY OF ENGINEERING MATERIALS

1. Which of the following is a character of refractory [ ]
   A) It should resist high temperature B) It should be chemically inert
   C) Resist abrasion action D) All
2. A refractory material generally obtained from bauxite is [ ]
   A) Fire clay B) Dolomite C) Chromite D) Alumina
3. Silica is an example of [ ]
   A) Basic refractory B) Acidic refractory C) Neutral refractory D) None
4. A good refractory should have _____thermal expansion [ ]
   A) High B)Less C) Both A&B D) None of these
5. Breaking, Cracking, Fracturing of a refractory under high temperature is called [ ]
   A) Thermal spalling B) Thermal expansion C) Fusion D) All
6. The resistivity of a super conductor is [ ]
   A) 0 B) Finite C) Infinite D) None

7.Which of the following is a basic refactory [ ]
   A) Silica B) Alumina C) Graphite D)Calcium oxide

8.Refractory fails due to [ ]
   A) Rapid changes in temperature B) Over firing
   C) Due to dimensional changes D) All

9.Refractoriness of a refractory can be measured by [ ]
   A) Pyrometric cone test B) Acidic test C) Penetration test D) None

10.Porosity of a refractory _____ the abrasion resistance [ ]
   A) Increase B) Decreases C) No change D) None

11.The main raw materials required for the manufacture of Portland cement are [ ]
   A) Lime stone + Clay B) Lime stone + SandC) Alumina + Sand D) Clay + Sand

12.The resistivity of a super conductor is [ ]
   A) 0 B) Finite C) Infinite D) None

13.An p-type Si is obtained by doping pure Si with [ ]
   A) Pentavalent impurity B) Tetravalent impurity C) Trivalent impurity D) All

14.Which of the following is a acidic refactory [ ]
   A) CaO B) Na_2CO_3 C) MgO D) SiO_2

15.A good refractory material must [ ]
   A) Possess low softening temperature B) Undergo spalling
   C) Be chemically inert D) Contain high thermal expansion

16.Most important characteristic of a refractory material is its [ ]
   A) Strength B) Refractoriness C) Spalling D) All

17.Higher the pyrometric cone equivalent is the softening temperature of a refractory[ ]

A) Lower B) Higher C) Zero D) Moderate

18.The chemical formula for lime stone is [ ]

A) $MgCO_3$ B) $CaCO_3$ C) Na_2CO_3 D) Li_2CO

19.Any material which can withstand high temperature without softening from deformation is called [ ]

A) Insulating material B) Refractory C) Lubricant D) Fuel

20.Which of the following is a neutral refractory [ ]

A) Silica B) Alumina C) Graphite D) Calcium oxide

21.In basic environment preferably refractory should not be [ ]

A) Basic B) Acidic C) Neutral D) None

22.Porosity of a refractory _____ the abrasion resistance [ ]

B) Increase B) Decreases C) No change D) None

23.The chemical formula for lime stone is [ ]

B) $MgCO_3$ B) $CaCO_3$ C) Na_2CO_3 D) Li_2CO_3

24.The conductivity of a super conductor is [ ]

A) 0 B) Finite C) Infinite D) None

25. Which of the following nanomaterial show effective catalytic activity for methenation of $CO + H_2$ at low temperature [ ]

A) Palladium (10 nm) B) Palladium colloids C) MoS_2 D) Rhodium Hydro sols

26. Fullerenes and Dendrimers are considered as _____ in Nanoscale [ ]

A) one dimensional B) Three dimensional C) Two dimensional D) None of these

27. Nanowires and Nanotubes are _____ in Nanoscale [ ]

A) one dimensional B) Three dimensional C) Two dimensional D) None of these

28. The term Nano Stands for _____ [ ]

A) 1 Billionth of centimeter B) 1 Billionth of Metre C) 1 Billionth of Foot D) None of these

29. Which of the following important properties of Nanomaterials differ significantly from other materials [ ]

A) Increase Surface area B) Decrease Surface area C) Increase Constant size D) None of these

30. Which of the following nanomaterial act as sensors of gases like NO_2 and NH_3 on the basis of increasing electrical conductivity [ ]

A) Carbon Nanotubes B) Thin film C) Zinc Oxide D) Palladium

31. Which of the following nano wires show Photoluminescene [ ]

A) Zinc Oxide B) Semi Conductor C) Silicon D) Carbon

32. In Nanomaterials, atoms or molecules are fabricated in nanoscale range [ ]

A) 1-10 nm B) 100-120 nm C) 10-20 nm D) 20-30 nm

33.Who is the father of Nanomaterial Science [ ]

A) Grahambel B) Dalton C) Richard Feynmen D) Newton

34. Which of the following is considered as one dimensional in the nanoscale [ ]

A) Quantum Dots B) Carbon Nanotubes C) Fullerenes D) Thin films

35. A Nanocrystal of 10 nm in size has approximately _____ of atoms on the surface [ ]

A) 80% B) 20% C) 15% D) 5%

36. Zinc oxide Nanowires exhibits at room temperature_____ [ ]

A) Magnetic Materials B) UV Laser C) Storage device D) Super Conductors

37. Which of the following important properties of nanomaterials differ significantly from other material [ ]
A) Increase surface area B) Decrease surface area C) Increase constant size
D) None of these
38. The Nano tubes of MoS_2 and CoS_2 are used as [ ]
A) Semi Conductors B) Insulators C) Storage device D) Solid Lubricants
39. When Lime is exposed to air, it slowly abosorbs [ ]
A) Nitrogen B) Oxygen C) Carbon di oxide D) Sulphur
40. The Nanotubes of MoS_2 and WS_2 used as _____ [ ]
A) Solid lubricants B) Super conductors C) Semi conductors D) Catalyst