



## UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Spring 2023

Paper: Applied Chemistry (Sp. Theory-I)

Course Code: CHEM-415

Roll No. ....

Time: 3 Hrs. Marks: 60

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED**

**Q.1. Answer the following short questions: (15x2=30)**

1. Name any four different unit operations treatment of crude oil.
2. What do you understand about migration?
3. Explain the term isomerization.
4. Define octane number of fuel?
5. What are the products of catalytic cracking?
6. Write any four fractions with carbon range obtained from fractional distillation.
7. What are environmental problems associated with pulp manufacturing.
8. Why non-fibrous materials are removed in paper manufacturing?
9. Which agriculture waste is used in paper manufacturing?
10. What is the role of beating process in paper manufacturing?
11. Write down applications of potash fertilizers.
12. What are raw materials for ammonia synthesis?
13. Give two examples of micro and macro nutrients for soil.
14. What are natural organic fertilizers, give examples.
15. What is the difference between normal superphosphate and triple superphosphate fertilizers?

**Q.2. Answer the following questions. (6x5=30)**

1. Explain refining process in petroleum industry; also write down its main products.
2. What is catalytic reforming and why it is used?
3. Compare Sulphate and Sulphite processes for paper manufacturing.
4. Explain paper manufacturing through cylindrical machine.
5. Write raw materials, chemical reactions in production of urea and its assimilation in soil.
6. Describe different types of calcium fertilizers; write important raw materials used for their manufacturing.



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# UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2023

Paper: Applied Chemistry (Sp. Theory-I)

Course Code: CHEM-415

Roll No. 024

Time: 3 Hrs. Marks: 60

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED**

Q.1. Answer the following short questions:

(15x2=30)

1. What do you know about abiogenic petroleum theory?
2. Write two examples of fractional distillation.
3. What is catalytic cracking?
4. What are the products of refining?
5. What is catalytic alkylation?
6. Briefly explain sulphite pulping process.
7. What is meant by calendering in paper manufacturing?
8. Give at least two examples of agriculture wastes for paper manufacturing.
9. Why debarking is important for pulp manufacturing?
10. How paper industry causes water pollution?
11. What are indirect fertilizers, give two examples.
12. Write down the temperature and catalyst conditions for Haber's process?
13. Briefly explain urea assimilation in soil.
14. What are potash fertilizers, give two examples.  $KCl, K_2SO_4$
15. What is the role of macro nutrients?

Q.2. Answer the following questions.

(6x5=30)

1. Describe the composition of crude petroleum.
2. Explain the catalytic reforming of crude oil highlighting the main steps involved.
3. Describe the different types of raw materials for paper making.
4. Explain the Kraft process of pulp manufacturing.
5. Give a brief overview of nitrogenous fertilizers.
6. What are triple superphosphates, write down important chemical reaction involved for their synthesis.



## UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Seventh Semester – Fall 2022

Paper: Applied Chemistry (Sp. Theory-I)

Course Code: CHEM-415

Roll No. 034539

Time: 3 Hrs. Marks: 60

**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED**

Q.1. Answer the following short questions:

(15x2=30)

1. Name four processes in chemical treatment of petroleum products.
2. What do you understand about migration?
3. Explain the term isomerization.
4. What are products of refining?
5. What is octane number of fuel?
6. Briefly explain the soda pulping?
7. What do you know about acidic digestion process?
8. What are environmental problems associated with pulp manufacturing?
9. Name four raw materials for paper industry.
10. Why lignin is removed from pulp?
11. What are the main raw materials for ammonia production?
12. Write down the action of calcium cyanamide as fertilizer.
13. Give examples of phosphate fertilizers?
14. What are raw materials for normal superphosphate fertilizers?
15. Name few natural organic fertilizers.

Q.2. Answer the following questions.

(6x5=30)

UA

1. Briefly explain fractional distillation of petroleum.
2. What is catalytic reforming and why it is used?
3. Explain Kraft process for making manufacturing.
4. Discuss the wet process in paper manufacturing.
5. Explain urea synthesis with chemical equations and flow sheet diagram.
6. Describe different types of calcium fertilizers; write raw materials used for their manufacturing.





# UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : Seventh Semester – Fall 2021

Roll No. ....

Paper: Applied Chemistry (Sp. Theory-I)

Course Code: CHEM-415

Time: 3 Hrs. Marks: 60

**Q.1. Answer the following short questions:**

**(15x2=30)**

1. Name any two fractions with carbon range obtained from fractional distillation of petroleum.
2. What is reforming?
3. Describe catalytic cracking.
4. What are products of refining?
5. Why desalting of crude oil is important?
6. Explain bleaching of paper pulp.
7. What is soda pulping?
8. Why is wheat straw preferred over rice straw for paper pulp?
9. What is beating process of paper production?
10. How paper pulp manufacturing causes water pollution?
11. Write down the action of calcium cyanide as fertilizer.
12. Give two examples of phosphate fertilizers?
13. What are raw materials for normal superphosphate fertilizers?
14. Name few natural organic fertilizers.
15. Differentiate between micro & macro nutrients.

**Q.2. Answer the following questions.**

**(6x5=30)**

1. Discuss C4 alkylation process with the help of flow sheet diagram.
2. What is octane number of fuel and how it can be improved?
3. What is debarking, how it is carried out, explain its significance in pulp manufacturing.
4. Explain Kraft process for making manufacturing.
5. Describe manufacturing of ammonia by Haber's process.
6. What are triple superphosphates, write down their important properties and applications.



**UNIVERSITY OF THE PUNJAB**  
**B.S. 4 Years Program :Seventh Semester – 2020**

Roll No. ....

Paper: Applied Chemistry (Sp. Theory-I)  
Course Code: CHEM-415

Part – II

Time: 2 Hrs. 45 Min. Marks: 50

**ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED**

**Q.2. Give short answers of the following: (10x2=20)**

- 1) Mention different unit operations/processes involved in treatment of crude oil.
- 2) What do you understand about migration of oil?
- 3) What is catalytic alkylation?
- 4) How prilling is carried out during urea manufacturing?
- 5) What is the role of beating in pulp refining?
- 6) Write down the action of ammonium sulfate as fertilizer.
- 7) Briefly explain Kraft pulping process?
- 8) Write down the temperature and catalyst conditions for Haber's process?
- 9) What kind of agriculture waste is used to make paper?
- 10) What is the significance of potash fertilizers?

**Answers the following questions. (3x10=30)**

- |      |     |   |   |
|------|-----|---|---|
| Q 3. | (a) | Briefly explain refining process in petroleum industry; also write down its products. | 5 |
|      | (b) | Discuss the catalytic cracking process.   | 5 |
| Q 4. | (a) | Describe all the raw materials used in paper manufacturing.                           | 5 |
|      | (b) | Write Sulphite process of pulp production.  | 5 |
| Q 5. | (a) | Briefly explain the classification of fertilizers.                                    | 5 |
|      | (b) | Describe urea manufacturing process, also mentioning its applications.                | 5 |

8. Which process is used for converting straight chain hydrocarbons into branched hydrocarbons?

- |                   |               |
|-------------------|---------------|
| (a) Cracking      | (b) Reforming |
| (c) Aromatization | (d) Nitration |

9. Newspaper can be recycled maximum

- |                 |                |
|-----------------|----------------|
| (a) Two times   | (b) four times |
| (c) Three times | (d) Five times |

10. Which parameter is indicative of fuel quality?

- |                           |                   |
|---------------------------|-------------------|
| (a) Iodine number         | (b) Octane number |
| (c) Saponification number | (d) Cetane number |



## UNIVERSITY OF THE PUNJAB

Seventh Semester – 2019

Examination: B.S. 4 Years Program

Roll No. ....

PAPER: Applied Chemistry (Sp. Theory-I)

Course Code: CHEM-415 Part – II

MAX. TIME: 2 Hrs. 45 Min.  
MAX. MARKS: 50

**ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED**

**Q.2. Explain the short questions.**

(10 x 2 = 20)

- Name any four fractions with carbon range obtained from fractional distillation of petroleum.
- Explain the term isomerization.
- Mention different unit processes in treatment of crude oil.
- Briefly explain urea assimilation in soil?
- Name four raw materials for paper industry.
- What is the role of sweetening process in crude oil refining?
- Write down the temperature and catalyst conditions for Haber's process?
- What do you understand about migration?
- Differentiate between micro and macro nutrients.
- Why desalting of crude oil is important?

**Q.3. Explain the detailed questions.**

(3 x 10 = 30)

- |        |  |   |
|--------|--|---|
| 1. (a) | Discuss C4 alkylation process with the help of flow sheet diagram  | 6 |
| (b)    | What is Octane number and how it can be improved.  | 4 |
| 2. (a) | Explain Kraft process for manufacturing of pulp with flow sheet diagram.   | 6 |
| (b)    | Explain paper making in Fourdrinier machine.   | 4 |
| 3. (a) | Write down urea synthesis with chemical equations and flow sheet diagram.  | 5 |
| (b)    | Differentiate between calcium superphosphate and triple super phosphate, give examples and their important properties. | 5 |



# UNIVERSITY OF THE PUNJAB

Seventh Semester 2018  
Examination: B.S. 4 Years Programme

Roll No. ....

PAPER: Physical Chemistry (Sp. Theory-I)  
Course Code: CEHM-403

TIME ALLOWED: 2 hrs. & 30 mins.  
MAX. MARKS: 50

*Attempt this Paper on Separate Answer Sheet provided.*

Q. 2 Attempt all questions:

(2x10=20)

- What is meant by enzyme inhibition?
- What do you mean by critical micelle concentration (CMC)?
- What is emulsification? Explain.
- Write two points of difference between colloid and sols.
- Name different types of sols.
- Define electropersis with examples.
- Define autocatalysis.
- Differentiate between gels and emulsions.
- What do you mean by colloidal dispersion?
- What is the effect of surface area on adsorption?

Q. 3 (a) Explain Langmuir-Hinshelwood mechanism to study inorganic reactions. (6)

(b) Discuss heterogeneous kinetics of single system reactions. (4)

Q. 4 (a) How the particle size of sols is determined? Explain. (5)

(b) What are Adsorption Isotherm<sup>s</sup>? Explain. (5)

Q. 5 (a) Discuss peroperties of suspensions in detail. (6)

(b) Explain Michaelis menion mechanism for enzyme catalysis. (4)



# UNIVERSITY OF THE PUNJAB

Seventh Semester 2017  
Examination: B.S. 4 Years Programme

Roll No. ....

PAPER: Applied Chemistry (Sp. Theory-I)  
Course Code: CHEM-415

TIME ALLOWED: 2 hrs. & 30 mins.  
MAX. MARKS: 50

*Attempt this Paper on Separate Answer Sheet provided.*

## Short Questions

Briefly answer following question?

10 × 2 = 20

1. What is the role of sweetening process in crude oil refining?
2. Describe the chemistry of platforming?
3. Name four raw materials for paper industry.
4. Why phosphorus is considered as macro nutrient?
5. Write down applications of potash fertilizers.
6. Discuss the function of urea as fertilizer.
7. Why isomerization of light naptha is carried out?
8. Why desalting of crude oil is important.
9. Briefly explain the significance of beating in pulping process.
10. What is abiogenic theory of petroleum origin?

## Subjective Part

10 × 3 = 30

- |      |     |   |   |
|------|-----|---|---|
| Q 1. | (a) | Describe sulphate process of pulp manufacturing.                              | 5 |
|      | (b) | Explain paper making in Fourdrinier machine.                                  | 5 |
| Q 2. | (a) | Discuss C <sub>4</sub> alkylation process with the help of flow sheet diagram | 6 |
|      | (b) | What is Octane number and how it can be improved.                             | 4 |
| Q 3. | (a) | Write down urea production on industrial scale?                               | 5 |
|      | (b) | Discuss Calcium superphosphate manufacturing.                                 | 5 |