

DEPARTMENT OF CHEMISTRY
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SECOND SEMESTER EXAMINATION, 2011/2012 SESSION.

COURSE CODE: CHM 524

UNITS: 3

COURSE TITLE: SELECTED TOPICS IN INDUSTRIAL CHEMISTRY.

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER THREE QUESTIONS.

- 1(a). Justify the statement "Meat animal should be fully rested before slaughter."
- (b). Name the four general processes widely used in the preservation of meat and briefly discuss the nutritional and health implications of consuming meat.
- (c) List and explain a process that can be employed in iron and steel industry for making complex shapes.
- (d) Vitamin A is among the categories of essential vitamins needed by the body. Give and explain the category of this vitamin.
- 2(a). Explain the term "rancidity"? Give the mechanism of oxidative rancidity.
- (b). State the factors that influence the rate of oxidation of lipid.
- (c). Define and state what the following parameters are used for in characterizing fats and oil: acid, iodine, peroxide and saponification values.
- 3(a). With the aid of a balanced chemical equation give the product(s) of the hydrolysis of protein by protease enzymes.
- (b). What is protein denaturation?
- (c). Casein micelles are very important constituent of any dairy product, explain.
- (d). Give one basic test for the identification of protein in a food substance.

4(a) i. Why are metals heat treated in metalworking processes?

ii. Explain the three (3) processes involved in (i) above.

(b) To prevent a metal from corrosion at high temperature, a suitable coating process is required. Mention and explain this coating process.

(c) How can you separate a useful solid mineral from an unwanted large particle size.

5(a) List and explain a process that controls the biochemical activities of carbohydrate in living organisms.

(b) Explain the following unit operations in the processing of minerals:

(a) Comminution (b) Dewatering.

(c) Why are the following used as food additives?

(i) Food acids (ii) Antioxidants (iii) Emulsifiers (iv) Preservatives (v) Humectants.