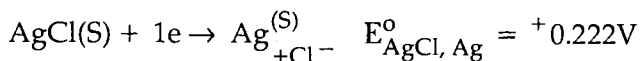
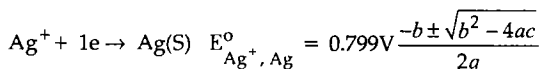


**P.G. DIPLOMA IN ANALYTICAL CHEMISTRY  
(PGDAC)****Term-End Examination****June, 2012****MCH-004 : ELECTROANALYTICAL AND OTHER  
METHODS***Time : 3 hours**Maximum Marks : 75**Note : Answer any five questions.**All questions carry equal marks.*

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1. Write down the cell reaction for the galvanic cell represented below :
    - (a)  $Zn/Zn^{2+} \parallel Cu^{2+}/Cu$  5
    - (b) The conductivity of 0.2M HCL is  $0.1576 \Omega^{-1} \text{ cm}^{-1}$ . Calculate the molar conductivity of the solution. 5
    - (c) What are the advantages of DME ? 5
  
  2.
    - (a) What are the sources of error in DSC. Explain how can these be avoided ? 5
    - (b) Calculate the strength of 14.8 ng of  $^{45}\text{Ca}$  ( $t_{1/2} = 16.3\text{d}$ ) in terms of Ci and Bq. 5
    - (c) What is the scheme of the sequence of steps for the determination of an element or a compound in a complex mixture by IDA ? 5

3. (a) Calculate the solubility product of AgCl 5  
from the data given below :



- (b) State the differences between concentration 5  
polarisation and kinetic polarisation in  
electrogravimetry.
- (c) A high concentration of supporting 5  
electrolyte is used in most of the  
electroanalytical procedures. Explain.
4. (a) How do the particle size of sample, amount 5  
of sample and sample container influence  
the DTA curve ? What precautions should  
be taken to avoid these ?
- (b) Which is the most important factor for the 5  
choice of a radiotracer in an experiment.  
Justify your answer with a suitable example.
- (c) State special features of coulometric 5  
methods in analytical chemistry.
5. (a) Draw the nature of curve for the 5  
conductometric titration of a mixture of a  
strong acid and a weak acid VS a strong  
base (NaOH). Explain the salient features  
of titration curve.

- (b) Explain the capillary characteristics and the factors affecting them in polarography. 5
- (c) Explain the characteristic features of an enthalpogram for an exothermic reactor. 5
6. (a) What is radiochromatography ? Explain the experimental procedure. How does it differ from ordinary paper chromatography ? 5
- (b) A sample containing 24.9.μg Zn was irradiated with thermal neutrons for a week at  $6.9 \times 10^{12} \text{ n cm}^{-2} \text{ s}^{-1}$  inducing the reaction  $^{64}\text{Zn}(n, r) ^{65}\text{Zn}$  ( $t_{1/2} = 245d$ ). Target nuclide had isotopic abundance of 48.9% and its thermal neutron absorption cross-section is 0.50b. Calculate induced activity in terms of Curie. 5
- (c) What are ion-selective electrodes ? Describe some of their applications. 5
7. (a) Write the equation for the peak current in differential pulse polarography (DPP) and Explain the different symbols used there in. 5
- (b) What is potentiostatic coulometry ? Discuss the role of integrators in modern instruments. 5

- (c) Write the half-cell reaction for SCE with reference to SHE. Derive an expression for its potential from Nernst equation. 5
8. (a) Discuss the effects of temperature and pressure on the conductivity of the electrolyte solution. 5
- (b) Draw the schematic diagram of thermogravimetric balance and explain the features of furnace and temperature measurement systems. 5
- (c) Compare DSC with DTA. Write the formula with the help of which the heat of reaction observed in DSC can be used to calculate molar enthalpy of reactions. 5
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00201

**DIPLOMA IN AQUACULTURE (DAQ)**

**Term-End Examination**

**June, 2012**

**BAQ-001 : BASICS OF AQUACULTURE**

*Time : 3 hours*

*Maximum Marks : 100*

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*Note : Attempt any five questions. All questions carry equal marks. Support your answer with well labelled diagrams wherever necessary.*

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1. Discuss the origin of aquaculture in India. 20
  
2. (a) List the important challenges in the development of aquaculture. Describe any one in detail. 10
- (b) Discuss the future development of aquaculture. 10
  
3. Describe the different physical properties of water to take up aquaculture related activities. 20
  
4. Describe the morphology, biology and distribution of any ten candidate species for brackish water aquaculture in India. 2x10=20

5. Describe how aquaculture could be practised in combination with other farming systems. 20
6. What do you mean by fish preservation ? 5+15  
Describe any three important commercial methods of fish preservation.
7. Discuss the structure and functions of fisheries co-operatives. 10+10
8. Write short notes on the following (*Any four*) : 20
- (a) Aquaculture extension in India.
  - (b) Global Scenario of Aquaculture
  - (c) Use of artificial habitats in aquaranching
  - (d) Importance of seaweeds
  - (e) Constraining factors for aquaculture development.
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