

FIRST SEMESTER B.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION
NOVEMBER 2015

(UG—CCSS)

Complementary Course

CH 1C 01—GENERAL CHEMISTRY

Time : Three Hours

Maximum : 30 Weightage

I. Answer all the *twelve* questions. Each question carries a weightage of $\frac{1}{4}$. This section contains multiple choice, fill in the blanks and one word answer questions :-

1 Which of the following is not possible ?

- (a) 1s. (b) 2p.
(c) 3f. (d) 4f.

2 Name the metal present in Vitamin B₁₂ :

3 The lowest layer of atmosphere is :

- (a) Stratosphere. (b) Troposphere.
(c) Mesosphere. (d) Exosphere.

4 Ionic product of water has the value of :

- (a) 14. (b) 1×10^{-14} .
(c) 1×10^{-7} . (d) 7.

5 In the de Broglie relation $\lambda = h/p$, what nature of electron is manifested by p ?

- (a) Wave. (b) Particle.
(c) Dual. (d) Uncertainty.

6 Which of the following errors depends on the size of the quantity being measured ?

- (a) Constant error. (b) Method error.
(c) Random error.. (d) Proportional error.

7 Which of the following molecule is not linear ?

- (a) C₂H₂. (b) H₂O.
(c) BeF₂. (d) CO₂.

8 Which of the following molecule does not contain iron ?

- (a) Haemoglobin. (b) Myoglobin.
(c) Cytochrome. (d) Haemocyanin,

Turn over

9 The suitable indicator for the titration of oxalic acid and sodium hydroxide is _____

10 Solubility product of AgCl is given by :

- (a) $[Ag^+]$ (b) $[Ag^+] / [Cl^-]$
 (c) $[Ag^+] + [Cl^-]$ (d) $K_{sp} [Ag^+]$

11 In PCl_5 , the hybridization of P is :

- (a) sp^3d (b) sp^2d
 (c) dsp^2 (d) d^2sp^3

12 Which of the following is not an environmental segment ?

- (a) Atmosphere. (b) Hydrosphere.
 (c) Lithosphere. (d) Stratosphere.

(12 x $\frac{1}{4}$ = 3 weightage)

II. Answer all the *nine* questions. Each question carries a weightage of 1 :

- 13 Distinguish between COD and BOD.
 14 What are non-bonding orbitals ?
 15 What is nitrogen cycle ? What is its significance ?
 16 Mention *two* factors which affect the lattice energy of an ionic compound.
 17 What is the toxic effect of CN⁻ on haemoglobin ?
 18 Write the Schrödinger wave equation and explain the terms.
 19 Give the structure of cis-platin. How does cis-platin act against cancer ?
 20 What is R_f value ?
 21 What is Lewis acid and base ? Give examples.

(9 x 1 = 9 weightage)

III. Answer any *five* questions. Each question carries a weightage of 2 :

- 22 Explain the consequences of acid rain.
 23 The uncertainty in the position of an electron is 10^{-10} m. What is its uncertainty in velocity ? ($h = 6.6 \times 10^{-34}$ Js).
 24 Write note on green house effect.

- 25 Using the theory of hybridization, explain the variation in the bond angles of methane ethylene and acetylene.
- 26 What is significance of sodium potassium pump in living cells ?
- 27 What are systematic and random errors ?
- 28 What are redox indicators ? Give one example.

(5 x 2 = 10 weightage)

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

- 29 (a) Draw the molecular orbital energy diagram for oxygen molecule and predict its bond order and magnetic property.
- (b) What are the limitations of Bohr atom model ?
- 30 Mention the different type of errors in analytical determination. What are the methods for the reduction of such errors ?
- 31 What is hard water ? Discuss different methods for the removal of hardness of water.

(2 x 4 = 8 weightage)