

**ACTIVITY CODE: 1903028021**

**B.Sc. 6<sup>th</sup> Semester (Honours) Examinations, October 2020**

**Subject: Chemistry**

**Course ID: 61416**

**Course Code: UG/CHEM/603/DSE-3 (T3)**

**Course Title: Analytical Methods in Chemistry**

**Full Marks: 12**

**Time: 45 Minutes**

*The figures in the margin indicate full marks*

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

1. Answer *any three* questions: 1×3 = 3

- (a) Define Accuracy.
- (b) Give an example of indeterminate error.
- (c) State Beer-Lambert's law
- (d) Name any source of UV spectroscopy.
- (e) In flame photometry, what is the range of the flame temperature?
- (f) What are the limitations of paper chromatography technique?
- (g) Give any two criteria for a good solvent in liquid-liquid extraction.
- (h) Write the full form of RAM and ROM.
- (i) Why  $R_f$  value is important in a chromatography experiment?

2. Answer *any one* question: 5×1 = 5

- (a) Define molar extinction coefficient. Mention its unit. Write two causes for deviation from the Beer's law. 2+1+2 = 5
- (b) Explain the theory of thermogravimetry with an example. 3+2 = 5
- (c) (i) Give several advantages of a potentiometric titration over a direct potentiometric measurement.
- (ii) Which is the most commonly used detector in high performance liquid chromatography and why? 3+2 = 5

3. Answer *any one* question: 4×1 = 4

- (a) State two advantages and a major limitation of each of the following methods –  
(A) Flame AAS      (B) FES. 2+2 = 4
- (b) Two students analysed a sample of iron and obtained the following results:  
**A-Set:** 50.750, 50.759, 50.770, 50.781  
**B-Set:** 50.666, 50.667, 50.668, 50.669  
Calculate the standard deviation and rejection quotient (Q) in both sets of values. 4
- (c) Why thin layer chromatography is important? Write down two applications of GLC.

2+2 = 4