



NATIONAL OPEN UNIVERSITY OF NIGERIA
UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE
EXPRESS WAY, JABI - ABUJA.
FACULTY OF SCIENCES
DEPARTMENT OF PURE AND APPLIED SCIENCE
SEPTEMBER 2020_1 EXAMINATION

COURSE CODE: CHM 316
COURSE TITLE: INDUSTRIAL CHEMICAL TECHNOLOGY I
CREDIT UNIT: 2
TIME: 2 Hours
INSTRUCTION: Answer question one and any other three questions.

QUESTION ONE

- 1ai. Define mass transfer. 2 mks
- 1aii. Why must products be purified during manufacture? 3 mks
- 1aiii. Of the purification methods, which is the most effective method for obtaining a pure sample of a product. Explain. 6 mks
- 1bi. Mention three equipment used in facilitating transformation of raw materials into products. 1½ mks
- 1bii. Outline the type of separation processes used in the chemical industry and explain briefly any one of them. 6½ mks
- 1c. Enumerate mass transfer industrial processes. 6 mks

QUESTION TWO

- 2a. What does the Second law of thermodynamic imply? 5 mks
- 2b. Discuss the types of heat conduction. 10 mks

QUESTION THREE

- 3a. State the Fourier law of heat conduction. 2 mks
- 3b. What is/are;
- i. radiation 5 mks
 - ii. properties of radiant heat 8 mks

QUESTION FOUR

4a. What is a Tubular Heat Exchanger?

7 mks

4b. Explain a Distillation Tower.

8 mks

QUESTION FIVE

5a. Write short note on diffusivity in liquid and solid.

7 mks

5b. Mention and explain briefly the factors to be considered when using a bioreactor.

8 mks