بسم الله الرحمن الرحيم

قسم الكيمياء – كلية العلوم — الزمن : ساعتان

جامعة الملك سعود — الشعبتان : ٢٢٢٥ ، ٢٢٣٢

الامتحان النهائي في المقرر ٣٥٠ كيم ( التحليل الآلي لطلاب الهندسة الكيميائية )

الفصل الدراسي الأول للعام الجامعي ١٤٢٧ / ١٤٢٨ هـ

مدرس المقرر : د٠ عبد الله بن محمد عزيز الرحمن

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(Q1) (25 points)

Sketch & explain the following :-

1- The operation mechanism of a double – beam spectrometer, employing two choppers ?

2- The formation of free atoms in flame, by using the premix burner ?

3- Determination of (Al) in one of its ores, by FIA – Spectrometry ?

4- The fluorescence mechanism of the aromatic compounds ?

5- The solid – state membrane electrodes ?

(Q 2) ( A = 18 Points & B = 7 Points )

( A ) Describe briefly the following :

1- The spectral interferences in flame atomic emission spectrometry?

2- Determination of KCN & $KMnO_4$ by coulometric titrations ?

3- The essential components of a polarographic cell ?

4-Determination of ( S ) in crude oil by the methylene blue method ?

5-The chemical deviation ? Give two different examples ?

6-The neutral carrier electrodes ?

( B ) Deduce the cell reaction of the following cell , and then calculate the ( $K_{eq}$ ) & the cell potential ( $E_{cell}$ ) :

$$Pt \left| \begin{array}{l} Sn^{4+} \ (0.001\ M)\ , Sn^{2+}\ (0.01\ M) \\ E^0 = 0.154V \end{array} \right| \left| \begin{array}{l} Ag^{+}(0.001\ M) \\ E^0 = 0.799V \end{array} \right| Ag$$

Good Luck