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Question Paper Code : 57269

B.E/B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Second Semester

Biotechnology

CY 6252 – CHEMISTRY FOR TECHNOLOGISTS

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define the term “BOD”.
2. Differentiate between soft water and demineralised water.
3. Distinguish between absorption and adsorption.
4. What is meant by defoaming ? Give an example for a defoaming agent.
5. Define the term “lubrication”.
6. What is meant by iodine value ?
7. What are the limitations of bleaching powder as a bleaching agent ?
8. How does chlorine dioxide act as a bleaching agent ?
9. What are chromophoric groups ? Indicate at least two chromophoric groups.
10. What is an azo dye ? Give two examples for the azo dyes.

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Discuss the principle, methodology and advantages of zeolite water softner. (8)
- (ii) What is meant by caustic embrittlement of boiler ? How can it be eliminated ? (8)

OR

- (b) (i) Briefly explain any four methods of the internal conditioning of boiler – feed water. (8)
- (ii) Write down the principle and methodology of obtaining drinking water by reverse osmosis. (8)
12. (a) (i) Derive Langmuir’s adsorption isotherm. (8)
- (ii) Discuss the factors influencing adsorption. (8)

OR

- (b) With suitable examples, explain the applications of adsorption. (16)
13. (a) How can oils and fats be chemically analysed ? Explain the procedure involved. (16)
- OR**
- (b) Explain any four properties of lube oils. (16)

14. (a) (i) How is sodium hypochlorite manufactured ? Discuss its properties. (8)
- (ii) Discuss how the available chlorine content in hypochlorite can be estimated. (8)

OR

- (b) (i) Explain the method of manufacture of hydrogen peroxide. Indicate its uses. (8)
- (ii) Discuss in detail about how hydrogen peroxide is estimated. (8)
15. (a) What is a dye ? What are the requisites of a dye ? Elaborate the Otto Witt’s and Modern theories of colour and constitution with specific examples. (16)

OR

- (b) Outline the synthesis and uses of any FOUR azo dyes. (16)

Reg. No. :

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Question Paper Code : 71700

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Second Semester

Bio Technology

CY 6252 — CHEMISTRY FOR TECHNOLOGISTS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term “COD”.
2. Differentiate between soft water and hard water.
3. Distinguish between absorption and adsorption.
4. What are detergents? Give examples for detergents.
5. What are the functions of a lubricant?
6. What is meant by iodine value?
7. How is sodium hypochlorite prepared?
8. How does chlorine dioxide act as a bleaching agent?
9. What are auxochromic groups? Give examples.
10. What is an azo dye? Give two examples for the azo dyes.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the principle, working and applications of zeolite softener. (8)
 - (ii) What is meant by internal conditioning of boiler-feed water? Write any three internal conditioning methods. (8)
- Or
- (b) (i) Briefly explain the method of determination of “BOD” of water. (8)
 - (ii) Write down the principle and methodology of obtaining drinking water by electrodialysis. (8)

12. (a) (i) Derive Langmuir's adsorption isotherm. (8)
(ii) Discuss the role of wetting agents and foaming agents, giving suitable examples. (8)

Or

- (b) With suitable examples, explain the applications of adsorption techniques. (16)
13. (a) How can oils and fats be analyzed chemically? Explain. (16)

Or

- (b) What are greases? Explain the different types of greases and their uses. (16)
14. (a) (i) How is sodium hypochlorite manufactured? Discuss its properties. (8)
(ii) Discuss how the available chlorine content in hypochlorite can be estimated. (8)

Or

- (b) (i) Explain the method of manufacture of hydrogen peroxide. Mention its uses. (8)
(ii) How can hydrogen peroxide be estimated? Explain. (8)
15. (a) What is a dye? What are the requisites of a dye? Elaborate the Modern theory of colour and constitution with specific examples. (16)

Or

- (b) Outline the methods of syntheses and applications of any FOUR azo dyes. (16)
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Reg. No. :

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Question Paper Code : 77108

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Second Semester

Biotechnology

CY 6252 — CHEMISTRY FOR TECHNOLOGISTS

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Zeolite?
2. What are the salts responsible for temporary and permanent hardness of water?
3. What do you mean by water repellency?
4. Define adsorption isotherm?
5. Fatty acids are no longer used as lubricants. Why?
6. How are greases made?
7. Write any four uses of H₂O₂?
8. Why is chlorine dioxide more reactive?
9. What are chromophores? Give two examples.
10. What do you understand by dispersion dyes?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is the principle of EDTA method? Describe the estimation of hardness by EDTA? (8)
- (ii) Give the details of priming and foaming problems in boilers and their prevention. (8)

Or

- (b) (i) Define BOD and COD. How will you determine BOD of a water sample? (8)
- (ii) What are the water quality physical parameters? Write their significance. (8)

12. (a) (i) Define the terms (1) Adsorption, (2) Adsorbate, (3) Chemisorption and (4) Physisorption. (8)
(ii) Explain adsorption of a gas on a solid in terms of ΔH , ΔS and ΔG . (8)

Or

- (b) (i) Discuss the factors on which adsorption depends. (8)
(ii) Discuss the terms detergency, defoaming and foaming in adsorption studies. (8)
13. (a) (i) Explain the following:
(1) Viscosity and Viscosity index
(2) Flash and fire point
(3) Cloud and pour points. (8)
(ii) What is lubrication? Explain any one method of lubrication. (8)

Or

- (b) (i) Write note on:
(1) Saponification and Iodine value
(2) Lubricating action of greases. (8)
(ii) What do you understand by consistency and drop-point of grease? Explain their importance. (8)
14. (a) (i) Discuss the manufacture of H_2O_2 by electrolysis method. (8)
(ii) Write the structure, preparation and properties of sodium hypochlorite. (8)

Or

- (b) (i) How will you determine the strength of H_2O_2 experimentally? (8)
(ii) What is available chlorine? Describe the chemistry involved in the method for the determination of percentage of available chlorine in a given sample of bleaching powder. (8)
15. (a) (i) Explain Witt's theory of colour and constitution. (8)
(ii) What are azo dyes? How are they synthesised by using coupling reaction? (8)

Or

- (b) (i) Discuss the modern theory of colour and constitution. (8)
(ii) Write note on:
(1) Vat dyes
(2) Ingrain dyes. (8)

Reg. No. :

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Question Paper Code : 80311

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Second Semester

Biotechnology

CY 6252 — CHEMISTRY FOR TECHNOLOGISTS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term “BOD”.
2. What are the types of Boiler troubles?
3. Distinguish between adsorbent and adsorbate.
4. What is meant by defoaming? Give an example for a defoaming agent.
5. Define the terms: “lubricant” and “lubrication”.
6. What is meant by saponification value?
7. What are the drawbacks of bleaching powder?
8. How does hydrogen peroxide act as a bleaching agent?
9. What are chromophoric groups? Indicate at least two chromophoric groups.
10. What are the requisites of a good dye?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the method of determination of total hardness of water. (8)
- (ii) What is meant by caustic embrittlement of boiler? How can it be eliminated? (8)
- Or
- (b) (i) Discuss any four methods of the internal conditioning of boiler-feed water. (8)
- (ii) Explain the RO method of obtaining drinking water by reverse osmosis with its merits. (8)

12. (a) (i) Differentiate between physisorption and chemisorption. (8)
(ii) What are detergents? Explain the detergent action. (8)

Or

- (b) With suitable examples, explain the types of adsorption isotherms. (16)
13. (a) (i) What are oils and fats? How are they classified? Give examples. (8)
(ii) Explain the procedure involved in determining acid number of an oil. (8)

Or

- (b) Explain any four properties of liquid lubricants. (16)
14. (a) (i) How is chlorine dioxide manufactured? Discuss its bleaching action. (8)
(ii) Discuss how the available chlorine content in hypochlorite can be estimated. (8)

Or

- (b) (i) Explain the method of manufacture of sodium hypochlorite. Indicate its uses. (8)
(ii) Discuss in detail about how hydrogen peroxide can be estimated. (8)
15. (a) Elaborate the Otto Witt's and Modern theories of colour and constitution. (16)

Or

- (b) What are dye stuffs? Explain the chemical classification of dyes with examples. (16)
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Reg. No. :

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Question Paper Code : 27183

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Second Semester

Biotechnology

CY 6252 — CHEMISTRY FOR TECHNOLOGISTS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the principle of EDTA method of hardness determination?
2. What are the various problems occur in boilers?
3. What are the factors responsible for adsorption of gases on solid?
4. Write the expression for freundlich adsorption isotherm and explain the terms.
5. What are the properties of surfactants? Give few examples.
6. How are sodium and lithium greases prepared? Mention its uses.
7. What is meant by oxidation stability?
8. What are various linkages of auxochrome groups? Give any two compounds with auxochrome group.
9. What are reactive dyes? Give two examples.
10. Write the Mark-Hownik equation. Explain the terms.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss in detail the desirable water quality parameters and standards for textile wet processing. (8)
- (ii) What is internal conditioning? Explain phosphate conditioning of boiler water. (8)

Or

- (b) (i) Define BOD and COD. Explain its determination and significance. (8)
- (ii) Explain the ion-exchange demineralization process of water treatment and its advantages and disadvantages. (8)
12. (a) (i) Define adsorption isotherm. Explain the different types of adsorption isotherm with examples. (8)
- (ii) Write note on the following techniques. (8)
- (1) Foaming and defoaming
- (2) Water repellency.

Or

- (b) Briefly explain the following : (16)
- (i) Interface region
- (ii) Curved surface
- (iii) Thermodynamics of surfaces.
13. (a) (i) Explain the determination and significance of the following. (8)
- (1) Acid value
- (2) Iodine value
- (ii) Explain the following mechanism of lubricants. (8)
- (1) Hydrodynamic
- (2) External pressure lubricants

Or

- (b) (i) Explain the flash and fire point method of determination of oil with neat diagram of the apparatus. (8)
- (ii) Briefly explain the following solid lubricants with structure. (8)
- (1) Graphite
- (2) Molybdenum sulphide

14. (a) (i) Explain the determination of the strength of H_2O_2 . (8)
(ii) How is available chlorine is estimated in hypochlorite bleach liquor. (8)

Or

- (b) Explain the preparation of the following chemicals in detail. (16)
(i) Bleaching powder
(ii) Chlorine dioxide
(iii) Sodium hypochlorite.
15. (a) (i) Discuss the modern theory of colour and constitution in detail. (8)
(ii) What are chromophores and chromogen? Give some examples of structure of compounds with chromophores. (8)

Or

- (b) (i) Discuss the chemistry and synthesis of azo-dye. (10)
(ii) How are dyes classified? (6)
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