# TOPIC : CHEMISTRY IN EVERYDAY LIFE EXERCISE # 1

#### Section (A)

- 2. Reserpine, morphine or quinine are complex nitrogeneous substances or alkaloids.
- **3.** The antibiotic used for curing tuberculosis is streptomycin.
- 4. The drugs used to get relief from pain are called analgesics.
- 5. Gammexane is insecticide.
- 8. These are water insoluble dyes.
- 9. Direct dyes are water soluble dyes.
- **11.** Dyes which are prepared right on the fabric during dyeing process are called Azo dyes.
- **15.** A composite solid propellant is Polyurethane + ammonium perchloride.
- **19.** Liquid  $N_2O_4$  + unsymmetrical dimethylhydrazine (UDMH) represents a biliquid propellant.

#### Section (B)

- 1. Deoxyribose is present in DNA and Ribose is present in RNA.
- 2. The pentose sugar in DNA and RNA has the furanose structure.
- **3.** Guanine is not a pyrimidine base.
- 5. Oils and fats are esters of higher fatty acids with Glycerol.
- 6. The cheif constituents of cell membranes are phospholipids.
- 8. The most concentrated source of energy in the human body is fats.

#### Section (C)

- **3.** The disease phenyl ketone urea is caused by the deficiency of phenylalanine hydroxylase.
- 5. The disease albinism is caused by the deficiency of tyrosinase.
- 6. The first hormone to be isolated and also the first to be synthesized in the laboratory was insulin.
- 7. Progesterone, estrone and epinephrine are female sex harmone and testosterone is male sex harmone.
- 8. The sex hormone which controls the development and maintanance of pregnancy is progesterone.
- **10.** Saliva contains amylases or ptyalins.

#### Section (D)

- **1.** Riboflavin is a vitamin.
- **5.** Vitamin E is also called Tocopherol.
- 6. The best source of vitamin C is Citrus fruits.
- 8. Deficiency of vitamin E causes loss of sexual power and reproduction.

# Section (E)



- 3. Due to more electronegativity of F.
- 4. Geometrical isomers have different value of  $\theta$  so have different  $\mu$ .
- 5. cis form have some net dipole moment.



10.

ŎŇa



**2.** Boiling point depends on H-bonding more than on dipole moment so order is w > z > x > y.

Br

**3.** Boiling point  $\infty$  molecular weight

,





 $189^{\circ} > (156^{\circ}) > (132^{\circ}) > (85^{\circ})$ 

- **4.** Boiling point  $\infty$  molecular weight.
- 5. Boiling points depends on molecular weight.
- **6.** Boiling point  $\infty$  molecular weight.
- **7.** Boiling point  $\infty$  molecular weight.

## Section (G)

- 1. Melting point depends on symmetry so p-dibromobenzene has highest melting point.
- 2. Melting point depends on H-bonding.
- **3.** Parahydroxyphenol is more symmetrical with presence of intermolecular H-bond.



**5.** Melting point depends on H-bonding which is dependent on surface area. Lower the surface area, more extent of the H-bonding.



- 7. D has highest molecular weight so have highest melting point.
- 8.  $\bigcirc$  does not form H-bond so has lower melting point.

\_OH forms H-bond so has higher melting point.

CI has dipole moment so higher melting point.

**9.** Melting point depends on symmetry of molecule.

#### Section (H)

- **1.** Phenyl group decreases the extent of H-bonding so solubility decreases.
- **2.** (1) Surface area decreases, solubility increases, so A is wrong order.



In it, due to the presence of intramolecular H – bonding the solubility is decrease, so B is wrong order.



Like dissolve like so it is correct.



dipole moment of I is greater than II. Greater the dipole moment greater its solubility.

- **3.** Solubility depends on Hydrogen bonding and dipole moment. Greater the H-bonding and dipole moment, greater the solubility of molecule in water.
- **4.** Solubility depend on extent of H-bonding. Lower the molecular wt. of alcohol greater the H-bonding and greater is the solubility.
- **5.** Alcohol have H-bonding.
- 6. Pentan-1-ol has larger alkyl group which decreases H-bonding so least soluble in water.

- 8. (in stability and aromatic character).
- **9.** I and II have aromatic character, III has more polarity due to resonance.
- **10.** Malonic acid is having smaller alkyl part so more soluble in water.

#### Section (I)

1. Aniline is base so form salt with HCI.

NH<sub>3</sub>OH



Soluble

OH

C.H



# EXERCISE # 2

insoluble

ÇH₃

ĊH (B)

25. Dipole moment depends on direction of electron flow i.e.



melting point and boiling point also depends on dipole moment if H-bonding is absent. Greater the dipole moment, greater the melting point and boiling point.

- 26. Boiling point depends on molecular weight and surface area.
- 27. Tertiary amine do not form H-bond so have lowest boiling point.

- **28.** Aromatic compound are insoluble in cold  $H_2O$ . So first we separate mixture with  $H_2O$  and then add aq. NaHCO<sub>3</sub> because acid are soluble in NaHCO<sub>3</sub> and after this in residue we add aq. HCI because aromatic amines are soluble in aq. HCI due to salt formation.
- **29.** Ar-NO<sub>2</sub>  $\xrightarrow{Zn/NH_4Cl}$  ArNHOH  $\xrightarrow{AgNO_3^+}$  Ag  $\downarrow$
- 30. Dicarboxylic acid are also soluble in aq. NaHCO<sub>3</sub> and p-nitrochlorobenzene is insoluble in aq. HCI



- **41.** Vitamin C is a lactone.
- **42.** (1) HS  $\longrightarrow$  SH is non-linear.
  - (2) Melting point depends on dipole moment.
  - (3) All are non-polar and water is polar.
  - (4) HCl form salt with aniline.



- 47. Azulene have polarity due to aromatization in both ring in charge molecule.
- **48.** Aspirin is a pain killer.

# EXERCISE # 3 PART - I

which is acetylated product of salicylic acid (o-hydroxy benzoic acid).





2. Gammexane is benzene hexachloride

acid



3. n-propyl alcohol and isopropyl alcohol gives different product on oxidation with K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>.

$$\begin{array}{c} CH_{3}-CH_{2}-CH_{2}OH \xrightarrow{[0]}{K_{2}Cr_{2}O_{7}/H_{2}SO_{4}} & CH_{3}-CH_{2}-CHC \\ Propionaldehyde \\ alcohol \\ CH_{3}-CH_{2}-CH_{3} \xrightarrow{[0]}{K_{2}Cr_{2}O_{7}/H_{2}SO_{4}} & CH_{3}-C-CH_{3} \\ OH \\ Isopropyl alcohol & Acetone \end{array}$$

5. Freons or chlorofluoro carbons are responsible for depletion of the ozone layer in the upper starta of the atmosphere. They are used as propellants, aerosol spray caps, refrigerents, fire fighting reagents etc. They are stable and chemically inert compounds. They absorb UV - radiation and break down liberating free atomic chlorine which causes decomposition of ozone through free radical reaction. This results in the deplection of the ozone layer.

Freons are mainly Freon-1 (CFCl<sub>3</sub>) and Feron-12 (CF<sub>2</sub>Cl<sub>2</sub>). They form free radical of chlorine in presence of UV-radiation. Such free radical decomposes  $O_3$  as follows :

 $Cl' + O_{3} \longrightarrow ClO' + O_{2}$  $ClO' + O_{3} \longrightarrow Cl' + 2O_{2}$ Chlorine free radical

6. Haemoglobin acts as oxygen carrier in the blood four  $Fe^{2+}$  ions of each haemoglobin can bind with four molecules of  $O_2$  and form oxyhaemoglobin.

$$4\text{Hb} + 4\text{O}_{_2} \longrightarrow \frac{\text{Hb}_{_4}\text{O}_{_8}}{\text{Oxy-haemoglobin}}$$

- **7.** Green chemistry involves such reactions which reduce the use and production of hazardous or toxic chemical to reduce pollution from environment.
- **9.** Tranquilizer are the chemicals that reduce anxiety and mental tension. Thus, they are sometimes called psychotherapteutic drugs. Equanil, valium and serotonin are some commonly used tranquilisers.
- **10.** OCI<sup>-</sup> acts as an oxidising species.

Active ingredient in bleaching powder for bleaching action is Ca(OCI)<sub>2</sub>

- **11.** Diphenyl hydramine is one of the Antihistamine drug.
- **12.** Photochemical smog cause's irritation in nose, eyes and throat.
- **13.** Chloroamphenicol is a broad spectrum antibiotic.
- **14.** Dilute solutions of boric acid and hydrogen peroxide are weak antiseptics.
- **15.** Aspartame is stable at cold conditions but unstable at cooking temperature.
- **16.** Bithional is added to soap as an antiseptic.
- **17.** Novalgin is an analgesic it is a fact.
- 18. It is fact.

- **19.** Fact Based from NCERT Page No 455 Chapter Chemistry in every day life (Penicillin G has a narrow spectrum while Chloramphenicol, Ampicillin, Amoxycillin are broad spectrum)
- **20.** The artificial sweetner sucralose Trichloro derivative of sucrose. Stable at cooking Temperature and does not provide calories.

# PART - II

**2.** Thymine (pyramidine base) and adenine (purine base) attach to each other by two H–bonds while cytosine (pyrimidine) and guanine (purine) attach by three H-bonds.



4.  $\alpha$  - keratin is a water insoluble fiberous protein. It is the major constituent of nail, hair and skin. It cannot be digested in human body.

Haemoglobin is a conjugate protein in blood. Adenine is a nitrogenous base of DNA and RNA.

**6.** Tincture of iodine is prepared by dissolving iodine and KI in water and making the solution with rectified spirit. So it is alcoholic solution of I<sub>2</sub>.

OCOCH<sub>3</sub> COOH (Aspirin) is used as analgesic.

7.

- **8.** Saponification value is the number of milligrams of KOH required to neutralise the fatty acid resulting from the complete hydrolysis of 1 g of oil or fat.
- **9.** Vitamin B<sub>12</sub> or cyanocobalamine contains cobalt, not magnesium.
- **10.** Among the given sugars, sucrose is the natural sugar while other are artifical. Among aritifical sugars, alitame is about 2000 times more sweeter than cane sugar.
- **11.** Lewisite is obtained when acetylene reacts with arsenic chloride.

 $CH \equiv CH \xrightarrow{AsCl_3} CHCI = CHAsCl_2$ Lewisite

- **12.** Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- **13.** It is Antihelminthic drug.
- **14.** Ozone layer acts as a shield and does not allow ultraviolet radiation from sun to reach earth. It does not prevent infra-read radiation from sun to reach earth, thus option (4) is wrong statement and so it is the correct answer.
- **20.** Histamine stimulate secreation of HCl, but Antihistamine drugs 5 top binding of histamine to receptor and decrease secreation of HCl

# PART - III

**1.** Bond formation is energy release process.

-CH соон

2.

o-acetylsalicylic acid or aspirin (analgesic)

- **3.** Alcohol has polar H which makes inter-mulecular H-bonding possible. Ether is non-polar hence no H-bonding. Lack of H-bonding in ether makes it more volatile than alcohal.
- 4. Liquid hydrogen and liquid oxygen are good fuel.



6. If nitrogen is present in organic compound, then sodium extract contains Na<sub>4</sub> [Fe(CN)<sub>6</sub>]

 $\begin{array}{c} \mathsf{Na} + \mathsf{C} + \mathsf{N} \xrightarrow{\mathsf{fuse}} \mathsf{NaCN} \\ \mathsf{FeSO}_4 + 6\mathsf{NaCN} \longrightarrow \mathsf{Na}_4[\mathsf{Fe}(\mathsf{CN})_6] + \mathsf{Na}_2\mathsf{SO}_4 \\ (1) \\ \mathsf{A} \text{ changes to prussian blue } \mathsf{Fe}_4[\mathsf{Fe}(\mathsf{CN})_6]_3 \\ \mathsf{on reaction with } \mathsf{FeCI}_3 \\ \mathsf{4FeCI}_3 + 3\mathsf{Na}_4[\mathsf{Fe}(\mathsf{CN})_6 \longrightarrow \mathsf{Fe}_4[\mathsf{Fe}(\mathsf{CN})_6]_3 + 12 \mathsf{NaCI} \end{array}$ 

- 7. Isobutene has minimum force of attraction (due to steric hindrance).
- 8. In Wurtz reaction alkyl halide reacts with sodium metal in the presence of dry ether to givealkane.
- **9.** Antipyretic drugs reduce fever. An algesic relieves in pain, antibiotics act against bacterial infections while tranquilisers are used against mental disorders.
- 10. DNA contains cytosine and thymine as a pyrimidine bases and guanine and adenine as purine bases. श
- 11. Dipole-dipole interactions occur among the polar molecules. Polar molecules have permanent dipole. The positive pole of one molecule is thus attracted by the negative pole of the other molecule. The magnitude of dipole-dipole forces in different polar molecules is predicted on the basis of the polarity of the molecules, which in turn depends upon the electronegativities of the atoms present in the molecule and the geometry of the molecule (in case of polyatomic molecules, containing more than two atoms in a molecule).
- **12.** Terminal alkyne evolve hydrogen gas on addition with sodium.
- **13.** Neutral FeCl<sub>3</sub> reacts with phenol and give violet coloured complex.

O-COCH<sub>3</sub> COOH 14. Aspirin (Acetyl salicylic acid)



- **16.** DDT is a non-biodegradable pollutant.
- **17.** Methyl isocyanate  $CH_3 N = C = O$  (MIC gas) (Fact)
- **18.** Quinoline is an alkaloid, it is not present in DNA, DNA has four nitrogenous bases in adenine, guanine, cytosine & thymine
- **19.** Phenelzine is tranquilizer. It is not an antacid.
- 20. Vitamin B and C are water soluble and Vitamin A, D, E and K are water insoluble.
- Sodium lauryl sulphate = detergent, anionic
  Cetyltrimethyl ammonium bromide = detergent, cationic
  Glyceryl oleate = detergent, non-ionic
  Sodium stearate = soap, anionic





Chloroxylenol

Penicillin



Sulphapyridine

**23.** Fact and information based.







24. Fact