



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
FIRST SEMESTER EXAMINATION 2021

COURSE CODE: CHM415
COURSE TITLE: INDUSTRIAL CHEMICAL TECHNOLOGY II
TIME: 2 HOURS
INSTRUCTION: Answer question one and any other three questions

QUESTION ONE

- 1ai. Draw a flow scheme of the main process for syngas 5 mks
- 1aii. List five applications of syngas 5mks
- 1b. Using equations, explain four different sources of Hydrogen 8 mks
- 1ci. Write short note on “water shift reaction” 5 mks
- 1cii. What advantage does fluid bed gasifier have over moving bed gasifier? 2 mks

QUESTION TWO

- 2a. Explain five essential stages involved in cement manufacture 5mks
- 2b. Write short notes on the following;
- i. Acid rain
- ii. Greenhouse effect 4 mks
- 2c. State how nuclear waste are categorized 3mks
- 2d. Explain how rancidity can be prevented 3mks

QUESTION THREE

3a. Explain the followings:

- | | | |
|------|--------------------------------------|-------|
| i. | The wet process of cement production | 3 mks |
| ii. | The dry process of cement production | 3 mks |
| iii. | Quick setting Portland cement | 3 mks |
| iv. | Super-sulphate cement | 3 mks |
| v. | Sulphate resisting Portland cement | 3 mks |

QUESTION FOUR

4a. Write short notes on these raw materials used in the manufacture of vanishes

- i. Plasticizers ii. Solvents and thinner

5 mks

4b. Mention three major and minor ingredients each for making glass 7 mks

4c. Account for ceramic enduring usage 3 mks

QUESTION FIVE

5ai. State one disadvantage of fluidized bed gasifier used for coal gasification 2mks

5aii. Explain the disadvantage moving bed gasifier has as a coal gasification process 2mks

5bi. State two economic importance of natural gas 2 mks

5bii. List the negative effect each, of sulphur and nitrogen on crude oil 5 mks

5c. Write short note on driers 4 mks