This question paper contains 3 printed pages] 30/11/19 (M) 30/11

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **7544**

Unique Paper Code : **42173923/32173902** **J**

Name of the Paper : **Basic Analytical Chemistry**

Name of the Course : **B.Sc. (H)/B.Sc. (Prog.) : SEC**

Semester : **III**

Duration : 2 Hours Maximum Marks : **38**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *four* questions in all.

1. (*a*) Indicate how many significant figures are there in each of the following numbers :

(*i*) 0.0903

(*ii*) 9.03×10^2

(*b*) A 250.0 mL aqueous solution contains 45.1 mg of a pesticide. Express the pesticide's concentration in *weight percent, parts per million* and *parts per thousand.*

(*c*) Define *absolute error* and *relative error.*

(*d*) Define ion exchange capacity. What are its units ?

1,3,3,2½

P.T.O.

2. (*a*) What do you understand by soil salinity and soil alkalinity ?

(*b*) Discuss all sources of errors in analytical measurements.

(*c*) What are the fundamental requirements of a useful ion exchange resin ? 2,5,2½

3. (*a*) Define permanent, temporary and total hardness of water. How are these determined ? Give experimental details.

(*b*) What do you understand by 'blank' determination in an analysis ?

(*c*) Differentiate between *partition chromatography* and *adsorption chromatography*. 5,2,2½

4. (*a*) Comment on the correctness of the following statements and justify :

(*i*) Good precision ensures accuracy.

(*ii*) Temporary hardness is tough to remove.

(*b*) Write short notes on

(*i*) Ion exchange chromatography

(*ii*) Water sampling methods

(*c*) Define stratified random sampling. 4,4,1½

5. (*a*) Discuss the sources of contamination of pure water.

(*b*) What is the significance of wavelength maxima (λ_{max}) and molar extinction coefficient (ε) in a colorimetric analysis ?

(*c*) Define *retention factor* (R_f). What is its significance in a chemical analysis ? 4,3,2½