



NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, Nnamdi Azikiwe Expressway, Plot 91, Cadastral Zone, Jabi, Abuja
FACULTY OF SCIENCES

DEPARTMENT OF PURE AND APPLIED SCIENCE

OCTOBER/ NOVEMBER 2019

COURSE CODE: CHM 312

COURSE TITLE: INDUSTRIAL CHEMICAL PROCESSES

COURSE UNIT: 2 units

TIME: 2 hours

INSTRUCTION: Answer Question 1 and any other three (3) questions

QUESTION 1

- (a) What are the four main requirements for a material to function as an adhesive? [4 marks]
- (b) Which of the two types of styrene butadiene rubber is more useful and why? [3 marks]
- (c) Highlight the steps involved in the production of Ibuprofen [4 marks]
- (d) State the functions of chromophore and auxochrome in dyeing process. (2 marks)
- (e) Distinguish between white wine and red wine (3 marks)
- (f) State three characteristics of explosives [3 Marks]
- (g) Describe the production process of trinitrotoluene (TNT) [3 marks]
- (h) What are pesticides? Give any two types each of chemical pesticides and biopesticides [3 marks]

QUESTION 2

2. (a) Define the term fermentation [2 Marks]
- (b) Explain each of the two major types of industrial fermentation [6 Marks]
- (c) List the steps involved in fermentation process [3 Marks]
- (d) Describe the recovery and purification of fermentation product. [4 Marks]

QUESTION 3

3. (a) (i) Define the term polymer [2 marks]
- (ii) State two examples each of:
- I. Natural polymers [2 marks]
- II. Synthetic polymers [2 marks]
- (b) State three basis for the classification of polymers [3 marks]
- (c) Differentiate between addition and condensation polymerization. [4 marks]
- (d) Mention two areas of application of polymers [2 marks]

QUESTION 4

4. (a) Define the term dyes? [2 Marks]
- (b) What are the bases for classifying dyes? [3 Marks]
- (c) Explain briefly the processes involved in the production of Penicillin [6 Marks]
- (d) Describe the synthesis process of dyes. [4 Marks]

QUESTION 5

5. (a) Define the term flavour [3 Marks]
- (b) State four basic flavours which the tongue can detect. [2 marks]
- (c) Name the two major flavouring agents [2 marks]
- (d) Explain each of the flavouring agents named in (c) above [8 Marks]