Council for Technical Education and Vocational Training
Office of the Controller of Examinations
Sanothimi, Bhaktapur
Regular/Back Exam - 2074, Falgun/Chaitra

www.rijankc.com.np

Program: Diploma in Civil/Architecture/Ref&AC/   Full Marks: 60
Electronic/Mechanical/Electrical/E&E/   Pass Marks:24
Automobile/IT/Computer/Geomatics Engineering
Year/Part: I/I [New + Old Course]   Time: 3 hrs
Subject: **Chemistry-I**

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicates full marks.

Attempt **All** Questions.

1. a] Define radical. State Avogadro's hypothesis. Deduce molecular
weight = 2 × vapour density of gas.   [1+1+3]
   b] What is equivalent weight? 0.5302 gm of metal yields 0.7052
gm of its chloride. The specific heat of metal is 0.059. Now find
exact atomic weight of metal.   [1+4]

2. a] Write 4 postulates of Bohr's atomic model. Write electronic
configuration of Cu. (copper)   [4+1]
   b] State Aufbau principle. Write in brief about various quantum
number.   [1+4]

3. a] Define oxidising agent and reducing agent. Balance the reaction
by either oxidation number method or ion-electron number-
$Zn + HNO_3 \rightarrow Zn(NO_3)_2 + NO + H_2O$
   b] State modern periodic law. Write anomalies of modern periodic
table.   [2+2]

4. a] What is titration? Write differences between: [1+4]
i] Acid-base titration and redox titration.
ii] End point and equivalent point.
   b] Find the normality of 0.49gm of H_2SO_4 present in 250ml solution.
What is the volume of this solution required to neturalize 20ml
0.4 N NAOH?   [3+2]

5. a] State Faraday's first law. If 1.5A current is passed to a metallic
solution for 50 minutes to deposit 5.03gm of metal, now find the
atomic weight of the divalent metal.   [1+4]
   b] Define acid and base on the basis of Bronsted concept. What is
conjugate acid-base pair? Give two examples.   [2+3]

6. Write short notes on: (Any Four) [4×2.5]
   a] Rusting of iron
   b] Dalton's atomic theory
   c] Normality and molarity relation
   d] Hund's rule
   e] Rutherford's atomic Theory's drawback
   f] Ionic bond

Good Luck!