

INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY  
BARGARHOLI, WAHATIPUR, LAKEPUR, SALTANA, RAJASTHAN  
DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY  
ANNUAL EXAMINATION NOV/DEC-2017 (2014 REGULATION)

Semester: I Year

Subject Code & Name: 1.4 APPLIED CHEMISTRY

Time: 3 Hours

Max. Marks: 80

**Part-A**

**2 X 10 = 20 Marks**

**Answer all questions.**

1. What is the difference between hard and soft water?
2. Define oxidizing agent and give two examples
3. Write the chemical formula of caustic soda
4. Mention two uses of sodium hydro sulphite
5. What do you mean by a soap?
6. Give any two chemical properties of NaOH.
7. Define polymer with two examples
8. Draw the structure of naphthalene.
9. Write any two examples for carbohydrate
10. Define solvent.

**Part-B**

**(4+8) X 5 = 60 Marks**

11. A) Explain water softening process by Clark's method.  
B) What are the disadvantages of hard water in textile industry?  
(Or)  
C) Write a note on calgon process.  
D) What is a catalyst? Classify the catalysts
12. A) What is Glauber's salt? Mention its uses.  
B) Explain the properties and uses of  $\text{Na}_2\text{CO}_3$ .  
(Or)  
C) Mention any two reactions of NaOH.  
D) Elaborate the uses of  $\text{H}_2\text{SO}_4$ .
13. A) How will you synthesize sodium chlorite.  
B) Write the formula and uses of sodium sulfoxylate formaldehyde.  
(Or)  
C) Explain the manufacturing process of Sodium Hypo Chlorite.  
D) Write the chemical name and properties of bleaching powder.

14. A) Explain addition reaction with suitable example.

B) What are the chemical properties of benzene?

(Or)

C) Differentiate saturated and unsaturated compounds.

D) Sketch the structure of aniline, benzene and anthracene and explain their properties.

15. A) Define detergent. How is it different from a soap?

B) Explain the properties of any carbohydrate.

(Or)

C) Mention the uses of glucose.

D) Write notes on addition and condensation polymerization.

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**INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY**

**BARGARH/GUWAHATI/FULIA/JODHPUR/SALEM/VARANASI/CHAMPA/KANNUR/KHITI  
GADAG/SPKM VENKATAGIRI**

**DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY**

**ANNUAL EXAMINATION NOV/DEC-2017 (2011 REGULATION)**

**TIME: 3 HOURS**

**Max.marks:80**

**I SEMESTER**

**1.4 APPLIED CHEMISTRY**

**Part-A**

**2 X 10 =20 Marks**

1. Define hard water?
2. What do you mean by an oxidation reaction?
3. Write the chemical formula of sodium hydro sulphite.
4. Mention two uses of NaOH.
5. Define a detergent.
6. Write two uses of Glauber's salt
7. What is polymerization?
8. Mention two uses of naphthalene.
9. Sketch the structure of glucose.
10. What is PVC?

**Part-B**

**(4+8) X 5 =60 Marks**

11. A) Write in detail about calgon process.  
B) What are the disadvantages of hard water in textile industry?  
(Or)  
C) Explain one method to remove hardness of water.  
D) Give detailed processing of Clark's method to soften water.
12. A) Write the chemical properties of HCl.  
B) Explain the properties and uses of sulphuric acid.  
(Or)  
C) Mention any two reactions of NaOH.  
D) State the uses of  $\text{Na}_2\text{CO}_3$ .

13. A) Write the uses of Rongalite-C.

B) Mention the properties and uses of  $\text{H}_2\text{SO}_4$ .

(Or)

C) Explain the manufacturing process of sodium chlorite.

D) Write the properties and uses of  $\text{H}_2\text{O}_2$ .

14. A) Give two examples for saturated and unsaturated compounds each.

B) Write the chemical properties of naphthalene?

(Or)

C) Sketch the structure of benzene and anthracene

D). Explain addition and substitution reactions with suitable examples.

15. A) Explain condensation polymerization.

B) Write the properties and uses of any carbohydrate.

(Or)

C) Define chain growth and step wise polymerization with suitable examples.

D) Write notes on cellulose.

# INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

BARGARH/FULIA/GUWAHATI/JODHPUR/SALEM/VARANASI/CHAMPA/KANNUR/KHITI GADAG/SPKMIHT VENKATGIRI

## DIPLOMA IN HANDLOOM & TEXTILE TECHNOLOGY

FIRST SEMESTER (OLD SYLLABUS BACK PAPER) EXAMINATION – APRIL/MAY-2016

### 1.4 APPLIED CHEMISTRY

Time: 3 Hours

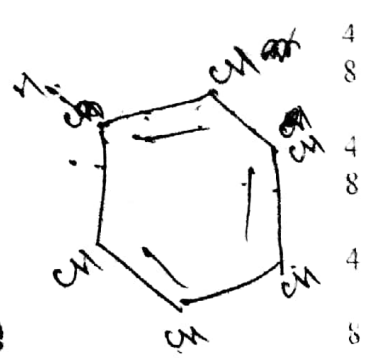
Max. Marks: 80

Answer all the questions within two or three sentences:

1. i) Mention any two constituents present in water that are responsible for hardness. 20
- ii) Define oxidation and reduction.
- iii) Mention any two uses of Glauber's salt (Sodium sulphate).
- iv) Write any two chemical properties of sodium hydroxide.
- v) Give the molecular formula for the bleaching powder.
- vi) Mention any two uses of sodium sulphonylate formaldehyde.
- vii) Sketch the structure of benzene.
- viii) Give the chemical formula for anthracene.
- ix) Define polymerization.
- x) Write the chemical formula for polycynylchloride.

Answer All the questions in detail:

- II. a) List out the general characteristic of catalytic reaction. 4
- b) Discuss in detail about the water softening process by permutit method. 8
- OR
- c) Write a note on expression of hard water. 4
- d) Give different types of catalysts with specific examples of each. 8
- OR
- e) Write about the uses of HCl. 4
- f) Elaborate the uses and properties sodium hydroxide. 8
- OR
- g) Write the uses of sodium carbonate. 4
- h) Describe both physical and chemical properties of sulphuric acid. 8
- i) Write two chemical properties of bleaching powder. 4
- j) Elaborate the uses and properties of Rongalite C. 8
- OR
- k) Write any two chemical properties of hydrogen peroxide. 4
- l) Explain the manufacturing process of bleaching powder. 8
- m) Write in detail about the closed chain or cyclic compounds. 4
- n) Write the physical and chemical properties of aniline. 8
- OR
- o) Give one example for the following type of reactions. 4
- a) Addition 4
- b) Substitution 8
- p) Write the physical and chemical properties of naphthalene. 8
- VIa) Write a short note on synthetic detergents. 4
- b) Write a note on addition polymerization with example. 8
- OR
- a) Write the chemical structure of wool. 4
- b) State the properties and uses of starch. 8



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BARAKAULIA/GUWAHATI/JODHPUR/SALEM/VARANASI/CHAMPA/KANNUR/KHILGADAG/SPKMIHT VENKATAGIRI

DIPLOMA IN HANDLOOM & TEXTILE TECHNOLOGY  
FIRST YEAR (REGULAR & BACK PAPER) – APRIL/MAY-2016

1.4 – Applied Chemistry

Max Marks: 80

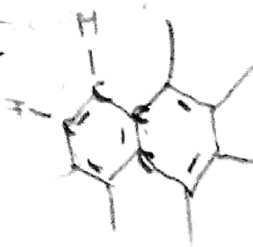
Time: 3 Hrs

## PART A

I. Answer all questions within TWO to THREE Sentences.

(2 x 10 = 20)

- Define Hard Water.
- What is meant by oxidizing agents?
- Mention any two uses of caustic soda.
- Write any two chemical properties of Glauber's salt.
- Give the chemical name of caustic soda and soda ash.
- Mention any two properties of hydrogen peroxide.
- Sketch the structure of naphthalene.
- Give the chemical formula of aniline.  $C_6H_5NH_2$
- Define polymerization.
- Write the chemical formula for polyethylene.



Answer the following questions in details.

II.

a) Write about the water softening process by Clark's method.

(4)

b) Discuss in detail about the disadvantages of hard water.

(8)

OR

c) Write short note on calgon process.

(4)

d) Define catalyst and discuss their types in detail.

(8)

III.

a) Write about the uses of sulphuric acid.

(4)

b) Elaborate the uses and properties sodium carbonate.

(8)

OR

c) Write the uses of sodium hydrosulphite.

(4)

d) Describe in detail about the properties and uses of hydrochloric acid.

(8)

P.T.O.

- IV. a) Write about the synthesis of sodium chlorite. (4)  
b) Elaborate the uses and properties sodium sulfoxylate formaldehyde. (8)

OR

- c) Write about the manufacturing process of hydrogen peroxide. (4)  
d) Write about the physical and chemical properties of bleaching powder. (8)

- V. a) Explain saturated and unsaturated compounds with examples. (4)  
b) Write the physical and chemical properties of benzene. (8)

OR

- c) Give an example for the following types of reaction. (4)  
i) Addition ii) Substitution (8)  
d) Write the physical and chemical properties of anthracene. (8)

- VI. a) Write a short note on synthetic detergents. (4)  
b) Write a note on condensation polymers with examples. (8)

OR

- a) Write in detail about the classification of carbohydrates. (4)  
b) State the properties and uses of glucose. (8)

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DIPLOMA IN HANDLOOM & TEXTILE TECHNOLOGY  
I YEAR (BACK PAPER) EXAMINATION - NOV/DEC-2015

1.4 APPLIED CHEMISTRY

Time : 3 Hours

PART-A



Max. Marks:80

(2x10=20)

I. Answer all questions in ONE or TWO sentences.

- i. What are the types of water?
- ii. Define PPM
- iii. Write two physical properties of Sulphuric Acid.
- iv. Give the chemical name of Caustic soda. Soda ash.
- v. Write any two uses of  $H_2O_2$  in textile wet processing.
- vi. Write the chemical name and structure of bleaching.
- vii. Define substitution reaction
- viii. Give any two uses of Anthracene.
- ix. Give the uses of soap.
- x. Write any two physical properties of wool.

PART-B

Answer all the questions in detail.

- I.a. Why hard water is not recommended for textile wet processing? Give your views. (04)
- b. Describe reduction reaction with suitable examples. (08)
- (OR)
- c. Explain in detail about softening of hard water by Zeolite method. (08)
- d. Describe oxidation reaction with suitable examples. (04)
- II.a. State the uses of Sodium Hydrosulphite. (04)
- b. Describe physical and chemical properties of Sodium Sulphate. (08)
- (OR)
- c. What are the uses of sodium Carbonate? (04)
- d. Write the physical and chemical properties of  $H_2SO_4$  (08)
- III.a. Write the uses of Bleaching Powder. (04)
- b. Elaborate manufacturing of Hydrogen Peroxide by Electrolytic process. (08)
- (OR)
- c. Write the uses of NaOCl. (08)
- d. Elaborate physical and chemical properties of Bleaching Powder. (08)



IV.a. Write the IUPAC name of the following compounds.

(04)

- i.  $\text{HCOOH}$
- ii.  $\text{C}_6\text{H}_5\text{NH}_2$
- iii.  $\text{CH}_3\text{COCH}_3$
- iv.  $\text{CH}_4$

b. Write the physical and chemical properties of Aniline.

(08)

(OR)

c. Define the following term (i) Diazotisation (ii) Hydrolysis.

(04)

d. Describe IUPAC system of nomenclature of organic compounds with examples.

(08)

V.a. Give the chemical structure of Acrylic.

(04)

b. Define carbohydrates and give their classification.

(08)

(OR)

c. What are the types of polymerization reactions?

(04)

d. Write short notes on (i) Glucose (ii) Fructose (iii) Sucrose (iv) Lactose.

(08)

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DIPLOMA IN HANDLOOM & TEXTILE TECHNOLOGY  
FIRST SEMESTER (BACK PAPER) EXAMINATION – NOV/DEC-2015

1.4 – APPLIED CHEMISTRY

TIME: 3 HOURS

MAX. MARKS : 80

PART - A



Answer all the questions within two or three sentences:

(2X10=20)

- I. i. Give the sources of water.
- ii. What is the reason for water hardness?
- iii. Write two physical properties of sodium sulphate,
- iv. Give the chemical formula for water and oxygen.
- v. Write any two uses of Sodium hypochlorite in textile wet processing.
- vi. Give the chemical name of Rongalite-C.
- vii. Define addition reaction.
- viii. Write any two uses of aniline.
- ix. Give the uses of synthetic detergents.
- x. Give any two examples of Carbohydrates.

PART - B

Answer all the questions in detail:

- II. a. Write short notes on enzyme catalysts. (04)
- b. Explain in detail about Calgon process. (08)

OR

- c. State the disadvantages of hard water. (04)
- d. Explain in detail about oxidation and reduction with suitable example. (08)

- III. a. Give the uses of Glauber's salt. (04)
- b. Describe physical and chemical properties of Sodium hydrosulphite. (08)

OR

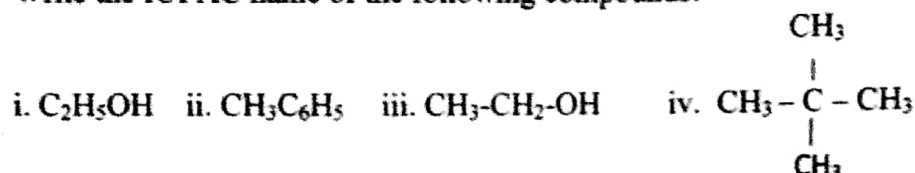
- c. What are the uses of Sodium hydroxide? (04)
- d. Write the physical and chemical properties of HCl. (08)

- IV. a. Write the uses of Sodium chlorite. (04)  
 b. Explain about physical and chemical properties of Sodium sulfoxylate formaldehyde. (08)

OR

- c. What are the uses of Hydrogen Peroxide? (04)  
 d. Bring about manufacturing of bleaching powder by using Bachmann's plant. (08)

- V. a. Write the IUPAC name of the following compounds: (04)



- b. Write the physical and chemical properties of benzene. (08)

OR

- c. Give the classification of organic compounds. (04)  
 d. Write the physical and chemical properties of Anthracene. (08)

- VI. a. Give the chemical structure of Nylon. (04)  
 b. Elaborate polymerization and copolymerization with examples. (08)

OR

- c. What are the types of polymers? (04)  
 d. Define carbohydrates and give their classification. (08)

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DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY  
FIRST YEAR (2014 - REGULATION) EXAMINATION - NOV/DEC-2016  
**1.4 APPLIED CHEMISTRY**

**Time: 3 Hours**

**Max.Marks: 80**

**PART - A**

**(2X10=20)**

**I Answer all questions within TWO to THREE sentences.**

- i) Define hardness of water.
- ii) Write a short note on Promotor with suitable example.
- iii) Mention two uses of sodium hydro sulphite.
- iv) Write chemical formula for Glauber's salt.
- v) Give two uses of hydrogen peroxide.
- vi) Give chemical formula for Rongalite-C.
- vii) Write a short note on diazotisation.
- viii) Sketch the structure of benzene.
- ix) Define carbohydrate with suitable example.
- x) Write the chemical formula for PVC.

**PART B**

**(5 X 12= 60)**

**II. Answer all the questions in detail**

- A) Write a short note on Calgon's conditioning. (4)  
B) Mention the disadvantages of hard water. (8)

(OR)

- C) Define Reducing and Oxidizing agent with suitable example. (4)  
D) Define catalysis and describe the various type of catalyst. (8)

**III. A) Write the chemical properties of  $H_2SO_4$ . (4)**

**B) Explain in detail about chemical properties of  $Na_2SO_4$ . (8)**

(OR)

**C) Write about the uses of caustic soda. (4)**

**D) Elaborate the properties and uses of sodium carbonate. (8)**

**IV. A) Brief note on manufacturing of Sodium chlorite. (4)**

**B) b) Write the properties and uses of Sodium sulphonylate formaldehyde. (8)**

(OR)

**C) Write a short note on manufacture of Sodium hypo chlorite. (4)**

**D) Discuss about the detail manufacture of Bleaching powder (8)**

- V. A) Give an example of following reactions, i) Addition, ii) Hydrolysis. (4)  
B) Write the physical and chemical properties of Toluene. (8)

(OR)

- C) Explain the Saturated and Unsaturated compounds with suitable example. (4)  
D) Write the physical and chemical properties of Naphthalene. (8)

- VI. A) Define the following terms i) addition polymerization ii) condensation polymerization. (4)

- B) Explain properties and uses of Glucose. (8)

(OR)

- C) Explain the cleaning action of soap. (4)

- D) Write the chemical formula for the following, i) Silk, ii) Acrylic & iii) Nylon. (8)

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DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY  
FIRST SEMESTER (2011- REGULATION) EXAMINATION -NOV/DEC-2016

## 1.4 APPLIED CHEMISTRY

Time: 3 Hours

Max.Marks: 80

### PART - A

I. Answer all questions within TWO to THREE sentences.

(2 x 10=20)

- i) What are the types of hardness?
- ii) Write a short note on inhibitors with suitable example
- iii) Mention the two uses of Glauber's salt
- iv) Write the chemical formula for Caustic soda
- v) Mention two uses of Rongalite-C.
- vi) Give the chemical formula for Bleaching powder
- vii) Write a short note on heterocyclic compounds with suitable example.
- viii) Sketch the structure of Naphthalene
- ix) Define Polymerization
- x) Write the chemical formula for Glucose

### PART B

II. Answer all the questions in detail

(5 x 12 = 60)

- A) Discuss about calgon water softening process. (4)
  - B) Write in detail about Permutit (or) Zeolite process. (8)
- (OR)
- C) List out the general characteristics of catalyst. (4)
  - D) Explain one hardness removal method in detail. (8)

III. A) Write about the uses of HCl. (4)  
B) Describe the uses and chemical properties of NaOH (Sodium hydroxide) (8)

(OR)

- C) Mention the two uses of Sulphuric acid. (4)
- D) Elaborate the physical and chemical properties of  $\text{Na}_2\text{SO}_4$ . (8)

IV. A) Brief note on manufacturing of sodium hypo chlorite. (4)  
B) Explain in detail properties and uses of  $\text{H}_2\text{O}_2$ . (8)

(OR)

- C) Write a short note on manufacture of sodium chlorite. (4)
- D) Discuss about the detail manufacture of Rongalite-C. (8)

- V. A) Give an example of following reactions, i) Substitution, ii) Esterification. (4)  
B) Write the physical and chemical properties of Benzene. (8)  
(OR)  
C) Explain Cyclic and Acyclic compounds with suitable example. (4)  
D) Write the physical and chemical properties of Anthracene (8)
- VI. A) Define Condensation polymerization with suitable example. (4)  
B) Explain properties and uses of Starch. (8)  
(OR)  
C) Explain the Chain growth and Step wise polymerization with suitable example (4)  
D) Explain properties and uses of cellulose. (8)

**INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY**

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**DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY**

**ANNUAL EXAMINATION APRIL/MAY-2017 (2014 REGULATION)**

**Time : 3 Hours  
FIRST YEAR**

**Max. Marks : 80**

**1.4 APPLIED CHEMISTRY**

**Part – A**

**2 x 10=20 Marks**

- 1 What is soft water?
- 2 What is reducing agent?
- 3 Define Atomic weight
- 4 Write the chemical formula of Glauber's salt
- 5 Define Soap.
- 6 Write the chemical name of Rongalite-C
- 7 What is addition reaction?
- 8 Sketch the structure of Aniline.
- 9 Define polymerization
- 10 Define solvent and solute.

**PART-B**

**(4+8) x 5= 60 Marks**

- 11 A) Mention the disadvantages of using hard water in Textile Industry (4)  
B) Write about the water softening process by Permutit method. (8)
- (Or)
- C) Explain Oxidation and oxidising agents with example. (4)  
D) Define catalysis and explain the different types of catalysts. (8)
- 12 A) Write the uses of Glauber's salt. (4)  
B) Describe the chemical properties of Sodium hydrosulphite. (8)
- (Or)
- C) Write the uses of caustic soda. (4)  
D) Describe the properties and uses of sulphuric acid. (8)
- 13 A) Write the uses of Hydrogen peroxide. (4)  
B) Explain the manufacturing process of Bleaching powder. (8)
- (Or)
- C) How is Sodium hypochlorite prepared? (4)  
D) Write the properties and uses of Sodium sulphonylate formaldehyde. (8)

**PTO**



**14**      A) Explain saturated and unsaturated compounds with examples. (4)  
             B) Discuss the physical and chemical properties with uses of benzene. (8)

**(Or)**

C) Give suitable example for the following reactions: i) Substitution (4)  
ii) Hydrolysis.

D) Write the physical and chemical properties with uses of Naphthalene (8)

**15**      A)    What are synthetic detergents? Give its uses. **(4)**  
             B)    What are carbohydrates and give their classification. **(8)**

**(Or)**

C) Draw the structure of Nylon. (4)

D) What is polymerization? Give an example for Addition polymerization and Condensation polymerization. (8)

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**INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY**  
**DIPLOMA IN HANDLOOM AND TEXTILE TECHNOLOGY**

BARGARH / GUWAHATI / JODHPUR / SALEM / VARANASI / CHAMPA / KANNUR / KITHGADAG /  
SPKMIHT/ VENKATAGIRI

**ANNUAL EXAMINATION APRIL/MAY 2018**  
(REGULATION 2014)

Year/Semester : 1<sup>st</sup> Year

Time : 3 Hours

Subject Code & Name : 1.4 & APPLIED CHEMISTRY

Max. Marks : 80

**PART-A**

**2 x 10 = 20 Marks**

1. Mention any two disadvantages in using hard water for textile processes.
2. State the role of a catalyst in a chemical reaction.
3. Give any two uses of Glauber's salt.
4. Write any two chemical properties of sulphuric acid.
5. Give the molecular formulae for the  
(a) sodium hypo chlorite & (b) sodium chlorite
6. Mention any two uses of Rongalite C
7. Sketch the structure of Anthracene.
8. Give the chemical formula for Aniline.
9. Give the difference between soap and detergent.
10. Define Polymerization.

**PART-B**

**(4+8) x 5 = 60 Marks**

11. A) Highlight any four general characteristics of catalyst. (04)  
B) Discuss in detail about the water softening process by permutit method. (08)  
OR  
C) Write a note on expression of hard water. (04)  
D) Give different types of catalysts with specific examples of each. (08)
12. A) Write about the uses of  $H_2SO_4$  in Textile Industry. (04)  
B) Elaborate the uses and properties of sodium carbonate. (08)  
OR  
C) Write the uses of NaOH. (04)  
D) Describe the physical and chemical properties of HCl. (08)
13. A) Write two chemical properties of Sodium Chlorite. (04)  
B) Elaborate the uses and properties of Sodium Sulphoxilate formdehyde. (08)  
OR  
C) Write any two chemical properties of Sodium Hypochlorite. (04)  
D) Explain the manufacturing process of bleaching powder. (08)

( 2 )

14. A) Write in detail about the types of organic compounds. (04)  
B) Write the physical and chemical properties of benzene. (08)  
OR  
C) Give one example for the following type of reactions (04)  
i) Hydrolysis ii) Esterification  
D) Write the physical and chemical properties of naphthalene. (08)
15. A) Write a short note on synthetic detergents. (04)  
B) Write a note on addition polymerization with example. (08)  
OR  
C) Write the chemical structures of nylon and wool. (04)  
D) Describe the physical and chemical properties of acrylic along with its uses. (08)

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**ANNUAL EXAMINATION APRIL/MAY 2018**  
(REGULATION 2011)

Year/Semester : 1<sup>st</sup> Year

Time : 3 Hours

Subject Code & Name : 1.4 & APPLIED CHEMISTRY

Max. Marks : 80

**PART-A**

**2 x 10 = 20 Marks**

1. State any two differences between hard and soft water.
2. What is meant by reducing agents?
3. Mention any two uses of caustic soda.
4. Write any two chemical properties of Glauber's salt.
5. Give the chemical formula for hydrogen peroxide and sodium chlorite.
6. Define solvent.
7. Sketch the structure of naphthalene.
8. Give the chemical formula of anthracene.
9. Define polymerization.
10. Draw the chemical structure of cotton.

**PART-B**

**(4+8) x 5 = 60 Marks**

11. a. Write about the Clark's method of water softening process. (04)  
b. Discuss in detail about the disadvantages of hard water. (08)

OR

- c. Write a short note on calgon process. (04)  
d. Discuss the functions of oxidizing agents. (08)
12. a. Write about the uses of sulphuric acid. (04)  
b. Elaborate the uses and properties sodium carbonate. (08)

- c. Write the uses of sodium hydrosulphite. (04)  
d. Describe in detail about the properties and uses of hydrochloric acid. (08)

13. a. Write a short note on :- (04)  
i) Solute ii) Solution.  
b. Elaborate the uses and properties of bleaching powder. (08)

OR

- c. Write about the physical and chemical properties of sodium chlorite. (04)  
d. Write about the manufacturing process of hydrogen peroxide. (08)

P.T.O.....

( 2 )

14. a. Give IUPAC names for the following compounds. (04)  
1. Ethanol 2. Aniline  
b. Write the physical and chemical properties of benzene. (08)

OR

- c. Give an example for the following types of reaction (04)  
i) Addition ii) Substitution  
d. Write the physical and chemical properties of anthracene. (08)
- 15 . a. Write a short note on synthetic detergents. (04)  
b. Write a note on condensation polymers with example (08)

OR

- c. Write in detail about the classification of carbohydrates. (04)  
d. State the properties and uses of glucose. (08)

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