

**M.Sc. CHEMISTRY  
FOURTH SEMESTER  
EVERYDAY CHEMISTRY  
MSC-405 A (MDC)**

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

**( PART-A : Objective )**

Time : 20 min.

Marks : 20

**Choose the correct answer from the following:**

*1x20=20*

- The pH of pure drinking water:  
a. 7  
b. 6  
c. 8  
d. none of the above
- Which of the following is not transition metal?  
a. Ni  
b. Co  
c. Fe  
d. K
- The constituent of paints:  
a. pigments  
b. extenders and fillers  
c. driers  
d. all of the above
- The chemical formula of white lead:  
a.  $\text{Pb}(\text{OH})_2 \cdot 2\text{PbCO}_3$   
b.  $\text{PbCO}_3$   
c.  $\text{Pb}(\text{OH})_2 \cdot 2\text{PbCl}_2$   
d. none of the above
- Which of the following is correct?  
a. Metals are good conductor of electricity.  
b. Metals are good non-conductor of electricity.  
c. Metals are not ductile.  
d. None of these.
- Intrinsic semiconductor generally:  
a. Co or Ni  
b. Si or Ge  
c. K or Na  
d. none of these
- The formula of milk of magnesia:  
a.  $\text{Mg}(\text{OH})_2$   
b.  $\text{MgCl}_2$   
c. KCl  
d. NaOH
- When oil and water are poured into the same vessel, two layers are observed with the less dense oil on top. These two liquids are said to be:  
a. immiscible  
b. insoluble  
c. hydrophilic  
d. hydrophobic
- A good surfactant will have a:  
a. hydrophilic head and a short hydrophobic tail.  
b. hydrophilic head and tail.  
c. hydrophobic head and tail.  
d. hydrophilic head and a long hydrophobic tail.

10. Glycerine is produced during production of:
- soap
  - detergent
  - grease
  - none of these
11. The 'water-loving' end of the soap molecule has a charge that is:
- positive
  - negative
  - strictly positive
  - either positive or negative
12. The property associated with water which opposes the wetting process is:
- viscosity
  - osmotic pressure
  - surface tension
  - conductivity
13. Which monomer is used in the formation of Nylon 6,6?
- Sulphur hexafluoride
  - Adipic acid
  - Sulphurous acid
  - Phthalic acid
14. Three dimensional molecules with cross links are formed in the case of a:
- thermoplastic polymers
  - thermosetting polymers
  - both (a) and (b)
  - none of these
15. Which of the following is an example of Elastomer?
- Nylon 6,6
  - Polyesters
  - Polyethene
  - Neoprene
16. The number average molecular mass and weight average molecular mass of a polymer are respectively 30,000 and 40,000. The polydispersity index of the polymer is
- <1
  - >1
  - 1
  - 1
17. When two or more chemically different monomers are polymerized to form a long molecular chain without removal of any small molecule, then the process is known as:
- addition polymerization
  - condensation polymer
  - copolymerization
  - none of these
18. Melting point of fat is \_\_\_\_\_ and melting point of oil is \_\_\_\_\_.
- high, high
  - high, low
  - low, low
  - low, high
19. Saponification is hydrolysis:
- by alkalis
  - by acids
  - by salts
  - by alcohols
20. Greenhouse gases which is present in very high quantity is:
- Propane
  - Ethane
  - Methane
  - Carbondioxide

( PART-B : Descriptive )

Time : 2 hrs. 40 min.

Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

- What are Surfactants? Give the mechanism of cleansing action of soap. 5+5=10
  - Explain the following terms with one example in each case:
    - Oil
    - Fat
    - Enzymes
- Write the properties of metals. 5+5=10
  - Explain the properties and composition of cement.
- What is called semiconductor? Explain with examples. 5+5=10
  - What are the different constituent presents in paints? Write its application.
- Write the principle of green chemistry. 5+5=10
  - What is called water pollution? Write the sources and control of water pollution.
- Define plasticizers. 2+5+3=10
  - What is meant by degree of polymerization? How polymers are classified based on their structure? Explain with examples.
  - What is the difference between addition and condensation polymers?
- A polymer sample contains 30% molecules of molar mass 25,000, 40% molecules of molar mass 30,000 and 30% molecules of molar mass 50,000. Calculate number average molar mass and weight average molar mass of the sample. 3+4+3=10
  - What is the difference between thermoplastic polymers and thermosetting polymers? Explain.
  - What are the different strategies adopted for the development of environment friendly polymers?
- What is the effect on the environment due to carbon emission? 3+3+4=10
  - What is green house effect? What is the cause of this effect?
  - Define the following terms:
    - Eutrophication
    - Ozone layer depletion
- What are hard and soft soaps? Write the general considerations for the manufacture of soaps. 5+5=10
  - What are detergents? Write their different types and preparation of any one type.

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