Notes:

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.

2. This is a Closed Book exam. No calculators are allowed for this exam.

3. Any five questions constitute a complete paper. Only the first five questions as they appear in your answer book will be marked.

4. All questions are of equal value.

5. Write your answers in point-form whenever possible, but fully.

Marking Scheme (marks)

1. (i) 7, (ii) 7, (iii) 6
2. (i) 7, (ii) 6, (iii) 7
3. (i) 7, (ii) 7, (iii) 6
4. (i) 6, (ii) 7, (iii) 7
5. (i) 8, (ii) 6, (iii) 6
6. (i) 7, (ii) 7, (iii) 6
7. (i) 7, (ii) 7, (iii) 6
National Exams May 2014
98-Ind-B10 - Industrial Safety and Health

1. (i) Explain the emphasis placed by Occupational Health and Safety Act (OHSA) to deal with the new hazards in non-traditional sectors of industry that include service industries.
(ii) State the means by which workplace safety and health can be improved through information technology or electronic access to regulatory information and services.
(iii) What are the cooperative agreements the companies may establish with OHSA for maintaining safe and healthful employment to obtain exemption from certain formal inspections?

2. (i) Explain Failure Modes and Effects Analysis (FMEA) in the context of reliability engineering.
(ii) What are the elements of a preliminary hazard analysis?
(iii) Explain the design deficiencies or defects which causes product or process safety hazards to the user or operator.

3. (i) Certain chemical agents are especially harmful to specific organs. Name the specific organs that are affected by such agents.
(ii) Explain the various types of damage caused by chemical agents to skin.
(iii) State the possible effects of toxic material on the operator.

4. (i) What is your understanding of industrial ecology as applied to manufacturing?
(ii) What is micrometeorology? State the reasons for studying micrometeorology extensively especially in the context of human health?
(iii) What are the responsibilities of facilities and equipment designers in providing safety measures for toxic hazards?

5. (i) What is your understanding of the following in the context of skin absorption:
(a) corrosives, (b) dermatitis, (c) eye damage and (d) gastrointestinal absorption.
(ii) What are the chemicals used as air purifiers in canisters?
(iii) Explain briefly the following equipment or apparatus: (a) self-contained air or oxygen-breathing apparatus, and (b) air-line breathing equipment.

6. (i) Explain the design deficiencies or defects which affect product or process safety causing hazards to the user or operator.
(ii) What are back-out and recovery as they apply to accident prevention?
(iii) State the order of preference that should be followed as general principles for eliminating and controlling hazards in industry.

7. A millwright was reaching out to make an adjustment on a flywheel chain on press while standing on a 20-foot ladder. In doing so, he lost his balance and fell onto the shaft and then struck a conveyor and fell to the floor, approximately 15 feet below. This caused a compound fracture of right leg and a property damage of $5,000 for broken shaft and belts on a large press and broken guard on conveyor belt.
(i) Determine the cause of the accident.
(ii) State the corrective actions required.
(iii) Suggest the follow-up action required.