

3 SEM TDC BAC (CBCS) SEC 3.1

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(Held in April–May, 2021)

CHEMISTRY

(Skill Enhancement Course)

Paper : SEC–3.1

(**Basic Analytical Chemistry**)

Full Marks : 40
Pass Marks : 16

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. Select the correct answer : 1×4=4

- (a) Soil contains
- (i) minerals
 - (ii) water and air
 - (iii) organic matter
 - (iv) All of the above

- (b) The health effect of excess fluoride in drinking water is
- (i) fluorosis
 - (ii) toothache
 - (iii) lung disease
 - (iv) intestinal infection
- (c) Cholesterol is a
- (i) lipid
 - (ii) carbohydrate
 - (iii) dietary fibre
 - (iv) vitamin
- (d) Chromatography is a physical method that is used to separate and analyse
- (i) simple mixtures
 - (ii) complex mixtures
 - (iii) viscous mixtures
 - (iv) metals

UNIT—I

2. (a) (i) What is meant by error in analytical chemistry? Write the expressions for absolute error and relative error. 1+2=3

(3)

(ii) A reaction between one mole of sodium and one mole of chloride ion should yield 42 grams of sodium chloride. In your experiment, the actual yield is 32.73 grams. Calculate the percent error of your experiment. 1

Or

(b) (i) Find the number of significant figures in each of the following : 2
 6.022×10^{23} , 0.00368, 0.3680,
 1.00×10^6

(ii) Perform the following calculations and round off the answers to the correct number of significant figures : 2

$$\frac{3.25 \times 0.08621}{4.007},$$

$$(1.0042 - 0.0034) \times 1.23$$

UNIT—II

3. (a) What is soil? Mention its important constituents. 1+2=3

(b) What are the different kinds of silicate minerals present in soil? 2

Or

Describe the usefulness of measurement of soil pH.

(4)

UNIT—III

4. (a) What is reverse osmosis? How can this technique be used in the purification of water? 1+2=3

Or

Discuss the different processes involved in the purification of water sample. 3

(b) Discuss the role of ozone as a water disinfectant. 2

Or

Describe Arsiron Nilogon.

UNIT—IV

5. Answer any two questions of the following : 3×2=6

(a) What are cholesterol? What are good and bad cholesterol? Why are they so called?

(b) What are the important constituents of dietary lipid? Give examples.

(c) What is food adulteration? How will you detect the presence of (i) starch in milk, (ii) chalk powder in turmeric powder?

(5)

UNIT—V

6. Answer any *two* questions of the following : 3×2=6
- (a) What is meant by the term R_f value? On what factors does the R_f value of the compound depend? Write the importance of it.
- (b) What are the mobile and stationary phases used in paper chromatography? How does the liquid rise through the paper?
- (c) In what ways TLC is superior to paper chromatography?

UNIT—VI

7. What is ion-exchange resin? Give one example of each cation and anion exchange resins with structures. Discuss one application of ion-exchange resins. 2+1+2=5

Or

What is the basic principle of ion-exchange chromatographic technique? Discuss briefly. What is meant by total exchange capacity of a resin? 3+2=5

(6)

UNIT—VII

8. (a) What are deodorants? Mention two important ingredients of deodorants. Differentiate between deodorant and antiperspirants. 1+1+1=3
- Or*
- Discuss the role of any three minor ingredients used in the cosmetic formulation.
- (b) Give examples of any two cosmetics which are used for hygiene purpose. 2
