



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF APPLIED CHEMISTRY
BACHELOR OF SCIENCE HONOURS DEGREE
SUPPLEMENTARY EXAMINATIONS – OCTOBER 2009
INDUSTRIAL ORGANIC CHEMISTRY I – SCH 2215
TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

Answer **ANY FIVE** questions from six (6) provided. Each question carries 20 marks.

1. (a) Develop a trouble shooting checklist for a coke oven that produces metallurgical coke. (12 marks)
- (b) What are the design considerations for a coke oven battery? (8 marks)

2. With the aid of a process flow chart, describe the manufacturing process of pulp for high-grade bond paper. (20 marks)

3. Write short notes on the manufacture and uses of the following explosives.
 - (a) TNT (5 marks)
 - (b) RDX (5 marks)
 - (c) HMX (5 marks)
 - (d) Tetryl (5 marks)

4. (a) Describe the process of methanol production from wood. (10 marks)
- (b) Name three (3) naval stores and for each, state three (3) areas of application. (10 marks)

5. (a) Draw a schematic diagram of a bullet/shell and label the explosive sections. (10 marks)
- (b) What determines the “fatal” range of a firearm? (3 marks)
- (c) Which propellant would result in the best “fatal” range in a short gun? Support your answer with reasons. (7 marks)

6. Write short notes on the following chemical conversion processes:

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| (a) | nitration | (5 marks) |
| (b) | sulphonation | (5 marks) |
| (c) | halogenation | (5 marks) |
| (d) | alkylation | (5 marks) |

End of question Paper!!!