

SH-III/CHE/305/SEC-1/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20**CHEMISTRY****Course ID : 31415****Course Code : SHCHE/305/SEC-1**

Course Title: Basic Analytical Chemistry

Time: 2 Hours**Full Marks: 40**

*The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer *any five* questions: 2×5=10
- Give one example for each of mobile phase and stationary phase?
 - Give an example of determinate error.
 - What is nutritional value of food?
 - Write the major constituent of talcum powder.
 - Name two metal-ion indicators mentioning the complexometric titrations where they are used.
 - Write two differences between thin layer chromatography and column chromatography.
 - Express the number of significant figure for the following: 0.00200, 9.023×10^{23} , 40500, 100.0.
 - Define Chemical Oxygen Demand (COD).
2. Answer *any four* questions: 5×4=20
- Calculate the standard deviation and variance of the data 20.93, 20.04, 20.89 and 20.45. Discuss the application of ion-exchange chromatography for water purification. 2+3=5
 - Mention two applications of TLC. Can you separate Zn^{2+} and Ca^{2+} ion using anion exchanger? If yes, how? 2+(1+2)=5
 - What are the benefits and drawbacks of food processing? What is food adulterant? Give an example. 3+2=5
 - Briefly discuss the procedure of the determination of benzoic acid in soft drinks. 5
 - Briefly discuss the procedure of the determination of ZnO in talcum powder. 5
 - Classify different types of errors. How will you minimize determinate errors? 3+2=5

3. Answer *any one* question:

10×1=10

- (a) (i) Perform the operation with correct significant figures: $Y = \log[3.00(\pm 0.03) \times 10^{-4}]$
(ii) What is the general procedure to determine ion exchange capacity of an anion exchanger?
(iii) Discuss the method for the determination of BOD in water. 3+3+4=10
- (b) (i) Is there any difference between precision and accuracy? — Justify.
(ii) Explain the difference between constant and proportional error.
(iii) Write down the structure of Mg–EDTA complex.
(iv) Which developing solvent and visualizing agent are used in the separation of *Fe* and *Al* using paper chromatography? (1+3)+2+2+2=10
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