LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PHYSICS**

FOURTHSEMESTER – APRIL 2018

16UCH4AL01- GENERAL CHEMISTRY FOR PHYSICS-II

Date: 25-04-2018 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

Part-A

Answer ALL questions. **(10 × 2 = 20)**

1. Define molality of a solution.
2. The result of an analysis is 29.48 g, compared with the accepted value of 30.02 g. Calculate the relative error in the analysis.
3. Define the radius ratio rule.
4. Compare the directionality of bonding interactions in ionic and covalent solids.
5. Draw the structures of the purine bases present in DNA.
6. What is meant by inversion of sugar?
7. Find the electrochemical equivalence of copper if 0.264 g of copper is deposited when 800 coulomb of electricity is applied.
8. Why is heat of neutralisation of a strong acid by a strong base always a constant?
9. Mention any two applications of radioisotopes in agriculture.
10. Define photovoltaic effect.

Part-B

Answer any EIGHT questions. **(8 × 5 = 40)**

11. Explain the types of error in detail.

12a. Define mole fraction of a component.

b. Find the normality of 250 ml of aqueous solution containing 3.98 g of sodium hydroxide (molecular weight-40). (2+3)

13. Give an account of van der Waals solids and its characteristics.
14. Outline the structural features of Zinc blende.
15. Write the differences between reducing and non-reducing sugar.
16. Classify the dyes based on their chemical constitution.
17. Sketch and explain the secondary structural model of DNA.
18. Illustrate how solubility product of a sparingly soluble salt can be determined with the help of conductance measurement.
19. Describe the electrolysis of aqueous copper sulphate solution using inert and copper electrodes.
20. Derive Kirchoff's equation relating variation of enthalpy of a reaction with temperature.

21. Discuss any three types of glass and mention their uses.

22. Elaborate permeable and impermeable wares.

Part-C

Answer any FOUR questions. **(4 × 10 = 40)**

23. Distinguish between the following:
    (i) End point and equivalence point in a titration
    (ii) Primary and secondary standard substances
    (ii) Accuracy and precision in a measurement (4+3+3)

24a. How will you experimentally determine the lattice energy for NaCl using Born-Haber cycle?

b. Mention any four differences between crystalline and amorphous solids. (8+2)

25a. Draw and explain the structure of sucrose.

b. How is glucose converted into fructose and vice versa? (5+5)

26. Discuss the conductometric titration curves obtained for the following:
    (a) HCl*vs*NaOH (b) $AgNO_3$*vs*KCl (5+5)

27a. Explain Hess's law of heat of summation.

b. State first law of thermodynamics and write its mathematical form. (5+5)

28a. Distinguish between nuclear fission and nuclear fusion reactions.

b. Give an account of the general properties of ceramics. (5+5)

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