18CYB103T - assignment

Chemistry (SRM Institute of Science and Technology)

31. a. Explain the mechanism of wet corrosion.

(OR)

b. Explain any two methods of Corrosion control in detail.

32. a. Discuss the principle, instrumentation and applications of UV-visible spectroscopy.

(OR)

b. Derive the Nernst equation. List out its applications.

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Reg. No.														

B.Tech. DEGREE EXAMINATION, NOVEMBER 2019
Third Semester

18CYB103T – CHEMISTRY (LE)
(For the candidates admitted during the academic year 2018-2019 onwards)

Note:
(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.
(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

1. The energy required to remove an electron from the highest occupied atomic orbital is known as
   (A) Ionization energy (B) Kinetic energy
   (C) Binding energy (D) Vibrational energy

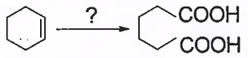
2. The most electronegative element possess which of the following the electronic configuration?
   (A) ns^2np^2 (B) ns^2np^4
   (C) ns^2np^5 (D) ns^2np^3

3. Identify the least stable ion amongst the following:
   (A) Li^+ (B) Be^-
   (C) B^- (D) C^-

4. The property Atomic size in the periodic table _____on moving down a group
   (A) Gradually increases (B) Gradually decreases
   (C) Increase then decrease (D) Decrease then increase

5. Loss of small molecule from original organic molecule is
   (A) Addition reaction (B) Elimination reaction
   (C) Substitution reaction (D) Reduction reaction

6. Drugs that are used to diagnise, cure and prevent disease are called
   (A) Additive drugs (B) Industrial drugs
   (C) Pharmaceutical drugs (D) Single cell drugs

7. The most suitable reagent for the following transformation is
   

   (A) $KMnO_4$ (B) OsO_4
   (C) $K_2Cr_2O_7$ (D) PCC

8. Identify the reducing agent from the following
   (A) OsO_4 (B) PCC
   (C) $LiAlH_4$ (D) $K_2Cr_2O_7$

9. Which of the following method is used to remove hardness from water sample.
   (A) Desalination (B) Decarbonation
   (C) Demineralization (D) Distillation

10. The exhausted cationic resins are regenerated by
   (A) Soft water (B) Acid
   (C) Alkali (D) NaCl

11. Permanent hardness of water is due to calcium
   (A) Chlorides (B) Bicarbonates
   (C) Nitrates (D) Acetates

12. Water can be sterilized by
   (A) CCl_4 (B) Cl_2
   (C) $CaCO_3$ (D) NaOH

13. Hypophosphite is used as a reducing agent in
   (A) Electro plating (B) Electroless plating
   (C) Hot dipping (D) Etching

14. Which of the following metal will form non-porous oxide layer?
   (A) Na (B) K
   (C) Al (D) Sr

15. Anhydrous inorganic metal surface in the absence of moisture exhibits
   (A) Wet corrosion (B) Dry corrosion
   (C) Galvanic corrosion (D) Pitting corrosion

16. When the hydrogen over voltage is low, the corrosion rate will be
   (A) High (B) Low
   (C) Independent (D) Zero

17. Nernst glower is the source of
   (A) UV-Visible radiation (B) IR radiation
   (C) Microwave (D) Radiowave

18. Reference electrode used in potentiometric titration is
   (A) Platinum electrode (B) Hydrogen electrode
   (C) Glass electrode (D) Calomel electrode

19. Finger print region in IR spectroscopy is _____.
   (A) 4000 – 1400 cm^{-1} (B) 3600 – 3200 cm^{-1}
   (C) 1400 – 900 cm^{-1} (D) 2850 – 2969 cm^{-1}

20. Hydrogen bonding in a molecule can be detected easily using.
   (A) Flame emission spectroscopy (B) Atomic absorption spectroscopy
   (C) UV-visible spectroscopy (D) IR spectroscopy

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

21. What is ionic size? Explain how cationic size varies along the period and group with examples.

22. What is reducing agent? Give an example with an equation.

23. Give two examples for temporary and permanent hardness causing substances.

24. Write short notes on electroplating.

25. What are the advantages of potentiometric titrations over other titrations?

26. What is demineralization?

27. Write short notes on Galvanic Corrosion.

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

28. a. What is polarizability and polarizing power for an ion? Explain the factors that enhance polarizability and polarizing power.

(OR)

b. Explain the trend of the following properties along the period and down the group of the periodic table.
   i. Electron affinity
   ii. Electronegativity
   iii. Ionization energy

29.a.i. What is the reaction of the following with cyclopropane?
   i. Halogens
   ii. Hydrogen iodide
   iii. Sulphuric acid
   iv. Hydrogen
   (8 Marks)

ii. Write any two reduction reactions using $NaBH_4$. (4 Marks)

(OR)

b.i. Explain Dieckmann condensation with an example. (8 Marks)

ii. Write any two oxidation reaction of $KMnO_4$. (4 Marks)

30. a. Explain the estimation of hardness of water by EDTA method.

(OR)

b. What is desalination? Explain the electrodialysis process with diagram. Give its advantages.