higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NON-NATIONAL CERTIFICATE: ENGINEERING CERTIFICATE OF COMPETENCY

OCCUPATIONAL HEALTH AND SAFETY ACT

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NON-NATIONAL CERTIFICATE: ENGINEERING CERTIFICATE OF COMPETENCY
OCCUPATIONAL HEALTH AND SAFETY ACT
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Write neatly and legibly.

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QUESTION 1

1.1 Define the following terms given in the Occupational Health and safety Act:

1.1.1 Chief Executive Officer (CEO) (1)

1.1.2 Employee (2)

1.1.3 Sell (1)

1.2 Every employee shall at work carry out any lawful order given to him, and obey the health and safety rules and procedures laid down by his employer in the interest of health or safety.

State TWO other general duties of employees at work. (2)

1.3 In terms of the Act, the chief executive officer (CEO) is charged with certain duties.

1.3.1 Name the duties of the CEO.

1.3.2 May the CEO assign these duties on to other persons? Motivate your answer.

(2 × 2) (4)
[10]

QUESTION 2

2.1 Subsection 8 (1) is a general requirement of an employer to provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of his or her employees. Subsection 8 (2) determines that, without derogating from the generality of the employer's duties under subsection (1), the matters to which those duties refer include in particular a number of functions.

Name THREE of these functions. (3 × 2) (6)

2.2 Every employer has a duty to make every employee conversant with the hazards to his or her health and safety while at work and also to inform health and safety representatives beforehand of specific aspects whereby inspectors of the department of labour are involved.

Name these aspects. (2)

2.3 Describe TWO functions which a health and safety committee has to perform other than the requirement that the committee has to hold a meeting once in THREE months. (2)
[10]

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QUESTION 3

3.1 Define the following terms as given in the Environmental Regulations for Workplaces 1987 as amended:

3.1.1 Acclimatised

3.1.2 Working plane

(2 × 1) (2)

3.2 You may not allow an employee to work in an environment below 6 °C unless specific precautionary measures are taken such as protective clothing or reduced times of exposure.

Name FOUR steps you must take when your employees have to perform hard manual labour in an environment where the time-weighted average WBGT index, determined over a period of one hour, exceeds 30 and where it is not practicable to reduce the said index to below 30. (4)

3.3 Every workplace in an undertaking shall be ventilated either by natural or mechanical means in such a way that the air breathed by employees does not endanger their safety.

Name THREE other requirements such ventilation shall also meet. (3)

3.4 A user of machinery shall provide and maintain sufficient clear and unobstructed space at every machine to enable work to be carried out without danger to persons.

With the exclusion of workplaces where building work is performed, what effective open floor area shall be available for every employee working in an indoor workplace? (1)

[10]

QUESTION 4

4.1 Define the following terms as given in the Driven Machinery Regulations, 2015:

4.1.1 Block and tackle

4.1.2 Lifting machine

(2 × 1) (2)

4.2 Name TWO requirements a swing or radial saw that is moved towards the material has to comply with. (2)

4.3 Name TWO requirements a portable power-driven circular saw has to comply with. (2)

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4.4 You have to ensure that the rope of every lifting machine has a factor of safety prescribed by the standard to which the lifting machine was manufactured.

In the absence of such prescribed safety factor, what safety factor must you use with regards to the safe working load of the machine for:

4.4.1 Steel-wire ropes.

4.4.2 Chains.

(2 × 1) (2)

4.5 You have lifting machines of various types, sizes and lifting capacities at the factory.

4.5.1 Who may operate a lifting machine?

4.5.2 Who may operate lifting machines that are listed in the code of practice?

(2 × 1) (2)
[10]

QUESTION 5

5.1 Define the term *shifts man* as given in the General Machinery Regulations, 1988. (2)

5.2 Depending on the sum of the power and type of the machinery installed on your premises, you have to appoint a competent person with prescribed qualifications and experience.

5.2.1 Name TWO types of machinery where such appointment is not required. (2)

5.2.2 What are the conditions when such a person need not be designated? (1)

5.3 When must you appoint a shifts man? (2)

5.4 On your premises you have a quantity of substance in a single storage vessel in excess of the quantity specified for that substance set out in Schedule A of the regulations.

What must you do? (1)

5.5 You are the owner of a bakery where you operate four mixing machines, numerous conveyor systems, three steam ovens, a steam generator operating on LPG and an electrode steam generator and you employ 55 persons.

As the user of machinery, what notices must you display? (2)
[10]

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QUESTION 6

6.1 Define the following terms as given in the Pressure Equipment Regulations, 2009:

6.1.1 Pressure equipment

6.1.2 Steam generator

(2 × 2) (4)

6.2 Who must ensure that new pressure equipment put on the market complies with the Pressure Equipment Regulations? (1)

6.3 Irrespective of compliance to the various standards incorporated into the regulations for pressure equipment, what must all pressure equipment be subjected to? (1)

6.4 In order to place certain pressure equipment such as pressure vessels and fire extinguishers in the market, a permit issued by an organisation approved by the chief inspector is required.

6.4.1 Who must obtain such permit?

6.4.2 When must such permit be obtained?

(2 × 1) (2)

6.5 You may not use a steam generator unless you have a certificate of registration issued by an inspector.

Name TWO cases when you have to immediately notify the provincial director in writing concerning the certificate of registration of your steam generator already in use. (2)

[10]

QUESTION 7

7.1 Define the term *earthed* as given in the Electrical Machinery Regulations, 2011. (1)

7.2 There is a presence of explosive dust and a danger of fire or explosion in an area in your factory. This area has been classified as a hazardous location and there is electrical machinery installed and in operation. You do not have a certificate for every electrical component in this area to certify that it complies with the safety standard for hazardous locations.

7.2.1 What must you now do about the certification and what is acceptable?

7.2.2 What must you do before you repair or adjust any electrical machinery in this area?

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7.2.3 What must you do when there is a possibility of the formation of static electricity under working conditions in this area?

7.2.4 At what intervals must the electrical machinery in this hazardous location be visually inspected and tested?

7.2.5 Once inspected, what must the person who carried out the inspection do?

(5 × 1) (5)

7.3 You intend to install a pump station one kilometre away from the factory to recirculate water from your purification plant back to the factory to use it as cooling water. An 11 kV overhead power line will be the most cost effective supply to the pump station and will cross a railway.

7.3.1 What norms must you use for the design of the power line?

7.3.2 What norms must you use for the maintenance of the power line?

7.3.3 What are the requirements for the positioning of the structures supporting the crossing span?

7.3.4 What special requirements are necessary to protect the conductors in the crossing span?

(4 × 1) (4)

[10]

QUESTION 8

8.1 Define the following terms as given in the Lead Regulations, 2001:

8.1.1 Lead

8.1.2 HSG 173

(2 × 1) (2)

8.2 You use a lead compound in one of the manufacturing processes at your factory. In terms of the Lead Regulations the employer shall cause the undertaking to be assessed in order to determine if any person may be exposed to lead.

8.2.1 At what intervals must this assessment be made?

8.2.2 What must you do before you do the assessment?

(2 × 1) (2)

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8.3 Define the following terms as given in the Facilities Regulations, 2004, as amended:

8.3.1 Drinking water

8.3.2 Hot water

(2 × 1) (2)

8.4 Under certain conditions you must provide a dining room or eating place which is separate from the changing rooms.

Name ONE condition when you provide such separate dining room or eating place? (1)

8.5 How many tables and chairs must be provided in every dining room? (1)

8.6 You plan a new division to manufacture a new product which will require that 30 employees have to shower at the end of their shift. You therefor have to provide a new changing room with showers for these employees.

State TWO requirements the showers have to comply with. (2)
[10]

QUESTION 9

9.1 Define the following terms as given in the Lift, Escalator and Passenger Conveyor Regulations, 2010:

9.1.1 Failure

9.1.2 Access goods only lift

(2 × 1) (2)

9.2 The regulations require that you must keep record of certain aspects of a lift.

9.2.1 Where are the records kept?

9.2.2 For what period must the records be kept?

(2 × 1) (2)

9.3 Define the following terms as given in the Major Hazard Installation Regulations, 2001:

9.3.1 Rolling stock

9.3.2 Transit

(2 × 1) (2)

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9.4 At your workplace a large quantity of a hazardous substance is used during the processing of a product and you intend to erect a storing facility which will cause the premises to be classified as a major hazard installation. You first have to obtain approval from the local government to construct the storing facility on the premises.

State TWO reasons why the local government might turn such an application down. (2)

9.5 The hazardous substance referred to in question 9.4 will be delivered by rail to a siding one km away from the factory. At the siding there is a pump installation to deliver the substance to your new storage facility at the factory.

What are your duties with regards to the rail delivery of the large quantities of hazardous substance? (2)

[10]

QUESTION 10

10.1 Define the following terms as given in the Construction Regulations, 2014.

10.1.1 Agent

10.1.2 Competent person

(2 × 1) (2)

10.2 You intend to extend a section at the factory and to carry out the construction work as an owner builder.

10.2.1 Name TWO conditions of the extent of work for which you have to inform the provincial director in order to obtain a construction work permit and site specific number before you may carry out the construction work.

10.2.2 Name TWO conditions you have to comply with before such a permit will be issued.

(2 × 2) (4)

10.3 Name TWO additional requirements a contractor has to comply with for the stacking of material on a construction site, in addition to compliance with the provisions for the stacking of articles in the General Safety Regulations. (2)

10.4 Name TWO steps a contractor must take on the construction site, in addition to compliance with the Environmental Regulations for Workplaces, with regards to fire precautions in confined spaces in which flammable gasses can cause a danger. (2)

[10]

TOTAL: 100

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