C 40424 (Pages 2)

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, MARCH 2013

(CCSS)

Chemistry

CH6B 17—PHYSICAL CHEMISTRY – III

Time : Three Hours

Maximum : 30 Weightage

Section A

Answer all *questions.*
Each question carries ¼ weightage.

Fill in the blanks :-

1. Half life of a ———— order reaction is independent of initial concentration.

2. The catalyst used in Haber Process is ————————

3. A salt bridge is used to eliminate ————————

4. The unit of specific conductance is ————————

Answer in a word *or* sentence :-

5. Define cell constant.

6. Define pKa.

7. What is quantum yield of a photochemical reaction ?

8. What is the single electrode potential of standard hydrogen electrode.

9. Define solubility product.

10. Give an example of acid buffer.

11. State Kohlarusch's law.

12. Define ionic strength.

(12 x ¼ = 3 weightage)

Section B

Answer all *questions.*
Each question carries 1 weightage.

13. The half life period of a first order reaction is 25 minutes. What is its rate constant ?

14. What is standard hydrogen electrode ?

15. What is polarography ?

Turn over

16. Calculate the pH of a 0.01 M solution of $NaOH$.

17. What is leveling effect ?

18. Explain the abnormal ionic mobility of hydrogen ions.

19. What is Debye-Falkenhagen effect ?

20. What is Ostwald's dilution law ?

21. Mention any four data types in C.

(9 x 1 = 9 weightage)

Section C

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

22. Describe any two methods for the determination of the order of a reaction.

23. Explain the Lowry-Bronsted theory of acids and bases using an example.

24. Write a note on H_2-0_2 fuel cell.

25. State and explain (a) Grotthus-Draper law ; (b) Stark- Einstein's law ; (c) Beer-Lamberts law ; and (d) Photosensitisation.

26. Write a note on enzyme catalysis.

27. Explain the variation of molar conductance with dilution.

28. Write a C program for calculation of molarity of a solution.

(5 .x 2 = 10 weightage)

Section D

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

29. Explain the collision theory of reaction rates.

30. Describe the Hittorfs method of determination of transport number.

31. Explain any four applications of e.m.f. measurements.

(2 x 4 = 8 weightage)