



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

DEGREE IN ENVIRONMENTAL HEALTH

FINAL EXAMINATION PAPER 2007/2008

TITLE OF PAPER	:	INDUSTRIAL HYGIENE ASPECT OF PLANT OPERATION I
COURSE CODE	:	EHS 562
DURATION	:	2 HOURS
MARKS	:	100
INSTRUCTIONS	:	READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
	:	ANSWER ANY FOUR QUESTIONS
	:	EACH QUESTION CARRIES 25 MARKS
	:	WRITE NEATLY & CLEARLY
	:	NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM
	:	BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.

Answer any four (4) questions

Question 1

Explain the following terms:

- a) Prime movers and transmission devices in a machine
- b) Escalators and their hazards
- c) Safety file in the construction industry
- d) Mechanical hazards of a machine
- e) Hazards associated with pressure vessels

[25 Marks]

Question 2

- a) Outline the different types of safety guides that can be in machines to protect workers

[8 Marks]

- b) Within the context of Occupational Safety and Health Act 2001 what is an accident and how is it reported.

[5 Marks]

- c) Read the case below and answer the question

On June 19, 2005, James was assigned to work as an operator on a steel-slitting machine at Mayo steel. James was killed on his first day of operating the machine, which was also his first day working at Mayo steel.

The machine:

The steel slitter is machine that cuts rolls of steel into strips. The steel rolls off a roller – is cut into strands – and wound up again by a recoiler. The strands of steel on the outside of the roller must stay tight. Workers in the factory did not use the tension stand that was available to keep the steel tight – instead they inserted pieces of cardboard by hand into the pinch-point of the recoiler. (The pinch-point is the place where the flat steel coming out of the slitter meets the rolling recoiler that rewinds the steel).

This kept the steel tight but was a very dangerous practice. Workers were able to do this because there were no guards on the machine. The company knew the use of cardboard was unsafe, yet they allowed workers to do it because it was quicker and more economical.

Training:

Usually a worker assigned to the job is given 30 days of training. James did not receive any training at all before his first day of operating the steel slitter. Safety meetings were

held approximately every three months but the content of the meetings was generally not communicated to the workers.

The accident:

On the day of the accident, slitter helper Mathew was told to work with James throughout the evening shift. James only spoke Spanish and Mathew spoke English. After 5 hours of work, Mathew went to another section of the plant to get another coil of steel. As he did that, he heard an unusual noise from the machine. He ran back to the recoiler and saw James wrapped in it dead with approximately 12 sheet of steel on top of him. Mathew ran to the emergency stop button, which was approximately 3 meters away from the machine. James was caught in the recoiler while inserting cardboard to keep the steel tight. He was killed instantly.

Question: Outline all the factors that contributed to this incident

[12 Marks]

Question 3

Agriculture is an industry with hazards that can be fatal and that can also lead to disabilities:

a) Define three (3) groups of hazards associated with agriculture

[12 Marks]

b) Handling of animals has dangers:

i. Explain why there is need to handle animals?

[5 Marks]

ii. Outline preventive precautions in handling animals.

[8 Marks]

Question 4

Workshop of company X has got only one floor and in it there are a number of tools and machinery that they use when repairing broken objects. There are cables, oil spillages and objects all over the floor. Moving and rotating parts in the machines are not covered; operators are not given any personal protective equipment or clothing.

a) List the hazards in this workshop

[5 Marks]

b) Assess the risks of the hazards in the workshop in terms of severity and probability.

[10 Marks]

c) Outline possible control measures

[10 Marks]

Question 5

- a) As a hygienist in an industry, outline 5 of your duties?

[10 Marks]

- b) Outline and assess risks of any 5 hazards associated with a manufacturing industry

[15 Marks]