

2018

CBCS

3rd Semester

CHEMISTRY

PAPER—C5P

(Honours)

(Practical)

Full Marks : 40

Time : 2 Hours

*Physical Chemistry—II**Instruction to the Examiners*

1. Set at least five experiments in the centre and dispense one experiment to each examinee through a single draw lottery.
2. Prepare and supply requisite volume of the following solutions :
  - (a) Approx  $\frac{N}{2}$  NaOH Solution for conductometric titrations.

(Turn Over)

- (b)  $\sim \frac{N}{10}$  NaOH solution for study of saponification reaction conductometrically.
- (c) Either 10% glycerin solution or 8% sugar solution (with proper label) for *experiment 1. a* as unknown liquid.
- (d) For *experiment 1. b*, saturated solution of  $I_2$  in carbon tetrachloride and carbon tetra chloride as organic solvent.
- (e) Approx  $\frac{N}{10}$  oxalic acid, approx  $\frac{N}{10}$  HCl and  $\sim \frac{N}{10}$  acetic acid solution with proper label experiments 1. c, 1. d and 1. e respectively as unknown solution.
- (f) approx  $\frac{N}{10}$  acetic acid solution to determine ionization constant.
3. Digital balance (3 decimal/accuracy 1 mg) must be supplied.
4. Provided the value of density of water, coefficient of viscosity of water, density of supplied ester and specific

conductance for 0.1 N and 0.01 N solutions of KCl at experimental temperature.

5. Calibrate the conductometer.
6. Allow examinees to do their experiment only after completion of theory write up. Put signature at the end of theory written by the candidate.
7. Check and sign important data.
8. Awarding Marks :
  - (a) Theory : 03
  - (b) Temperature recording, Representation of data in tabular form and calculation : 07
  - (c) Graph Plotting : 03 (only for expt. 1.c to 1. g)
  - (d) Result : 05 (for expt. 1. a and 1.b)/02 (for expt. 1.c to 1.g)

\*\*\* Marks on results should be awarded on the basis of results that examiners will get from their experiments.

If the result of the examiners and that reported by a candidate differ by  $x\%$ , then award marks as per following table.

$x$	<i>Expt. 1. a to 1. b</i>	<i>Expt. 1. c to 1. g</i>
$0\% \leq x \leq 5\%$	5	2
$5\% \leq x \leq 8\%$	3	$1\frac{1}{2}$
$8\% \leq x \leq 10\%$	2	1
$10\% \leq x \leq 11\%$	1	$\frac{1}{2}$
$x > 11\%$	0	0

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*Full Marks : 20*

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*The figures in the right-hand margin indicate full marks.*

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

*Illustrate the answers wherever necessary.*

**Physical Chemistry-II Lab.**

1. Perform one experiment from the following list of experiments allotted through a single draw Lottery.

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- (a) Determine coefficient of viscosity of the supplied liquid with respect to *water* by using Ostwald viscometer.

*(Turn Over)*

- (b) Determine partition coefficient for the distribution of  $I_2$  between water and the supplied organic solvent (perform the experiment in one set).
- (c) Determine the exact concentration of supplied solution (approx  $\frac{N}{10}$ ) of a dibasic acid by titrating the solution conductometrically against standard NaOH solution.
- (d) Determine the exact concentration of supplied solution (approx  $\frac{N}{10}$ ) of a strong monobasic acid by titrating the solution conductometrically against Standard NaOH solution.
- (e) Determine the exact concentration of supplied solution (approx  $\frac{N}{10}$ ) of a weak monobasic acid by titrating the solution conductometrically against standard NaOH solution.
- (f) Determine the rate constant of saponification reaction conductometrically.
- (g) Determine the ionization constant of a weak monoprotic acid using Ostwald dilution law.

In each experiment, marks are distributed among the following : Theory, Temperature recording, Representation of data in Tabular form, calculation, graph plotting (if necessary) and Result.

2. Laboratory Note Book	2
3. Viva-Voce	3