2024

(CBCS)

(5th Semester)

CHEMISTRY

EIGHTH (B) PAPER

(Industrial Chemistry)

(Optional Paper)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. In fertilizers, the value of K represents oxides in the form of

(a) K_2O_2 ( )

(b) K_2O ( )

(c) KO_2 ( )

(d) K_2O_3 ( )

2. Which one of the following is not important raw material for the manufacture of cement?

(a) Gypsum ( )

(b) Clay ( )

(c) Potassium oxide ( )

(d) Limestone ( )

3. Most naturally occurring monosaccharides belong to the

(a) L-series ( )

(b) S-series ( )

(c) C-series ( )

(d) D-series ( )

4. During the log phase of bacterial culture, the cell grows at

(a) maximum rate ( )

(b) zero rate ( )

(c) minimum rate ( )

(d) exponential rate ( )

5. The energy released in an explosion of 1 gram of TNT is approximately

(a) 800 joules ( )

(b) 4000 joules ( )

(c) 3000 joules ( )

(d) 1500 joules ( )

6. The use of H_2SO_4 in tanning process is to

(a) control the pH ( )

(b) soften the hairs ( )

(c) eliminate salt stains ( )

(d) achieve quick curing ( )

7. Coal gasification is the process of producing

(a) oil gas ( )

(b) syngas ( )

(c) water gas ( )

(d) producer gas ( )

8. Water gas is a mixture of

(a) CO_2 and H_2 ( )

(b) CO and H_2O ( )

(c) CO and H_2 ( )

(d) CO_2 and H_2O ( )

9. The aliphatic polyamides are generally known as

(a) Teflons ( )

(b) polyesters ( )

(c) nylons ( )

(d) resins ( )

10. The process of converting fibers directly into fabric is

(a) spinning ( )

(b) knitting ( )

(c) weaving ( )

(d) felting ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Answer the following : 3×5=15

UNIT—I

1. What are the adverse effects of excessive use of nitrogen?

OR

2. What is quartz glass? Why is it widely used for manufacture of laboratory apparatus?

UNIT—II

3. Write a brief note on microbial enzyme.

OR

4. What are reducing sugars and non-reducing sugars? Give suitable examples for each.

UNIT—III

5. What is guncotton? How is it prepared?

OR

6. Write two methods of tannery effluents treatment processes.

UNIT—IV

7. Write a brief note on octane number.

OR

8. Why is lime used in the dehairing of skins in leather industry?

UNIT—V

9. How will you prepare polyesters? Mention their uses.

OR

10. Write a brief note on the colour consideration in textile industry.

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer the following : 10×5=50

UNIT—I

1. *(a)* What are primary nutrients? Mention them. 3

(b) What is soft glass? What is its composition? 3

(c) Describe in brief about nitrogenous fertilizers like urea. 4

OR

2. *(a)* What are the essential raw materials in the manufacture of cement? 3

(b) Explain why CSP (calcium superphosphate) is the principal phosphate fertilizer. 3

(c) Using a suitable equation, describe the manufacture of calcium ammonium nitrate. 4

UNIT—II

3. *(a)* What are polysaccharides? What are their main functions? 3

(b) What are the advantages of microbial enzymes over animal or plant sources? 3

(c) What are permitted additives? Why are they used as a component in food technology? 4

OR

4. *(a)* Explain different methods of food preservation.

   (b) What do you mean by refrigerated storage of food?

   (c) What are different stages of growth of microbial culture? Illustrate with diagram.

UNIT—III

5. *(a)* What are rocket propellants? How are they classified? 3

   (b) What is tanning? How is pH controlled in tanning process? 3

   (c) Give the preparation and chemistry of the following : 2×2=4

   (i) Cordite

   (ii) Picric acid

OR

6. *(a)* What are the primary objectives of liming process? 3

   (b) How is nitroglycerine prepared? Why is it manufactured into dynamite? 3

   (c) Describe the process of tanning of skins in leather industry. 4

UNIT—IV

7. *(a)* What are coal tar-based chemicals? 3

   (b) Write a brief note on the environmental impact of burning of coal. 3

   (c) Explain briefly on the process of refining of petroleum. 4

OR

8. *(a)* What are fuels? How are they classified? 3

   (b) What is allothermal process of coal gasification? 3

   (c) Explain the following terms : 2×2=4

   (i) Cracking

   (ii) Knocking

UNIT—V

9. *(a)* Differentiate between low-density and high-density polyethylene. 3

(b) Write a short note on designer's projection in textile designing. 3

(c) Discuss the preparation and applications of the following : 2×2=4

(i) PVC

(ii) Polyurethanes

OR

10. *(a)* Discuss one preparation of phenol-formaldehyde. 3

(b) What do you understand by timing in textile designing? On what factors does it depend? 3

(c) Write notes on the following : 2×2=4

(i) PMMA (polymethyl methacrylate)

(ii) Polyester

★ ★ ★

2024

(CBCS)

(5th Semester)

CHEMISTRY

EIGHTH (B) PAPER

(Industrial Chemistry)

(Optional Paper)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. In fertilizers, the value of K represents oxides in the form of

(a) K_2O_2 ( )

(b) K_2O ( )

(c) KO_2 ( )

(d) K_2O_3 ( )

2. Which one of the following is not important raw material for the manufacture of cement?

(a) Gypsum ( )

(b) Clay ( )

(c) Potassium oxide ( )

(d) Limestone ( )

3. Most naturally occurring monosaccharides belong to the

(a) L-series ( )

(b) S-series ( )

(c) C-series ( )

(d) D-series ( )

4. During the log phase of bacterial culture, the cell grows at

(a) maximum rate ( )

(b) zero rate ( )

(c) minimum rate ( )

(d) exponential rate ( )

5. The energy released in an explosion of 1 gram of TNT is approximately

(a) 800 joules ( )

(b) 4000 joules ( )

(c) 3000 joules ( )

(d) 1500 joules ( )

6. The use of H_2SO_4 in tanning process is to

(a) control the pH ( )

(b) soften the hairs ( )

(c) eliminate salt stains ( )

(d) achieve quick curing ( )

7. Coal gasification is the process of producing

(a) oil gas ( )

(b) syngas ( )

(c) water gas ( )

(d) producer gas ( )

8. Water gas is a mixture of

(a) CO_2 and H_2 ( )

(b) CO and H_2O ( )

(c) CO and H_2 ( )

(d) CO_2 and H_2O ( )

9. The aliphatic polyamides are generally known as

(a) Teflons ( )

(b) polyesters ( )

(c) nylons ( )

(d) resins ( )

10. The process of converting fibers directly into fabric is

(a) spinning ( )

(b) knitting ( )

(c) weaving ( )

(d) felting ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Answer the following : 3×5=15

UNIT—I

1. What are the adverse effects of excessive use of nitrogen?

OR

2. What is quartz glass? Why is it widely used for manufacture of laboratory apparatus?

UNIT—II

3. Write a brief note on microbial enzyme.

OR

4. What are reducing sugars and non-reducing sugars? Give suitable examples for each.

UNIT—III

5. What is guncotton? How is it prepared?

OR

6. Write two methods of tannery effluents treatment processes.

UNIT—IV

7. Write a brief note on octane number.

OR

8. Why is lime used in the dehairing of skins in leather industry?

UNIT—V

9. How will you prepare polyesters? Mention their uses.

OR

10. Write a brief note on the colour consideration in textile industry.

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer the following : 10×5=50

UNIT—I

1. *(a)* What are primary nutrients? Mention them. 3

(b) What is soft glass? What is its composition? 3

(c) Describe in brief about nitrogenous fertilizers like urea. 4

OR

2. *(a)* What are the essential raw materials in the manufacture of cement? 3

(b) Explain why CSP (calcium superphosphate) is the principal phosphate fertilizer. 3

(c) Using a suitable equation, describe the manufacture of calcium ammonium nitrate. 4

UNIT—II

3. *(a)* What are polysaccharides? What are their main functions? 3

(b) What are the advantages of microbial enzymes over animal or plant sources? 3

(c) What are permitted additives? Why are they used as a component in food technology? 4

OR

4. *(a)* Explain different methods of food preservation. 3

(b) What do you mean by refrigerated storage of food? 3

(c) What are different stages of growth of microbial culture? Illustrate with diagram. 4

UNIT—III

5. *(a)* What are rocket propellants? How are they classified? 3

(b) What is tanning? How is pH controlled in tanning process? 3

(c) Give the preparation and chemistry of the following : 2×2=4

(i) Cordite

(ii) Picric acid

OR

6. *(a)* What are the primary objectives of liming process? 3

(b) How is nitroglycerine prepared? Why is it manufactured into dynamite? 3

(c) Describe the process of tanning of skins in leather industry. 4

UNIT—IV

7. *(a)* What are coal tar-based chemicals? 3

(b) Write a brief note on the environmental impact of burning of coal. 3

(c) Explain briefly on the process of refining of petroleum. 4

OR

8. *(a)* What are fuels? How are they classified? 3

(b) What is allothermal process of coal gasification? 3

(c) Explain the following terms : 2×2=4

(i) Cracking

(ii) Knocking

UNIT—V

9. (a) Differentiate between low-density and high-density polyethylene. 3

(b) Write a short note on designer's projection in textile designing. 3

(c) Discuss the preparation and applications of the following : 2×2=4

(i) PVC

(ii) Polyurethanes

OR

10. (a) Discuss one preparation of phenol-formaldehyde. 3

(b) What do you understand by timing in textile designing? On what factors does it depend? 3

(c) Write notes on the following : 2×2=4

(i) PMMA (polymethyl methacrylate)

(ii) Polyester

★★★