



**ELIZADE UNIVERSITY,
ILARA-MOKIN, NIGERIA**

FACULTY: BASIC & APPLIED SCIENCES

DEPARTMENT: BIOLOGICAL SCIENCES

FIRST SEMESTER EXAMINATION

2018/2019 ACADEMIC SESSION

COURSE CODE: EMT 303

COURSE TITLE: METHODS IN ENVIRONMENTAL ANALYSIS II

DURATION: 2 HOURS

HOD's SIGNATURE

NAME:.....

MAT. No:.....

INSTRUCTION: ANSWER FOUR (4) QUESTIONS IN ALL

Attempt any four (4) questions in all

1. (a) Briefly describe the preparation of a liquid sample for infra-red spectroscopy
(b) What is the importance of the fingerprint region in infrared spectrum?
(c) Draw a schematic diagram of Fourier transform infrared spectrophotometer?
(d) What are the applications of Infra-red spectroscopy?
(e) Infra-red region of the EMS is divided into three regions, list the regions (with their ranges) and which of the regions is the most analytically useful.
2. (a) What do you understand by the terms Electromagnetic Radiation (EMR) and Electromagnetic Spectrum (EMS)
(b) Explain the principle of absorption spectroscopy.
(c) List the three types of energy changes accompanying absorption of EMR and explain any one.
(d) Explain the microwave region of the electromagnetic spectrum.
(e) What are the qualities of an ideal solvent for UV/VIS spectrophotometry?
3. (a) Define Beer-Lambert's law and list the deviations from Beer-Lamberts law.
(b) What are Chromophores and Auxochromes? Give two examples in each case.
(c) List three limitations and two applications of Flame Atomic Emission Spectrophotometry.
(d) What are Bathochromic and Hypochromic shifts?
(e) A molecule with a vibrational quantum number of 6 having a bond fundamental vibrational frequency of 2.42 Hertz. Calculate the energy of the vibrational mode.
4. (a) Describe the techniques involved in photometric titration.
(b) Differentiate between circular dichroism and optical rotatory dispersion.
5. (a) Explain the principles, uses and limitations of flame photometry.
(b) Describe the principle of polarimetry.
6. (a) What are the applications of Polarimetry?
(b) Draw the Schematic Instrumentation of Flame Photometry.