F.Y.B.SC. SEM – I (2014 COURSE) : WINTER- 2017

SUBJECT: CHEMISTRY: PHYSICAL AND INORGANIC CHEMISTRY-I

Day : Monday
Date : 23/10/2017

W-2017-0583

Time : 12.00 NOON TO 02.00 PM
Max. Marks : 40

N.B.:

1) All questions are **COMPULSORY.**
2) Figures to the **RIGHT** indicate full marks.
3) Draw neat labeled diagrams **WHEREVER** necessary.
4) Both the sections should be written in **SAME** answer book.

SECTION-I

Q.1 Attempt any **TWO** of the following: **(10)**

a) Derive equation for a second order reaction in which reactants are at different concentrations.
b) Distinguish between molecularity and order of the reaction.
c) Explain decomposition of hydrogen pentoxide.

Q.2 Attempt any **TWO** of the following: **(10)**

a) State and explain distribution law.
b) Elaborate on the process of extraction.
c) What are the limitations of the distribution law?

Q.3 **A)** Attempt any **ONE** of the following: **(05)**

a) If $y=(x^2-2)(x+2)$, $\frac{dy}{dx}=?$

b) Integrate $\int\left(x^{\frac{4}{3}}+\log_{10}x\right)dx$

SECTION-II

B) Attempt any **ONE** of the following: **(05)**

a) Define oxidation number. Calculate oxidation number of
(i) 'S' in $Na_2S_2O_3$ (ii) N in HNO_3.
b) What will be the normality of following solutions?
i) 100 ml containing 0.315 g nitric acid (eq. wt. = 63)
ii) 100 ml containing 0.1515 g crystalline oxalic acid (eq. wt. = 63).

Q.4 Attempt any **FIVE** of the following: **(10)**

a) Define the terms oxidation and reduction.
b) Explain primary standard substance and secondary standard substance.
c) Define ppm and ppb and write their general formule.
d) What is the relation between normality and molarity? Find the normality of 0.1 M H_2SO_4.
e) Calculate oxidation state of Mn in $MnSO_4$.
f) Give general formula for calculating 'Weight to volume percent.'
g) Find the amount of the substance to be weighed to prepare 100 ml 0.025 N solution of $KMnO_4$ (Eq. wt. of $KMnO_4$ = 31.6).

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