

D 53529

(Pages : 3)

Name.....58.....

Reg. No.....

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, JANUARY 2014

(UG-CCSS)

Complementary Course—Chemistry

CH IC 01—GENERAL CHEMISTRY

Time : Three Hours

Maximum : 30 Weightage

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

1. Which among the following is not a component of natural environment ?

- (a) Wild life. (b) Forests.  
(c) Dams. (d) Soil.

2. Which of the following is not a green house gas ?

- (a)  $\text{CO}_2$ . (b)  $\text{CO}$ .  
(c)  $\text{CH}_4$ . (d)  $\text{O}_3$ .

3. Which combination of quantum numbers is not permitted for an electron in an atom ?

- (a)  $n = 1, l = 0, m = 0, s = \frac{1}{2}$ .  
(b)  $n = 3, l = 1, m = 0, s = \frac{1}{2}$ .  
(c)  $n = 3, l = 1, m = -2, s = -\frac{1}{2}$ .  
(d)  $n = 4, l = 3, m = 2, s = \frac{1}{2}$ .

4. A molecule with distorted geometry is :

- (a)  $\text{BF}_3$ . (b)  $\text{CH}_4$ .  
(c)  $\text{ClF}_3$ . (d)  $\text{PCl}_5$ .

5. Methyl orange is used in the titration of :

- (a)  $\text{NaOH}$  and  $\text{HCl}$ . (b)  $\text{NaOH}$  and Oxalic acid.  
(c)  $\text{Na}_2\text{CO}_3$  and  $\text{HCl}$ . (d) Both (a) and (c).

6. In adsorption chromatography the mobile phase is a :

- (a) Solid. (b) Liquid.  
(c) Gas. (d) Liquid or Gas.

7. Ozone gas is found mainly in \_\_\_\_\_ region of atmosphere.

Turn over



8. BOD stands for \_\_\_\_\_.
9. The de Broglie relation is \_\_\_\_\_.
10. The 'p' orbitals have \_\_\_\_\_ shape.
11. According to Bronsted, acids are \_\_\_\_\_.
12. Name the metal present in chlorophyll.

(12 × ¼ = 3 weigh

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

13. Name the major segments of the environment.
14. Write any *two* consequences of ozone depletion.
15. Which are the major air pollutants emitted by automobiles ?
16. State Heisenberg's Uncertainty principle.
17. Name any *two* metalloporphyrins.
18. Write any *two* points to distinguish between photosynthesis and respiration.
19. Differentiate between precision and accuracy of a measurement.
20. What is a Lewis acid ? Give example.
21. What is elution ?

(9 × 1 = 9 weigh

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

22. Distinguish between biomagnification and bioaccumulation.
23. How is lattice energy of a compound determined ?
24. Explain  $sp^3d$  and  $sp^3d^2$  hybridisations with suitable examples.
25. Write briefly on sodium potassium pump.
26. Explain the important functions of haemoglobin.
27. Write the Ostwald theory of acid-base indicators. ✓
28. What are the important applications of ion exchange chromatography ?

(5 × 2 = 10 weigh

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

29. Write briefly on :

- (a) Chemical Oxygen Demand.
- (b) Hydrological cycle.
- (c) Acid rain.

30. (a) State and explain VSEPR theory.

(b) Write the MO configuration of  $N_2$  molecule and calculate the bond order.

31. Explain the different types of errors in analytical measurements and suggest methods to minimise them.

(2 × 4 = 8 weightage)