

E-324

B. E. V Semester (Main & Re-Exam.) Examination December – 2016

CHEMISTRY - II

Branch : Mech.

Time : Three Hours]

[Maximum Marks : 75

[Minimum Marks : 30

Note : Attempt all the questions of Section – A, four from Section – B and three questions from Section – C.

SECTION – A

[Marks : $1.5 \times 10 = 15$

(Objective Type Questions)

1. Acid rain is caused by increase in the atmosphere concentration of :

(a) SO_3 and CO

(b) OZ one and dust

(c) CO_2 and CO

(d) SO_2 and NO_2

2. Ozone layer protects the life from :

(a) UV rays

(b) Y-rays

(c) X-rays

(d) All of these

3. Nitro benzene acts as :

(a) Initiator

(b) Retarder

(c) Chain transfer agent

(d) None of these

4. Zeigler-Natta catalyst is :

- (a) $AlR_3 + TiCl_3$ (b) $CH_3 - Mg - X$
(c) CH_3ONa (d) Phenol

5. The Double helical structure of DNA is stabilized by :

- (a) Hydrogen bond (b) Peptide Bond
(c) Covalent bond (d) Ionic bond

6. Which one of the proteins transports oxygen in the body ?

- (a) Insulin (b) Haemoglobin
(c) Keratin (d) None of these

7. Which structure of Protein is highly stable ?

- (a) Primary (b) Secondary
(c) Tertiary (d) Quaternary

8. Condensed system is :

- (a) H_2O -system (b) Sulphur system
(c) Pb-Ag system (d) $CuSO_4 - H_2O$ system

9. How many phases in sulphur system ?

- (a) 3 (b) 4
(c) 6 (d) 2

10. Plane 100 has miller indices :

- | | |
|-------------|-----------|
| (a) 1, 0, 0 | (b) 01, 0 |
| (c) 1, 1, 1 | (d) 1, 10 |

SECTION – B

[Marks : $6 \times 4 = 24$]

(Short Answer Type Questions)

1. Write difference between crystalline and Amorphous solids.
2. Write short notes on :
 - (a) Seven segment cell
 - (b) Schottky defects
3. Write short notes on :
 - (a) Bakelits
 - (b) P.V.C.
4. Explain mechanism of corrosion.
5. Write short note on solar energy.
6. Explain structure of RNA.

SECTION – C

[Marks : $12 \times 3 = 36$]

(Long Answer Type Questions)

1. Describe the structure and importance of Nematic and cholestric phase.
2. Explain the classification of polymers on the basis of synthesis.
3. Discuss the primary, secondary and Tertiary structures of Protein.

(3)

P.T.O.

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4. What is Zeolite ? Explain the zeolite method for softening water a flowchart and the limitations of this process.
 5. Write short notes on :
 - (a) Molecular cluster
 - (b) Green house effect
 - (c) Factors of cause of water pollution and air pollution.
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B.E. Vth Semester Examination- December, 2018

Chemistry-II

MECHANICAL ENGG.

(Main & Re)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt all questions from **Section-A**, four from **Section-B** and three questions from **Section-C**.

Section-A

1.5×10=15

(Objective Type Questions)

1. The polymerization which is accompanied by elimination of small molecules is'
 - (a) Addition
 - (b) Copolymerization
 - (c) Condensation
 - (d) Cross linking polymerization
2. Dissociation of NH_4Cl in a closed vessel is a
 - (a) 3 Component
 - (b) 1 component
 - (c) 2 Component
 - (d) 4 Component
3. Calgon is:
 - (a) Na_3PO_4
 - (b) NaCl
 - (c) $(\text{NaPO}_3)_6$
 - (d) NaH_2PO_4
4. Besides CO_2 the other green house gas is
 - (a) CH_4
 - (b) N_2
 - (c) Ar
 - (d) O_2
5. In aqueous solution, an amino acid exists as
 - (a) Cation
 - (b) anion
 - (c) dianion
 - (d) Zwitter ion
 - (e) neutral molecule

P.T.O.

6. A compound is formed by element A and B. This crystallizes in the cubic structure where A atoms are at the corners of the cube and B atoms are at the body centres. The simplest formula of the compound is
- (a) A_8B_4 (b) AB_6
 (c) AB (d) A_6B
7. During galvanic corrosion, the more noble metal acts as
- (a) Anode (b) Cathode
 (c) anode as well as cathode (d) corroding metal
8. Good fuel should have
- (a) low calorific value (b) high moisture content
 (c) high ash content (d) moderate ignition temperature
9. Ozone layer of upper atmosphere is being destroyed by
- (a) Chlorofluorocarbon (b) SO_2
 (c) Photochemical oxidant/ O_2 & CO_2 (d) smog
10. Which of the following is not present in DNA?
- (a) Adenine (b) Guanine
 (c) Uracil (d) Thymine

Section-B

6×4=24

(Short Answer Type Questions)

- Differentiate Frenkel and Schottky defect.
- Classify the polymers on the basis of

(a) Tacticity (b) Origin
 (c) Thermal stability (d) Mode of synthesis
- (a) Describe the 'reverse osmosis' method for the desalination of brackish water.

(b) Calculate temporary and permanent hardness of sample of water containing; $Mg(HCO_3)_2=7.3$ mg/L, $Ca(HCO_3)_2=16.2$ mg/L, $MgCl_2=9.5$ mg/L, $CaSO_4=13.6$ mg/L
- Write the important structural and functional differences between DNA and RNA.

4. Write the important structural and functional differences between DNA and RNA.
5. Differentiate Vander waals clusters and molecular clusters.
6. Write short notes on:
 - (a) Acid rain
 - (b) Photochemical smog

Section-C

$12 \times 3 = 36$

(Long Answer Type Questions)

1. Explain Zeolite process for water softening. The hardness of 50,000 litres of a sample of water was removed by passing it through a zeolite softener. The softener then required 200 litres of NaCl solution, containing 150 gm/litre of NaCl for regeneration. Calculate the hardness of the sample of water.
2. State phase rule? Discuss the phase diagram for water system in detail.
3. Define corrosion of metals. What are different types of corrosion? Explain the electrochemical theory of wet corrosion, giving its mechanism.
4. (a) Classify air pollutants. What are their sources? How can air pollution be controlled?
(b) Give the structures of the following polymers and their industrial importance
 - (i) Buna-S
 - (ii) Terylene
 - (iii) Nylon 66
5. Write notes on:
 - (a) Nucleic acid
 - (b) Proteins
 - (c) Lipids

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B.E. V Semester (Main & Re.) Examination,
December 2013

Chemistry-II
Mechanical Engg

Time: Three Hours]

[Max. Marks : 75

[Min. Marks : 30

Note : Attempt **all** the questions of section A, **Four** from section B and **three** from section C.

Section - A

(Objective Type Questions)

Note : This section will contain ten objective type questions. They may be fill in the blanks, True/False or Multiple Choice Type. $1.5 \times 10 = 15$

1. The coordination number of Na^+ in NaCl is:
(a) 1 (b) 2
(c) 6 (d) 9
2. The Gibbs phase rule for one component system is:
(a) $F = C - P + 2$ (b) $F = C - P + 1$
(c) $F = C + P + 2$ (d) $F = C + P + 2$
3. The example of condensation polymer is:
(a) Polythene (b) PVC
(c) Nylon 6,6 (d) Polystyrene
4. Uracil is found in:
(a) DNA (b) RNA
(c) Enzymes (d) none
5. The common cations present in hard water are:
(a) Na^+ and K^+ (b) Ca^{2+} and Mg^{2+}
(c) Both a and b (d) none

P.T.O.

6. Zeolites use for the:
 - (a) Fuel production
 - (b) Protection from corrosion
 - (c) Water treatment
 - (d) none
7. The example of addition polymer is:
 - (a) Polythene
 - (b) Bakelite
 - (c) Nylon 6,6
 - (d) None
8. Greenhouse effect is due to:
 - (a) Methane
 - (b) LPG
 - (c) CO_2
 - (d) H_2O vapour
9. Fullerene used in the
 - (a) Water treatment
 - (b) Solar energy
 - (c) Reduction of greenhouse gas
 - (d) None
10. DNA on complete hydrolysis gives
 - (a) Phosphate+Sugar
 - (b) Base+Sugar
 - (c) Base+Sugar+Phosphate
 - (d) Phosphate+Base

Section - B

(Short Answer Type Questions)

Note: This section will contain six questions. Students will ask to attempt any four questions out of six questions.

6×4=24

1. Give the idea about Crystal lattice and Unit cell.
2. Give the preparation of Nylon 6,6
3. What are enzymes? Give the examples.
4. What is hardness of water?
5. What is Acid rain?
6. Give the idea about Solar Energy.

Section - C

(Long Answer Type Questions)

Note: This section will contain five questions. Students will ask to attempt any three questions out of five questions.

12×3=36

1. Explain Sulphur System according to Gibbs phase rule.
2. Give the Structure of DNA.
3. What is corrosion give idea about dry and wet corrosion, Atmospheric corrosion and Preventive methods.
4. Write an essay on Air Pollution.
5. What are Vanderwaals clusters, Molecular clusters, Nanoclusters, Macroscopic clusters?