

Roll No.: Date: 

**NORTHWEST ACCREDITATION COMMISSION, USA**  
**SR. SECONDARY/12<sup>TH</sup>**  
**2017-2018**

Subject- CHEMISTRY (THEORY)

Question Paper No. : 

C	T	4	2
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Subject Code : CH1205

Question Paper Code: 

C	H	8	3
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Total Time: 03.00 Hours.

Total Marks: 70

**GENERAL INSTRUCTIONS**

**1. OPENING AND CHECKING OF THE QUESTION-BOOKLET**

Break open the seal of the Question-Booklet only when the announcement is made by the Invigilator. After breaking the seal and before attempting the questions, student should immediately check for:

- a) The number of the printed page in the Question-Booklet is the same as mentioned on the cover page of the Booklet and
- b) Any printing error in the Booklet pages, if any.  
Any discrepancy or error should be brought to the notice of the Invigilator who will then replace the Booklet. No additional time will be given for this.

2. No student, without the permission of the Superintendent or the Invigilator concerned, is to leave his/ her seat or the Examination Room.

**3. FILLING UP THE REQUIRED INFORMATION ON QUESTION-BOOKLET AND ANSWER SHEET**

After breaking open the seal and checking the Booklet, student should:

- a) Fill up the **Question Paper No.** and **Question Paper Code** (mentioned on the cover of Question-Booklet) in the space provided on the First Answer Sheet.
- b) Fill up his/her Roll Number on the First Answer Sheet and on each Supplementary Answer Sheet, if taken.
- c) Student should mention the total number of **Supplementary Answer Sheet**, if taken, in the space provided on the First Answer Sheet and also fill up the Serial Number mentioned on each **Supplementary Answer Sheet** along with his/her Roll Number in the register maintained by the Invigilator. Student must tie all the Answer Sheets with the thread provided by the Invigilator.

**4. INSTRUCTIONS ABOUT QUESTION PAPER**

This Question Paper is divided into three Sections – A, B and C. All Sections are compulsory. Attempt all Sections as per instructions.

- a) Section A question No. 1 to 4 are very short questions carrying 3 marks each in approximately 20-30 words.
- b) Section B question No. 5 to 11 are short questions carrying 4 marks each in approximately 30-50 words.
- c) Section C question No. 12 to 16 are long questions carrying 6 marks each in approximately 80-120 words.

5. Student found in possession of Cellular Phone / Mobile Phone / Pager or any other Communication Device and/or any Book/Note whether using or not, will be liable to be debarred for taking examination(s) either permanently or for specified period or/and dealt with as per law or/and ordinance of the School/SERI according to the nature of offence, or/and he/she may be proceeded against and shall be liable for prosecution under the relevant provision of the Statutory Law.

**THE ANSWER SHEET IS TO BE RETURNED ON COMPLETION OF THE TEST**

This Question Paper MUST be attached with Answer Sheet

## SECTION A

Total number of questions: 4	Marks allocated to each question: 3	Total marks: 12
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- Question 1.** Write the name of monomers used for getting the following polymers:  
(a) Teflon (b) Buna-N
- Question 2.** (a) Write the type of magnetism observed when the magnetic moments are aligned in parallel and Antiparallel directions in unequal numbers.  
(b) Which stoichiometric defect decreases the density of the crystal?
- Question 3.** Write the structure of 2-hydroxybenzoic acid.
- Question 4.** Why does  $\text{NH}_3$  act as a Lewis base?

## SECTION B

Total number of questions: 7	Marks allocated to each question: 4	Total marks: 28
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- Question 5.** State Henry's law. Why do gases always tend to be less soluble in liquids as the temperature is raised?
- Question 6.** Write short notes  
(a) Hardy schulze Rule  
(b) Peptization
- Question 7.** Differentiate b/w the roasting and calcinations.
- Question 8.** What is auto reduction and write the reactions occurring in Bessemer converter.

OR

Write chemical reactions occurring in the blast furnace and which reaction is endothermic.

- Question 9.** Arrange the following according to the instruction:  
(a)  $\text{F}_2, \text{I}_2, \text{Br}_2, \text{Cl}_2$  (Increasing order of bond enthalpy)  
(b)  $\text{H}_2\text{S}, \text{H}_2\text{O}, \text{H}_2\text{Te}, \text{H}_2\text{Se}$  (Increasing order of acidic strength)  
(c)  $\text{NH}_3, \text{PH}_3, \text{AsH}_3, \text{BiH}_3, \text{SbH}_3$  (Increasing order of basic character)

**Question 10.** Write monomers of

- (a) Natural rubber                      (b) PHBV                      (c) Buna S rubber

**OR**

Draw the structure of (i)  $\alpha$  . D glucose (ii) Amylopectin (iii) Amylose

**Question 11.** Give a reason for the following:

- (a) Rough surface of catalyst is more effective than smooth surface.  
(b) Smoke passed through charged plates before allowing it to come out of chimneys in factories.  
(c) Ne gets easily absorbed over charcoal than He.

### SECTION C

Total number of questions: 5	Marks allocated to each question: 6	Total marks: 30
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**Question 12.** (a) Describe the following giving chemical equations:

- (i) De-carboxylation reaction  
(ii) Friedel-Crafts reaction

(b) How will you bring about the following conversions?

- (i) Benzoic acid to Benzaldehyde  
(ii) Benzene to m-Nitroacetophenone  
(iii) Ethanol to 3-Hydroxybutanal

**OR**

(a) Write balanced equations for the following reactions:

- (i) Chlorine reacts with dry slaked lime.  
(ii) Carbon reacts with concentrated  $H_2SO_4$ .

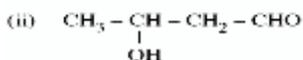
(b) Describe the contact process for the manufacture of sulphuric acid with special reference to the reaction conditions, catalysts used and the yield in the process.

- Question 13.** (a) Elements of Gr. 16 generally show lower value of first ionization enthalpy compared to the corresponding periods of Gr. 15. Why?
- (b) What happens when
- concentrated  $\text{H}_2\text{SO}_4$  is added to  $\text{CaF}_2$  ?
  - sulphur dioxide reacts with chlorine in the presence of charcoal?
  - ammonium chloride is treated with  $\text{Ca}(\text{OH})_2$ ?

**OR**

- (a) What type of deviation is shown by a mixture of ethanol and acetone? Give reason.
- (c) A solution of glucose (molar mass =  $180 \text{ g mol}^{-1}$ ) in water is labeled as 10% (by mass). What would be the molality and molarity of the solution? (Density of solution =  $1.2 \text{ g mL}^{-1}$ )

- Question 14.** (a) Draw the structures of the following derivatives:
- Propanone oxime
  - Semicarbazone of  $\text{CH}_3\text{CHO}$
- (b) How will you convert ethanal into the following compounds? Give the chemical equations involved.



**OR**

- (a) Define molar conductivity of a solution and explain how molar conductivity changes with change in concentration of solution for a weak and a strong electrolyte.
- (b) The resistance of a conductivity cell containing 0.001 M KCl solution at 298 K is  $1500 \Omega$ . What is the cell constant if the conductivity of 0.001 M KCl solution at 298 K is  $0.146 \times 10^{-3} \text{ S cm}^{-1}$ ?

- Question 15.** (a) Describe the following giving chemical equations:
- De-carboxylation reaction
  - Friedel-Crafts reaction
- (b) How will you bring about the following conversions?
- Benzoic acid to Benzaldehyde
  - Benzene to m-Nitroacetophenone
  - Ethanol to 3-Hydroxybutanal

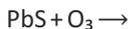
**OR**

- (a) Write balanced equations for the following reactions:
- (i) Chlorine reacts with dry slaked lime.
  - (ii) Carbon reacts with concentrated  $\text{H}_2\text{SO}_4$ .
- (b) Describe the contact process for the manufacture of sulphuric acid with special reference to the reaction conditions, catalysts used and the yield in the process.

- Question 16.** (a) Silver forms CCP lattice and X-ray studies of its crystals show that the edge length of unit cell is 408.6 pm. Calculate the density of crystal
- (b) Why ZnO becomes yellow on heating?

**OR**

- (a) Which poisonous gas is evolved when white phosphorus is heated with conc. NaOH solution? Write the chemical equation involved.
- (b) Which noble gas has the lowest boiling point?
- (c) Fluorine is a stronger oxidizing agent than chlorine. Why?
- (d) What happens when  $\text{H}_3\text{PO}_3$  is heated?
- (e) Complete the equation:



**END OF THE QUESTION PAPER**