UNIT 5

Applied Chemistry

GBFE5M

TEXTBOOK EVALUATION

GBY68X

I. Choose the correct answer.

1. One Nanometre is
   (a) 10^{-7} metre (b) 10^{-8} metre
   (c) 10^{-6} metre (d) 10^{-9} metre
   Ans: (d) 10^{-9} metre

2. The antibiotic Penicillin is obtained from _____
   (a) plant (b) microorganism
   (c) animal (d) sunlight
   Ans: (b) microorganism

3. 1% solution of Iodoform is used as
   (a) antipyretic (b) antimalarial
   (c) antiseptic (d) antacid
   Ans: (c) antiseptic

4. The cathode of an electrochemical reaction involves _____
   (a) oxidation (b) reduction
   (c) neutralisation (d) catenation
   Ans: (d) catenation

5. The age of a dead animal can be determined by using an isotope of _____
   (a) carbon (b) iodine
   (c) phosphorous (d) oxygen
   Ans: (a) carbon

6. Which of the following does not contain natural dyes?
   (a) Potato (b) Beetroot
   (c) Carrot (d) Turmeric
   Ans: (a) Potato

7. This type of food protect us from deficiency diseases.
   (a) Carbohydrates (b) Vitamins
   (c) Proteins (d) Fats
   Ans: (b) Vitamins

8. Radiochemistry deals with
   (a) oxidants (b) batteries
   (c) isotopes (d) nanoparticles
   Ans: (c) isotopes

9. The groups responsible for the colour of an organic compound is called
   (a) isotopes (b) auxochrome
   (c) chromogen (d) chromophore
   Ans: (b) auxochrome

10. Chlorinated hydrocarbons are used as
    (a) fertilizers (b) pesticides
    (c) food colourants (d) preservatives
    Ans: (b) pesticides

II. Fill in the blanks.

1. _____ is an electrochemical cell which converts electrical energy into chemical change(Reaction).
   Ans: Electrolytic cell

2. Painkiller drugs are called _____
   Ans: Analgesics

3. Aspirin is an _____
   Ans: Antipyretics

4. _____, _____ and _____ are macronutrients required for plant growth.
   Ans: Nitrogen,Phosphorous,potassium

5. _____ is a chemical used in finger print analysis.

Ans: Ninhydrin

III. Match the following.

Antipyretics	- Large surface area
Corrosion prevention	- Iodine-131
Hyperthyroidism	- Fever
Nanoparticle	- Cancer cell identifi ation
Nanorobotics	- Electroplating

Ans:

Antipyretics	- Fever
Corrosion prevention	- Electroplating
Hyperthyroidism	- Iodine-131
Nanoparticle	- Large surface area
Nanorobotics	- Cancer cell identification

IV. Answer in brief.

1. What is Chemotherapy?

Chemotherapy: Treatment of certain diseases by destroying the invading organism without damaging the cells of the host, by the use of certain organic compounds is known as Chemotherapy. It is widely used for treating cancer.

2. What are called Anaesthetics? How are they classified?

The drugs which cause loss of sensation are called Anaesthetics.
Types of Anaesthetics:
1.General anaesthetics
2.Local anaesthetics

3. What is the need for chemical fertilizers in crop fields?

Fertilizers are chemical compounds added to crop fi eld for supplying essential micro and macro nutrients required for crop growth.Depending on the nature of soil, these fertilizers are used singly or as mixtures.

4. What is Forensic chemistry related to?

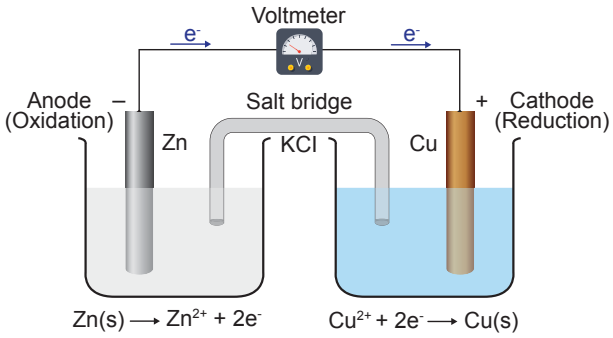
In general, forensic chemists work in four steps in the investigation of crime.

1.Collection of Evidences
2.Analysis of evidences
3.Collaboration
4.Report of findings

V. Answer in detail.

1. Draw the cell diagram of Daniel cell. Give its reactions.

It is a type of galvanic cell in which zinc metal acts as anode and copper metal as cathode. Aqueous zinc sulphate solution makes the anodic electrolyte whereas aqueous copper sulphate solution makes the cathodic electrolyte. Saturated solution of potassium chloride (KCl) acts as salt bridge. The following figure depicts the construction of Daniel cell.



Daniel Cell

At anode, zinc undergoes oxidation losing its electrons.

$Zn_{(s)} \rightarrow Zn^{2+} + 2e^-$ (Oxidation)

At cathode, copper ions from cathodic electrolyte gain electrons at the surface of cathode and get reduced to copper metal.

$Cu^{2+} + 2e^- \rightarrow Cu_{(s)}$ (Reduction)

Net reaction: $Zn_{(s)} + Cu^{2+} \rightarrow Zn^{2+} + Cu_{(s)}$

Cell potential of Daniel cell is 1.1 V

2. Explain the types of dyes based on their method of application.

Acid dyes: These are acidic in nature and used for dyeing animal fibres and synthetic fibres. These can be used for protein fibre such as wool and silk. E.g. Picric acid, Naphthol yellow-s

Basic dyes: These are basic dyes containing basic group ($-NH_2$,- NHR, - NR_2). They are used for dyeing animal fibres and plant fibres.

Mordant dyes or Indirect dyes: These dyes have a poor affinity for cotton fabrics and hence do not dye directly. They require pretreatment of the fibre with a mordant. Mordant (latin : mordere = to bite) is a substance which can be fixed to the fibre and then can be combined with the dye to form an insoluble complex called lake. Aluminium, chromium, and iron salts are widely used as mordants. E.g. alizarin.

Direct dyes: They have high affinity for cotton, rayon and other cellulose fibre. So they are applied directly as they fix firmly on the fabric. E.g. Congo red

Vat dyes: It can be used only on cotton and, not on silk and wool. This dyeing is a continuous process and is carried out in a large vessel called vat. So it is called as vat dye. E.g. Indigo

3. Name various food additives and explain their functions.

Type of additive	Function of the additive	Example
Preservatives	They protect food from spoilage by microorganism in storage.	Vinegar, Sodium benzoate, benzoic acid, sodium nitrite
Colourants	They give pleasant colours to food	Carotenoids, Anthocyanin, Curcumin
Artificial Sweeteners	They add sweet taste to food	Saccharin, Cyclamate
Flavor enhancers	They are used to enhance the flavour of food items	Monosodium glutamate, Calcium diglutamate
Antioxidants	They prevent the oxidation of food. They protect us against cardiovascular disease.	Vitamin C, Vitamin E, Carotene

VI. HOTS

1. Batteries that are used in mobile phone can be recharged. Likewise, can you recharge the batteries used in watches? Justify your answer.

A watch battery is a primary cell,that is designed to be used once,and discarded,and hence it is not rechargable.

2. Sudha met with a fire accident. What kind of drug(s), she must take?

Neosporin,Bacitracin,Silvadene are used for the treatement of fire accident.

3. The soil pH of a crop land is 5. What kind of fertilizers should be used in that land?

The soil pH of a crop land is 5.it is relative acidity of the soil,so we use the alkaline lime fertilizer in that land.

Prepared By
D.Felix Arockia Raj,M.Sc.,B.Ed.,
PG ASST CHEMISTRY
ST JOSEPH'S COLLEGE HR SEC SCHOOL,TRICHY-2