

2022

3rd Semester Examination

CHEMISTRY (General)

Paper : SEC 1-T

(CBCS)

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

[Basic Analytical Chemistry]

Full Marks : 25

Time : Two Hours

Group - A

1. Answer any **three** questions below : $2 \times 3 = 6$

- (a) State with examples what is standard deviation.
- (b) What is dissolved oxygen (DO)?
- (c) What does mean of alkalinity of water?
- (d) Define food adulteration.
- (e) Retention time in chromatography depend on which factors?

P.T.O.

(2)

Group - B

Answer any **two** questions below : $5 \times 2 = 10$

2. (a) (i) Define cosmetics.
(ii) What are the major and minor constituents of cosmetics?
(b) What is the mobile phase in chromatography?
 $2+2+1$
3. (a) Write the principles of separation of Fe^{3+} and Al^{3+} using paper chromatography.
(b) What are the major disadvantages of TLC? $3+2$
4. (a) What pH range is used to (a) measurement mineral acidity and (b) total acidity in water?
(b) Write down the importances of soil analysis. $3+2$

Group - C

Answer any **one** question below : $9 \times 1 = 9$

5. (a) What are the differences between precision and accuracy?
(b) What is chelation? Define chelating agent with an example.
(c) How do you identify malachite green in green vegetables like chilli, peas, etc?
(d) Write a short note on R_f factor. $2+2+2+3$

6. (a) Write down the source and detection method of the following natural colours
- (i) caramel, (ii) curcumin and (iii) betanin
- (b) Write down the different applications of ion-exchange chromatography.
- (c) Why a polythene bottle is not used to store EDTA?
- (d) State the name of reagent which is used to estimate aluminium gravimetrically in deodorants.

4+2+2+1

বঙ্গানুবাদ

বিভাগ - ক

1. নিচের যেকোনো তিনটি প্রশ্নের উত্তর দাও : $2 \times 3 = 6$

- (a) প্রমাণ বিদ্যুতি কী তা উদাহরণসহ বলো?
- (b) দ্রবীভূত অক্সিজেন (DO) কী?
- (c) ক্ষারত্ব (Water) বলতে কী বোঝায়?
- (d) খাদ্যে ভেজালের সংজ্ঞা দাও।
- (e) ক্রোমাটোগ্রাফিতে ধরে রাখার সময় কোন বিষয়ের উপর নির্ভর করে?

P.T.O.

OR

[Chemo Informatics]

Full Marks : 40

Time : Two Hours

1. Answer any *five* of the following : $2 \times 5 = 10$

- (a) What is molecular descriptor? What are the types of molecular descriptors?
- (b) What do you understand by molfiles and sfiles?
- (c) What are the differences between ligand based and structure based drug design?
- (d) What is QSAR in chemoinformatics?
- (e) What are the different types of electronic effects present in organic molecules?
- (f) Explain the importance of adjacency matrix.
- (g) What is HTS analysis?
- (h) What are the benefits of visual screening?

2. Answer any *four* of the following : $5 \times 4 = 20$

- (a) Discuss different types of notations to represent a chemical structure.
- (b) Write an explanatory note on ligand-based and structure based drug design.
- (c) Write notes on structure and sub-structure searching.

- (d) What is computer assisted structure elucidation and computer assisted synthesis design?
- (e) Discuss modeling toxicity.
- (f) Describe the applications of chemoinformatics in drug design.

3. Answer any **one** of the following : 10×1=10

- (a) Discuss the following terms in details related to drug design : target identification and validation, lead identification and optimization, virtual screening.
- (b) Describe the basics of computation of physical and chemical data, structure descriptors and data visualization.

বঙ্গানুবাদ

1. নিচের যেকোনো **পাঁচটি** প্রশ্নের উত্তর দাও : 2×5=10

- (a) ‘Molecular descriptor’ কি? ‘Molecular descriptor’-এর প্রকারগুলি কি কি?
- (b) ‘Molfiles’ এবং ‘sdfiles’ দ্বারা কি বোঝ?
- (c) ‘Ligand based’ এবং ‘structure based drug design’-এর মধ্যে পার্থক্য কী?
- (d) Chemoinformatics-এ QSAR কি?
- (e) ‘Organic molecules’-এ উপস্থিত বিভিন্ন ধরনের ‘electronic effect’ গুলি কী কী?

P.T.O.