

D 32497

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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 $\frac{1}{4}$. 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) $n = 2, l = 1, m = 1$.

(c) $n = 3, l = 1, m = 1$.

(d) $n = 3, l = 0, m = 0$.

2 Which of the following orbital does not exist ?

(a) 7s.

(b) 5p.

(c) 2d.

(d) 4f.

3 Vitamin B₁₂ 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 adsorbent 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 concentration is 9.95 ppm the absolute error is _____.
- 12 The conjugate base of nitric acid is _____.

(12 × ¼ = 3)

II. Answer all *nine* questions. Each question has a weightage 1. Answers may be in one 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 nm.
- 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 × 1 = 9)

III. Answer any *five* questions. Each question has a weightage of 2. Answers may be in one 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 × 2 = 10)

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 × 4 = 8)