D 32497 **(Pages : 2)** **Name**

Reg. No.....

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, JANUARY 2013

(CCSS)

Chemistry

CH 1C 01—GENERAL CHEMISTRY

Time : Three Hours Maximum : 30 Weightage

I. Answer all *twelve* questions. Each question has a weightage of ¼. This part contains multiple choice, fill in the blank and one word answer questions :

1 The correct set of quantum numbers for the unpaired electron of chlorine atom is :

(a) n = 2, *l* = 1, *m* = 0. (b) n = 2, / 1, m = 1.

(c) n = 3, *l* = 1, m = 1. (d) n = 3, / = 0, m = O.

2 Which of the following orbital does not exist ?

(a) 7s. (b) 5p.

(c) 2d. (d) 4f.

3 Vitamin B_{12} is :

(a) Cyanocobalamine. (b) Pyridoxine.

(c) Folic acid. (d) Biotin.

4 The indicator used in iodometric titrations is :

(a) Methyl. orange. (b) Phenolphthalein.

(c) Eriochrome Black T. (d) Starch.

5 Basic absorbent used in adsorption chromatography :

(a) Silica Gel. (b) Alumina.

(c) Chalk. (d) Ferric oxide.

6 The chemical substance responsible for global warming is :

(a) Chloroflourocarbons. (b) Dioxane.

(c) Oxides of nitrogen. (d) Carbon dioxide.

7 The chemical constituent which is considered to be the major reason for algal bloom is :

(a) Phosphate. (b) Fluoride.

(c) Bicarbonate. (d) Carbonate.

8 Oxygen carriers in marine invertebrates :

(a) Haemoglobin. (b) Haemerythrins.

(c.) Haemocyanins. (d) Haemosiderin.

Turn over

9 The hybridization of carbon in acetylene is _____

10 Ionic product of water at 298 K is _____

11 The concentration of aluminium in a sample was found to be 10.11 ppm. If the correct value is 9.95 ppm the absolute error is _____

12 The conjugate base of nitric acid is _____

(12 x ¼ = 3 weightage)

II. Answer all *nine* questions. Each question has a weightage 1. Answers may be in one sentence *or* two:

13 What is Smog ? How is it formed ?

14 Washing clothes using soap is not advisable in hard water. Why ?

15 What are London dispersion forces ?

16 Calculate the momentum of a particle which has a de-Broglie wavelength 0.1 nanometer.

17 What are macro nutrients ? Give examples.

18 What are metallo enzymes ? Specify and two characteristics of it.

19 What is the difference between constant error and proportional error ?

20 What happens when NH_4Cl is added to an aqueous solution of ammonia ?

21 Phenolphthalein is not suitable for the titration of strong acid with weak base. Why ?

(9 x 1 = 9 weightage)

III. Answer any *five* questions. Each question has a weightage of 2. Answers may be in a paragraph :

22 Briefly outline nitrogen cycle.

23 Automobile pollution is difficult to control in comparison to industrial pollution. Why ?

24 What are the differences between bonding and anti-bonding molecular orbitals ?

25 Briefly discuss the mechanism of photosynthesis.

26 Explain the function of metallochromic indicators in complexometric titrations.

27 Describe how solubility product principle and common ion effect are applied in qualitative inorganic analysis.

28 Explain any *two* methods for the minimization of errors.

(5 x 2 = 10 weightage)

IV. Answer any *two* questions. Each question has a weightage of 4 :

29 What is hybridization ? Discuss the shapes of XeF_2, SF_6 and SF_4 molecules on the basis of hybridization.

30 Describe the different chromatographic techniques used in the separation of natural products.

31 What are the causes and consequences of ozone depletion ?

(2 x 4 = 8 weightage)