

National Exams December 2013
98-Ind-B10 - Industrial Safety and Health
3 hours duration

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) 6, (ii) 7, (iii) 7
3. (i) 8, (ii) 6, (iii) 6
4. (i) 7, (ii) 7, (iii) 6
5. (i) 7, (ii) 7, (iii) 6
6. (i) 7, (ii) 7, (iii) 6
7. (i) 7, (ii) 7, (iii) 6

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1.
 - (i) State the basic objectives of the Occupational Health and Safety Act (OHSA).
 - (ii) Explain the concept of “system safety” in the context of accident investigation.
 - (iii) What are back-out and recovery as they apply to accident prevention?

2.
 - (i) State your understanding of the terms often used in accident control: (a) standard, (b) code, and (c) regulation.
 - (ii) What are the uses of standards, codes and regulations in product design?
 - (iii) What is the purpose of process safety management?

3.
 - (i) What is the purpose of fault-tree analysis (FTA)?
 - (ii) Explain the manner by which fault-tree analysis can be used for accident investigation.
 - (iii) What are the limitations of fault-tree analysis?

4.
 - (i) What are toxic substances and their effects on the human body?
 - (ii) How are the toxic agents detected? Name the broad categories of application of respiratory protective equipment.
 - (iii) What is hypoxia? What are the effects of hypoxia on people?

5.
 - (i) What are the features of an effective machine guard or safety device?
 - (ii) State the precautionary measures that are common to operation of all mechanical equipment.
 - (iii) Injuries in industrial plants are due to mechanical causes arising from certain machines. State the typical machines and the types of mechanical injuries.

6.
 - (i) State the features of an effective machine guard or safety device.
 - (ii) State the types of mechanical hazards in industry and the possible causes for such hazards.
 - (iii) What measures are taken to minimize mechanical hazards in industry?

7. A die setter and a co-worker had each rigged a chain around one end of a 5-ton die to move it by crane to a press line. The die setter did not double check his rigging. As he turned to walk away, his co-worker signaled the crane operator to take up the slack in the chain. The chain which the die setter had rigged was against the keeper pin instead of the die notch. The sudden pressure from the chain caused the keeper pin to shear off; it struck the die setter across the back of the head causing a fracture of his skull and knocking him unconscious.
 - (i) Determine the causes of the accident.
 - (ii) State the corrective actions required.
 - (iii) Suggest the follow-up action required.