14CY203/CY123

Hall Ticket Number:

I/IV B.Tech (Supplementary) DEGREE EXAMINATION

December, 2019 **Common to all branches**

First/Second Semester **Engineering Chemistry - II**

Time: Three Hours **Maximum:** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)
   a) What is meant by polymerization?
   b) Write the monomers of nylon -6,6.
   c) What is the main purpose of vulcanization?
   d) What is electrode potential?
   e) Why glass electrode cannot be used for solution of pH above 9.0?
   f) What is lead – acid accumulator?
   g) Iron corrodes under drops of salt solution. Give reason.
   h) Which of the following metals could provide cathodic protection to iron:A1, Zn,cu,Ni.
   i) What is the principle of green chemistry?
   j) What are potentiometric titrations?
   k) Define Beer- Lambert's law.
   l) State the Principle colorimetry.

UNIT I

2. a) Differentiate between addition polymerization and condensation polymerization with suitable examples. 6M
   b) Explain the mechanism of Ziegler Natta Polymerization. 6M

(OR)

3. a) Write the preparation, properties and uses of PVC. 6M
   b) Give the preparation and structure of the following 6M
   i)Buna- S ii) Buna- N

UNIT II

4. a) Describe the following electrodes giving the diagram electrode notation and electrode reaction. 8M
   i) Standard Hydrogen electrode ii) Calomel electrode
   b) Calculate the emf of a concentration cell at 25°C consisting of two Zn electrodes immersed in solutions of Zn^{+2} ions of 0.1M and 0.01M concentrations. 4M

(OR)

5. a) Define fuel cell. Explain the construction and working H_2 –O_2 fuel cell. What are the advantages and limitations of fuel cell? 6M
   b) Describe the construction of lead – acid battery with the reactions occurring during discharge. 6M

UNIT III

6. a) Explain the electrochemical corrosion. Write its mechanism. 8M
   b) Discuss the factors influencing rate of corrosion. Explain any two. 4M

(OR)

7. a) Write the Applications of Green chemistry. 4M
   b) What is cathodic protection? Explain sacrificial anodic protection method. 8M

UNIT IV

8. a) What is potentiomery ? How do you estimate Iron (II) with $K_2cr_2O_7$ potentiometrically? 6M
   b) Explain the estimation of sodium by using Flame photometry. 6M

(OR)

9. a) How can you estimate the nickel by using Atomic absorption? 6M
   b) What are conductometric titrations? Explain with a suitable example. 6M

14CY203(Y16)

Hall Ticket Number

I/IV B.Tech(Regular/Supplementary) DEGREE EXAMINATION

Common to all branches
ENGINEERING CHEMISTRY-II

March-2019
Second Semester
Time : Three Hours **Maximum**: 60 Marks

Answer Question No.1 compulsorily (1 x 12 = 12 Marks)
Answer ONE question from each unit. (4 x 12 = 48 Marks)

1. Answer all questions (1 x 12 = 12 Marks)
   a) What is meant by polymerization?
   b) Write the monomers of nylon -6,6.
   c) What is the main purpose of vulcanization?
   d) What is electrode potential?
   e) Why glass electrode cannot be used for solution of pH above 9.0?
   f) What is lead – acid accumulator?
   g) Iron corrodes under drops of salt solution. Give reason.
   h) Which of the following metals could provide cathodic protection to iron:A1, Zn,cu,Ni.
   i) What is the principle of green chemistry?
   j) What are potentiometric titrations?
   k) Define Beer- Lambert's law.
   l) State the Principle colorimetry.

UNIT-I

2. a) Differentiate between addition polymerization and condensation polymerization with suitable examples. 6M
   b) Explain the mechanism of Ziegler Natta Polymerization. 6M

(OR)

3. a) Write the preparation, properties and uses of PVC. 6M
   b) Give the preparation and structure of the following
   i)Buna- S ii) Buna- N 6M

UNIT-II

4. a) Describe the following electrodes giving the diagram electrode notation and electrode reaction.
   i) Standard Hydrogen electrode ii) Calomel electrode 8M
   b) Calculate the emf of a concentration cell at 25°C consisting of two Zn electrodes immersed in solutions of Zn^{+2} ions of 0.1M and 0.01M concentrations. 4M

(OR)

5. a) Define fuel cell. Explain the construction and working H_2 –O_2 fuel cell. What are the advantages and limitations of fuel cell? 6M

b) Describe the construction of lead – acid battery with the reactions occurring during discharge. 6M

UNIT-III

6. a) Explain the electrochemical corrosion. Write its mechanism. 8M
   b) Discuss the factors influencing rate of corrosion. Explain any two. 4M

(OR)

7. a) Write the Applications of Green chemistry. 4M
   b) What is cathodic protection? Explain sacrificial anodic protection method. 8M

UNIT-IV

8. a) What is potentiomery ? How do you estimate Iron (II) with $K_2cr_2O_7$ potentiometrically? 6M
   b) Explain the estimation of sodium by using Flame photometry. 6M

(OR)

9. a) How can you estimate the nickel by using Atomic absorption. 6M
   b) What are conductometric titrations? Explain with a suitable example. 6M

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SCHEME OF EVALUATION

1. Answer all questions (1 x 12 = 12 Marks)

EACH QUESION CARRIES ONE MARK

a) What is meant by polymerization?
b) Write the monomers of nylon -6,6.
c) What is the main purpose of vulcanization?
d) What is electrode potential?
e) Why glass electrode cannot be used for solution of pH above 9.0?
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g) Iron corrodes under drops of salt solution. Give reason.
h) Which of the following metals could provide cathodic protection to iron:A1, Zn,cu,Ni.
i) What is the principle of green chemistry?
j) What are potentiometric titrations?
k) Define Beer- Lambert's law.
l) State the Principle colorimetry.

UNIT-I

2. a) Differentiate between addition polymerization and condensation polymerization with suitable examples. 6M

ANY THREE DIFFERENCES (3 X 2 = 6M)

b) Explain the mechanism of Ziegler Natta Polymerization. 6M

EXPLANATION -2M

MECHANISM -4M

(OR)

3. a) Write the preparation, properties and uses of PVC. 6M

PREPARATION – 2M

PROPERTIES -2M

USES- 2M

b) Give the preparation and structure of the following

i)Buna- S ii) Buna- N 6M

PREPARATION – 2M

STRUCTURE-1M

UNIT-II

4. a) Describe the following electrodes giving the diagram, electrode notation and electrode reaction.

i) Standard Hydrogen electrode ii) Calomel electrode 8M

Diagram-2M

Electrode notation -1M

Electrode reaction -1M

b) Calculate the emf of a concentration cell at 25°C consisting of two Zn electrodes immersed in solutions of Zn^{+2} ions of 0.1M and 0.01M concentrations. 4M

(OR)

5. a) Define fuel cell. Explain the construction and working H_2 –O_2 fuel cell. What are the advantages and limitations of fuel cell? 6M

Definition -1M

Construction-1M

Diagram -1M, Equation- 1M, Working -1M

Advantages & Limitations- 1M

b) Describe the construction of lead – acid battery with the reactions occurring during discharge. 6M

Construction-1M

Diagram -1M, Equations- 4M,

UNIT-III

6. a) Explain the electrochemical corrosion. Write its mechanism. 8M

Evolution of hydrogen gas -4M,Absorption of oxygen -4M

b) Discuss the factors influencing rate of corrosion. Explain any two. 4M

Any two factors-2X2=4M

(OR)

7. a) Write the Applications of Green chemistry. 4M

Any four applications – 4M

b) What is cathodic protection? Explain sacrificial anodic protection method. 8M

Principle- 2M, Diagram -2M, method -4M

UNIT-IV

8. a) What is potentiomery ? How do you estimate Iron (II) with $K_2cr_2O_7$ potentiometrically? 6M

Definition – 2M, Method – 6M

b) Explain the estimation of sodium by using Flame photometry. 6M

Method -6M

(OR)

9. a) How can you estimate the nickel by using Atomic absorption. 6M

Method -6M

b) What are conductometric titrations? Explain with a suitable example. 6M

Definition -2M, Explanation-4M

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