PURBANCHAL UNIVERSITY
2023

B. E. Computer/ECA/Electrical/Biomedical/Second Semester/*Final*

Time: 03:00 hrs. Full Marks: 60 /Pass Marks: 24

BSH2003: Chemistry (New Course)

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt ALL questions.

Group A

Very short question: **4×2=8**

1. Establish the relation between pH and pOH. 2
2. Define the term (a) co-ordination number (b) Ligand. 1+1
3. Trans isomer is more stable than cis isomer, why? 2
4. What are the applications of paints (at least four)? 2

Group B

Short question: **7×4=28**

5. Write the major factor that causes air pollution and also mention their effects. 4
6. Derive Ostwald's dilution law. Write it's limitation. 3+1
7. Explain the Geometry and Magnetic properties of $[Ni(co)_4]$ and $[Fe(CN)_6]^{3-}$ on the basis of VBT. 2+2
8. Define the term Enantiomers and mesomers giving the examples of optical acitivity of Tartaric acid. 2+2
9. What is Grignard's reagent? How can you prepare Grignard's reagent from haloalkane. Write the action of Grignard's reagent with (a) Formaldehyde (b) water. 1+1+1
10. What is the monomer of natural rubber? What is the vulcanization of rubber? 1+3
11. What is buffer solution? A buffer solution contains 0.015M of NH_4OH and 0.025M of NH_4CL. Calculate the pH of the solution, K_b for NH_4OH is 1.8×10^{-5}. 1+3

OR,

Contd. ...

What pollutants causes soil pollution? Write the methods of control of soil pollution. 4

Group C

Short question: **3×8=24**

12. What is glass electrode? How can you determine the pH of solution using glass electrodes? Construct the galvanic cell by using the electrodes $E°Zn^{2+}/Zn = -0.76V$ and $E°Ag^{+}/Ag = +0.80V$; Given $[Zn^{2+}]=0.4M$ and $[Ag^{+}]=0.1M$. Also calculate the emf of the cell. 2+3+3

13. What are the transition elements? Write the electronic configuration of Fe^{2+} and CU. Explain the magnetic and catalytic properties of transition element. 2+2+2+2

14. Write the mechanism and kinetics of hydrolysis of CH_3Br and $(CH_3)_3Br$ in the presence of aqueous KoH . 4+4

OR,

Write the Hazards and their control in petroleum Refineries and LPG bottling plants. 4+4

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