

Post Graduate Diploma in Analytical Chemistry (PGDAC)

MARCH EXAMINATION 2021

COURSE CODE: MCHL-4 COURSE TITLE: Electroanalytical and Other Methods Lab (Credits: 2)

Time: ½ Hour

Maximum Marks: 25

Please fill up the following particulars:

Enrolment No. in Figures

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Enrollment No. in Words

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Examination Centre Code

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Day and Date

Medium (English/Hindi).....

Name of Examinee.....

Signature of Examinee.....

Signature of Invigilator.....

To be filled only by the Evaluator

Marks Obtained.....

Signature of the Evaluator.....

Name of the Evaluator.....

Evaluator Code:.....

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Seal of Centre Superintendent
with Centre Code

Note for Examinee:

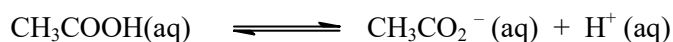
- This is an objective type question paper.
- This question paper consists of 15 questions. **You have to attempt only 10 questions.** Each question carries 2½ marks.
- Each question has four alternatives, only one of which is correct. Mark the correct alternative on the question paper itself by putting the tick mark ✓ in the box given against it.

ON COMPLETION, IT IS COMPULSORY FOR YOU TO SUBMIT THIS QUESTION PAPER TO YOUR INVIGILATOR.

- When we added hydrochloric acid from burette to potassium hydroxide, the pH of the solution will.....
i). increase ii) decrease
iii) no change iv) remain constant
- One mole of oxalic acid equivalent tomole(s) of sodium hydroxide.
i) 1 ii) 2
iii) 3 iv) 4
- If you are titrating 20 cm³ NaOH with HCl from burette, the sharp change in pH after equivalence point is due to the excess of:
i) H⁺ ions ii) Na⁺ ions
iii) OH⁻ ions iv) Cl⁻ ions
- Which of the following is commonly used standard buffer(s) for the calibration of pH meter?

- i) pH value 4 only ii) pH value 7 only
 iii) pH value 9.2 only iv) All the three

5. Select correct option for the expression of K_a for the following reaction:



- i) $K_a = [\text{CH}_3\text{CO}_2^-(\text{aq})][\text{H}^+(\text{aq})]/[\text{CH}_3\text{COOH}(\text{aq})]$
 ii) $K_a = 2[\text{H}^+(\text{aq})]/[\text{CH}_3\text{COOH}(\text{aq})]$
 iii) $K_a = [\text{H}^+(\text{aq})]^2 / [\text{CH}_3\text{COOH}(\text{aq})]$
 iv) $K_a = [\text{CH}_3\text{COOH}(\text{aq})]/[\text{H}^+(\text{aq})]^2$

6. Which cannot be used as indicator electrode in potentiometric titration?

- i) Hydrogen electrode
 ii) Glass electrode
 iii) Quinhydrone electrode
 iv) Pt electrode

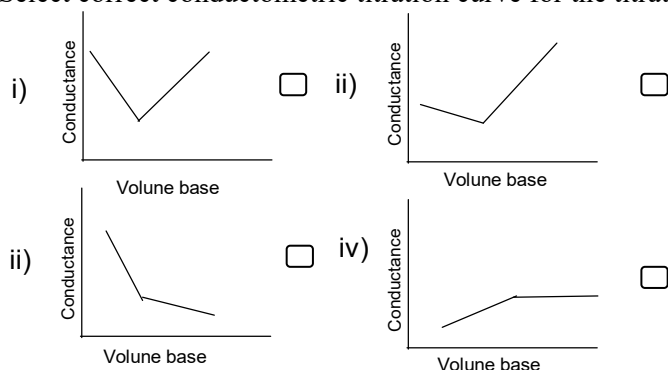
7. If M_1 and V_1 are the molarity and volume of ferrous ammonium sulphate, respectively. Similarly, M_2 and V_2 are the molarity and volume potassium dichromate. Which of the formula will be used to calculate molarity of potassium dichromate solution when it is titrated with ammonium ferrous sulphate solution in acidic medium?

- i) $M_2 = \frac{M_1 V_1}{6V_2}$ ii) $M_2 = \frac{M_1 V_1}{2V_2}$
 iii) $M_2 = \frac{M_1 V_1}{5V_2}$ iv) $M_2 = \frac{M_1 V_1}{4V_2}$

8. In precipitation titration of chloride ions, the potential change is due to:

- i) precipitation of chloride ion ii) precipitation of Ag
 iii) formation of sodium nitrate iv) ionisation of silver chloride

9. Select correct conductometric titration curve for the titration of weak acid vs a strong base.



10. Which is the working principal of conductometry?

- i) Measurement of potential
 ii) Measurement of conductivity
 iii) Measurement of emf
 iv) Measurement of pH

11. In precipitation titration of AgNO_3 with NaCl , we use _____ indicator electrode.

- i) silver electrode ii) glass electrode
 iii) pt electrode iv) hydrogen electrode

12. The auxillary electrode in polarography is.....electrode.
- i) dropping mercury ii) mercury pool
iii) graphite iv) platinum
13. In polarography any change in diffusion current is denoted by
- i) Ilkovic equation ii) Nernst Equation
iii) Faraday's Law iv) Ohm's law
14. Which is the working principle of amperometry ?
It is based on the principle of polarography with the exception that
- i) the voltage is altered during the titration
ii) the current is maintained constant during the titration
iii) the voltage is maintained constant during the titration
v) the current is maintained altered during the titration
15. Which of the following is not a criteria for selecting radio tracers?
- i) Sufficient long half-life ii) Very long half-life
iii) Type of radiation emits iv) Cost of radio tracer