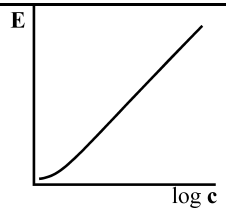
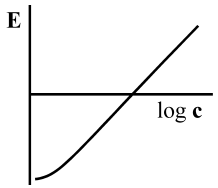
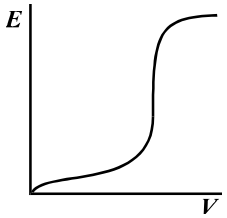
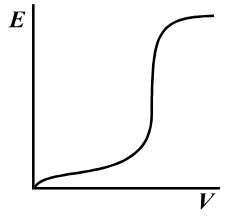
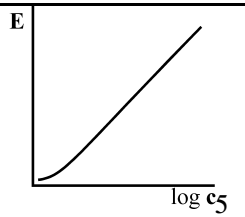
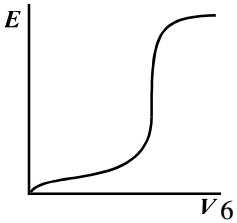
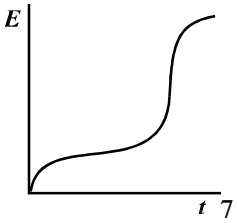
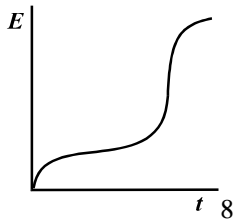
8.5 Classification of electroanalytical techniques

8.5.1 Potentiometric and related techniques (Techniques Involving Electrode Reactions and Employing Constant Excitation Signals)

Recommended Name of Technique	Excitation Signal (Constant)	Independent Variable	System	Measured Response	Typical Response Curve	Remarks
Potentiometry	Current, $i(I) = 0$	Concentration c	One indicator electrode and one reference electrode (or two indicator electrodes) in the same solution	Potential, $E = f(c)$	 1	A measure of the potential difference between an indicator electrode and a reference electrode (or another indicator electrode) in solution, while the current is held at zero. Because no faradaic current flows, the potential is usually controlled by the thermodynamic properties of the system. The therms "zero-current potentiometry" and "null-current potentiometry" are not recommended. No special terminology is recommended for measurements of pH and similar quantities.
Differential potentiometry			Two indicator electrodes in separate solutions joined by an ionic conductor	Potential, $E = f(c,c')$	 2	The term "precision null-point potentiometry" is not recommended.
Potentiometric titration	As for potentiometry	Volume V (or otherwise measured amount) of added reagent	As for potentiometry	Potential, $E = f(V)$	 3	The terms "zero-current potentiometric titration" and "null-current potentiometric titration" are not recommended.
Differential potentiometric titration			As for differential potentiometry	Potential, $E = f(V)$	 4	

8.5.1 Potentiometric and related techniques (Techniques Involving Electrode Reactions and Employing Constant Excitation Signals) (Continued)

Recommended Name of Technique	Excitation Signal (Constant)	Independent Variable	System	Measured Response	Typical Response Curve	Remarks
Controlled-current potentiometry	Current, $i\ (I) \neq 0$	Concentration c	One indicator electrode and one reference electrode in the same solution.	Potential, $E = f$ (c or log c)	 5	A measure of the potential difference between an indicator electrode and a reference electrode in solution, where the cell current is non-zero.
Controlled-current potentiometric titration		Volume V (or otherwise measured amount) of added reagent	As for controlled current potentiometry	Potential, $E = f\ (V)$	 6	
Chrono-potentiometry		Time t	Indicator electrode stationary in unstirred solution	Potential, $E = f\ (t)$	 7	A measure of the time dependence of the potential of an indicator electrode, usually at non-zero current with a stationary electrode in unstirred solution. Potential excursions reflect changes in surface concentrations of electroactive species with time due to the passage of current.
Coulometric titrations (controlled current coulometry)			Convective mass transfer to working electrode	Potential E of an indicator electrode, absorbance A, or some other composition dependent property of the bulk of the solution electrolyzed $= f\ (t)$	 8	A measure of the total coulombs of electricity required to reach an end-point indicative of the quantitative electrolysis of an electroactive species in solution. Terms like "potentiometric coulometric titration or "controlled-current coulometry with potentiometric end-point detection" are recommended when the technique of end-point location is to be specified.