

2019

B.Sc.

4th Semester Examination  
**CHEMISTRY (Honours)**

Paper - SEC-2T

*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 : 2 Hours

**Group - A**

1. Answer any *three* questions : 3×2=6
- (a) What is mono sodium glutamate ? State its uses.
  - (b) What type of materials are present in a soil ?
  - (c) Distinguish between accuracy and precision.
  - (d) What is meant by  $R_f$  value ?
  - (e) What are chromatoplates in TLC ?

[ Turn Over ]

**Group - B**

2. Answer any *two* questions.  $2 \times 5 = 10$
- (a) "Sample Size" is playing a vital role in detecting the systematic error"—Explain.  $3+2$
- (b) Express the result with significant figures :  
 $25.4623 + 0.620 - 8.14302$
3. (a) What are the functions of food preservatives ?
- (b) Name the type of foods preserved by Sugar, Salt and Oil.  $2+3$
4. (a) 'TLC is superior to other type of chromatographic methods'—Explain.
- (b) Is purified water the same as distilled water ?
- (c) What is Ion exchange Capacity ?  $2+2+1$

**Group - C**

5. Answer any *one* question.  $2 \times 5 = 10$
- (a) Why are the Magnesium 'trisilicate and Amylacetate used in cosmetics ?  $2+2+2+3$
- (b) What happens if the pH of the soil is too low or high ?
- (c) Suggest reason for the observation that species are eluted in the order of decreasing molecular size.
- (d) Explain the separation of Lanthanides by ion exchange method.

6. (a) 'High precision of the data does not warrant high accuracy of the result'—Explain.

2+3+2+2

- (b) Name the raw materials required for manufacture of the following —

(i) Talcum powder.

(ii) Lip stick

- (c) What is Reversed phase partition TLC ?

- (d) What is the principles of paper chromatography ?

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**(Chemistry of Cosmetics and Perfumes)**

Full Marks : 25

Time : 2 Hours

1. Answer any *three* (03) questions out of *five* (05) questions 02 marks of each.

3×2=6

(a) Write down the use of Suntan lotion.

(b) What is the difference between tooth paste and tooth powder ?

2

(c) Write down the ingredients present in face powder.

2

(d) What is cream ? How many types of creams are found in the market ?

2

[ Turn Over ]

- (e) What is talcum powder ? Write down the use of talcum powder. 2
2. Answer any two (02) questions out of three (03) questions carrying 05 marks of each.  $2 \times 5 = 10$
- (a) What is the importance of Anti-Wrinkled cream ? Write the composition of Anti Wrinkled cream. 3+2
- (b) What are the beneficial effects of Shampoo ? Explain the composition of Egg Shampoo. 3+2
- (c) Describe the composition and functions of liquid foundation. 5
3. Answer any *one* (01) question out of *two* (02) questions carrying 09 marks of each.  $1 \times 9 = 9$
- (a) What are the functions of lipstick ? Write the composition of lipstick. Describe the functions and compositions of Eye shadow. 2+2+5
- (b) What do you understand by the term Anti-perspirant and deodorant ? Explain the composition of liquid Anti-perspirant. Which shampoo will you suggest for oily hair ? 4+3+2
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**(Pesticide Chemistry)**

Full Marks : 40

Time : 2 Hours

**Part - I**Answer any *five* questions.

5×2=10

1. (a) What is pesticides ?
- (b) Give examples of one natural and one synthetic pesticides.
- (c) Write two benefits of pesticides.
- (d) Write two adverse effects of pesticides.
- (e) Write down the full form of DDT.
- (f) What is carbofuran ?
- (g) Write the structure of parathion.
- (h) What do you mean by biopesticides ?

**Part - II**Answer any *four* questions.

4×5=20

2. (a) What are the changing concepts of pesticides ?  
5
- (b) Write the preparation and use of DDT. 5
- (c) Write the synthesis/technical manufacture of *carbofuran* and mention its uses. 5

[ Turn Over ]

- (d) Explain the structure activity relationship in pesticides chemistry ? 5
- (e) What is malathion ? Write its synthesis and use. 5
- (f) Write down the classification of pesticides with example in each type. 5

### Part - III

Answer any *one* question.  $1 \times 10 = 10$

3. Write down the preparation/synthesis (with flow chart), uses and environmental effect of (a) Butachlor and (b) Chloranil. 5+5
4. Write down the preparation/synthesis (with flow chart) uses, and environmental effect of (a) Alachlor and (b) Gammexene. 5+5

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### (Fuel Chemistry)

Full Marks : 40

Time : 2 Hours

### Group - A

1. Answer any *five* questions.  $5 \times 2 = 10$
- (a) What is bio-diesel ?
- (b) Define flash point and ignition temperature ?

- (c) Write down the composition of water gas.
- (d) What is power alcohol and what is its use ?
- (e) Define cloud point of lubricating oil.
- (f) Mention use of Vinylacetate.
- (g) What are the constituents of coal as determined by proximate analysis ?
- (h) Define octane number and its significance.

**Group - B**

Answer any *four* questions. 4×5=20

- 2. What do you understand by HTC  $\Delta$  LTC of coal ?  
Write down the usefulness of each process. 3+2
- 3. (a) What are the characteristics of lubricants ? 3  
(b) Give example and use of two solid lubricants ?  
2
- 4. Write short notes on renewable sources of energy ?  
5
- 5. (a) What is biofuel ? 2  
(b) Discuss in brief about “gobar gas as biogas”.  
3
- 6. (a) What is CNG and what is its composition ? 2  
(b) What are the advantages of CNG over other  
fuels ? 3

[ Turn Over ]

7. (a) What is the calorific value of a fuel ? 2  
(b) Distinguish between GCV & NCV. 3

**Group - C**

Answer any *one* question.  $1 \times 10 = 20$

8. (a) What is petroleum crude ? 1  
(b) Write down the name and composition of various fractions of fractional distillation of crude petroleum. 4  
(c) What are the benefits of coal gasification ? 2  
(d) How can biofuel be an ideal substitute of fossil fuel and help in solving global energy crisis. 3
9. (a) How to prepare producer gas and what is its constituents. 2  
(b) What are the advantages of synthetic lubricant over natural lubricants ? 2  
(c) What is LPG and CNG ? 2  
(d) Explain the significance of ultimate analysis of coal. 2  
(e) What is knocking and antiknocking ? 2
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