## 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.
- (e). 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?
- (e). 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.
  - (e) Why are the following used as food additives?
    - (i) Food acids (ii) Antioxidants (iii) Emulsifiers (iv) Preservatives (v) Humectants.