



# higher education & training

Department:  
Higher Education and Training  
REPUBLIC OF SOUTH AFRICA

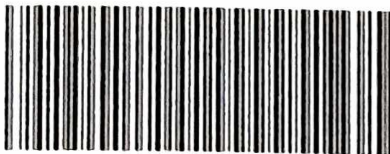
## NON-NATIONAL CERTIFICATE: ENGINEERING CERTIFICATE OF COMPETENCY

### OCCUPATIONAL HEALTH AND SAFETY ACT

(13050046)

16 November 2023 (X-paper)  
09:00–12:00

This question paper consists of 12 pages.



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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**

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
**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 as used in the Act:
- 1.1.1 chief executive officer
  - 1.1.2 employer 
  - 1.1.3 health and safety equipment
  - 1.1.4 mandatory
- (3 × 1) (4)
- 1.2 For what reason may the Advisory Council for Occupational Health and Safety establish a technical committee? (1)
- 1.3 For what reason shall a member of a technical committee be appointed by the Council? (1)
- 1.4 Any person who manufactures, imports, sells or supplies any substance for use at work shall ensure, as far as is reasonably practicable, that the substance is safe and without risks to health when properly used.   
 What other steps must be taken as may be necessary? (2)
- 1.5 Every chief executive officer shall, as far as is reasonably practicable, ensure that the duties of his employer, as contemplated in this Act, are properly discharged and he or she may assign any duty to any person under his control.
- 1.5.1 Under what conditions may the employer be relieved of any responsibility or liability?
  - 1.5.2 Who shall be deemed to be the chief executive officer of any department of State? 
- (2 × 1) (2)  
[10]

**QUESTION 2**


- 2.1 An employer shall in respect of each workplace where two or more health and safety representatives have been designated, establish one or more health and safety committees and a health and safety committee shall consist of such number of members as the employer may from time to time determine.
- 2.1.1 What number of persons may an employer nominate on any health and safety committee other than the elected health and safety representatives?
  - 2.1.2 For what period shall persons nominated by an employer on a health and safety committee be designated? 

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
2.1.3 For what period shall health and safety representatives be designated?  (3 × 1) (3)

2.2 A health and safety committee may co-opt one or more persons.


2.2.1 For what reason may a person be co-opted on a health and safety committee?

2.2.2 What is the function of a co-opted member? (2 × 1) (2)

2.3 Where any requirement (including any health and safety standard) in respect of any article, substance, plant, machinery or health and safety equipment or for the use or application thereof has been prescribed, no person shall sell or market in any manner whatsoever such article, substance, plant, machinery or health and safety equipment unless it complies with such requirements.

Under what condition may equipment which does not comply be sold or marketed?  (1)

2.4 What may an inspector of the Department of Employment and Labour do when it comes to his or her notice that an employer performs an act or requires or permits an act to be performed, which in the opinion of the inspector threatens or is likely to threaten the health or safety of any person? (1)

2.5 The Minister may, for such period and on such conditions as may be determined by him, exempt any employer or user from any of or all the provisions of this Act or the provisions of a notice or direction issued under this Act. 

Name ONE reason why such an exemption shall lapse. (1)

2.6 The Minister may, by notice in the Gazette, incorporate in the regulations any health and safety standard or part thereof, without stating the text thereof, by mere reference to the number, title and year of issue of that health and safety standard or to any other particulars by which that health and safety standard is sufficiently identified.

2.6.1 What is the legal position of a standard so incorporated?

2.6.2 What is the position whenever a health and safety standard is at any time after the incorporation thereof amended or substituted by the competent authority?



(2 × 1) (2)  
[10]





**QUESTION 3**

- 3.1 Define the term, *Boatswain's chair*, as used in the General Safety Regulations, 1986, as amended. (1)
- 3.2 Where more than five employees are employed at a workplace, the employer of such employees shall provide a first aid box or boxes.
- 3.2.1 Apart from the equipment listed in the Annexure, name TWO aspects that the employer have to take into account regarding the content.
- 3.2.2 Name TWO items which are listed in Annexure A. (2 × 2) (4)
- 3.3 Where spraying is done in any room, the employer concerned shall cause the ventilation system to conform to specific requirements regarding the method of extraction and the average air speed.
- 3.3.1 What is the average air speed measured at a level of 1,5 meters above the floor when the air supply and extraction is horizontal?
- 3.3.2 What is the average air speed measured at a level of 1,5 meters above the floor when the air supply is vertical and the extraction thereof is done through slits or a grill along the side walls at floor level? (2 × 1) (2)
- 3.4 An employer shall install an adequate amount of efficient fire-fighting equipment in suitable locations in and around every building in which such substances are used, handled or stored.
- 3.4.1 What must the employer take into account in determining the fire-fighting equipment and suitable locations? (1)
- 3.4.2 Who's recommendation should be followed in this regard? (2 × 1) (2)
- 3.5 What must the employer do with the records of ergonomic risks when he or she ceases activities? (1)
- [10]**

**QUESTION 4**

- 4.1 Define the term, *exposed*, as given in the Environmental Regulations for Workplaces, 1987, as amended. (1)



- 4.2 No employer shall require or permit an employee to work in a refrigerated environment in which the actual dry-bulb temperature is below 0 °C unless the maximum exposure of the employee does not exceed the periods as prescribed and the employee is provided with protective clothing.



4.2.1 What is the maximum exposure of an employee for a temperature lower than -34 °C but not lower than -57 °C?

4.2.2 What protective clothing must be provided when an employee works in a low-temperature area in which the temperature is not lower than -18 °C for periods not exceeding five minutes in every hour?

4.2.3 When must a registered medical practitioner or a registered nurse, according to a protocol prescribed by such practitioner, certify an employee to be fit for work in an environment of such low temperature and issue a certificate to the employee?

4.2.4 What is most important about all the clothing worn by an employee prior to entering the low-temperature area?

(4 × 1) (4)



4.3 In order to have visual contact with areas outside a workplace where employees work the majority of their shift in a room of which the floor area is less than 100 square meters, the employer shall cause every such room to be provided with windows.

4.3.1 Name TWO conditions when windows need not be provided. (2)

4.3.2 What must the employer do where the penetration of direct sunlight into any workplace may pose a threat to the safety of persons in such workplace? (1)

4.4 Every employer shall ensure that any emergency escape door from any room or passage or at a staircase shall, as far as is practicable, be hung so as to open outwards in order to expedite the evacuation of a workplace in case of fire.



4.4.1 With regard to the size, construction and location of a workplace, the number of persons, and the activity therein, what must be provided to expedite evacuation.

4.4.2 With regard to the size, construction and location of the workplace, and the amount and type of flammable articles used, handled or stored on the premises, an employer shall provide on the premises an adequate supply of suitable fire-fighting equipment at strategic locations.




How can the employer determine the adequacy and suitability of the fire-fighting equipment?

(2 × 1) (2)  
[10]



**QUESTION 5**

5.1 Define the following terms as used in the Driven Machinery Regulations, 2015:


5.1.1 lifting machinery 

5.1.2 lifting machinery inspector

5.1.3 training provider

(3 × 1) (3)

5.2 The user shall cause moving or revolving components of machinery to be securely fenced or guarded unless they are in such a position or of such construction that they are as safe as they would be if they were fenced or guarded.

Under what conditions may the underside of every overhead driving belt, rope or chain above passages or workplaces not be so guarded as to prevent a broken belt, rope or chain from falling and so injuring persons? 

(1)

5.3 The user of a power-driven bench saw shall cause the circular saw blade to be effectively guarded and for ripping wood to be provided with a riving knife.

5.3.1 How must the guard and riving knife be arranged where the saw has a tilting table?

5.3.1 What must the user do to enable work on a bench saw, which is fed by hand, to be carried out without danger to persons?



(2 × 1) (2)


5.4 Who may be allowed to operate a band saw?

(1)

5.5 How must all dangerous moving parts of a mixing, agitating or similar machine be placed?

(1)

5.6 The user shall cause the whole installation and all working parts of every lifting machine to be thoroughly examined and subjected to a performance test to determine the serviceability of the structures, ropes, machinery and safety devices.

5.6.1 Who must carry out the examination and performance test of a lifting machine? 

5.6.2 When must this examination and performance test be carried out?

(2 × 1) (2)  
[10]





**QUESTION 6**

- 6.1 You have to designate a GMR 2 competent person in your factory to ensure that the provisions of the Act and Regulations are complied with. The power generated is 1 000 kW machinery and two steam generators of which one has 1 000 m<sup>2</sup> heating surface and the other has an evaporative capacity of 10 000 kg of water per hour at 100 °C.



Define the competent person that you need to appoint.

(1)

- 6.2 May an employer appoint more than one GMR 2 person?

(1)

- 6.3 A person who has obtained an engineering diploma in electro-technical (heavy current) with an academic qualification of N6, and who subsequently has three years' practical experience in the distribution of electricity, wants to apply for the GMR 2 position at a municipality.

What is the size of demand over a continuous period of 30 minutes of a municipality for which he can apply for such an appointment?

(1)

- 6.4 When must an employer or user of machinery who designated a GMR 2 person forward a copy of the letter of appointment to the department of Labour?



(1)

- 6.5 An employer or user of machinery shall provide devices to start and stop machinery.

6.5.1 In what position must the devices be installed?

6.5.2 How must it be constructed?

6.5.3 What is not regarded as positive means for rendering the controls inoperative while repairs or adjustments are being made of machinery driven by an electric motor?



(3 × 1)

(3)

- 6.6 An employer has machinery which is simultaneously operated by two or more persons.

6.6.1 What must the employer provide at every point of operation?

6.6.2 What else must the employer provide?

(2 × 1)

(2)

- 6.7 Any employer or user of machinery shall affix notices as prescribed in respect of any machinery and of a boiler in both official languages and in legible form in a conspicuous place.

What must the employer do where employees are not conversant with the official languages?



(1)

[10]





**QUESTION 7**

- 7.1 Define the following terms as used in the Pressure Equipment Regulations, 2009:
- 7.1.1 repair (2)
- 7.1.2 re-rating (1)
- 7.1.3 SANS 347 (1)
- 7.2 What must a manufacturer do when he determines that pressure equipment, which he manufactured and is already in use, has a latent defect? (1)
- 7.3 The user of pressure equipment shall ensure that pressure equipment has a certificate issued by an approved inspection authority before commissioning.
- What is required from a foreign inspection body to obtain the chief inspector's approval to certify that pressure equipment complies with the safety standard? (1)
- 7.4 No user may use a steam generator unless such user is in possession of a certificate of registration for that steam generator, issued in terms of the regulations.
- Give TWO reasons why a certificate of registration shall lapse. (2)
- 7.5 No user may require or permit pressure equipment to be used unless it is provided with all the pressure and safety accessories required by the relevant health and safety standard.
- In the absence of such a requirement in the health and safety standard, what must the pressure and safety accessories comply with? (1)
- 7.6 No user shall use, require or permit the use of a fire extinguisher unless designed, constructed, filled, recharged, reconditioned, modified, repaired, inspected or tested in accordance with the relevant safety standard incorporated into these Regulations under section 44 of the Act.
- Who may fill, recharge, recondition, modify, repair, inspect or test a fire extinguisher? (1)

**[10]**

**QUESTION 8**

8.1 Define the following terms as used in the Electrical Installation Regulations, 2009:

.....  
 .....  
 .....

8.1.1 certificate of compliance (2)

8.1.2 electrical tester for single phase (1)

8.1.3 master installation electrician (1)

8.2 The user or lessor of an electrical installation, as the case may be, shall be responsible for the safety, safe use and maintenance of the electrical installation.

When shall the lessee be responsible for that installation? (1)

8.3 Every user or lessor of an electrical installation, as the case may be, shall have a valid certificate of compliance for that installation in the form of Annexure 1, which shall be accompanied by a test report in the format approved by the chief inspector, except for an electrical installation that existed prior to 23 October 1992, and where there was no change of ownership after 1 March 1994.

.....  
 .....  
 .....

When will it be required to obtain a certificate of compliance for such existing installations? (1)

8.4 Only a registered person may issue a certificate of compliance, which must be accompanied by the required test report.

8.4.1 When must the registered person issue such certificate and test report?

.....  
 .....  
 .....

8.4.2 To what provisions must a new electrical installation comply with?

8.4.3 To what provisions must an electrical installation, which existed prior to the publication of the current edition of the health and safety standard incorporated into these Regulations, comply with.

(3 × 1) (3)

8.5 Should a dispute arise over the interpretation of a health and safety standard referred to in the regulations between a user, a registered person, an electrical contractor, an approved inspection authority for electrical installations or a supplier, as the case may be, an affected person may appeal against that interpretation to the chief inspector.

.....  
 .....  
 .....

What must the person who refers a dispute to the chief inspector do? (1)

[10]



## QUESTION 9

- 9.1 Define the following terms as used in the Electrical Installation Regulations, 2009:



9.1.1 electric fence energiser

9.1.2 insulated

(2 × 1) (2)

- 9.2 What must an employer or user do whenever work is to be carried out on any electrical machinery which has been disconnected from all sources of electrical energy, to prevent such machinery from being charged or made live while persons are working thereon? (1)

- 9.3 The user shall cause notices to be exhibited within, and at all designated entrances to the premises on which generating plant and transforming, switching or linking apparatus are situated other than miniature substations and distribution boxes.



Name TWO notices that must be exhibited inside a substation building.

(2)

- 9.4 The user shall cause enclosed premises housing switchgear and transformers to be of ample size so as to provide clear working space for operating and maintenance staff, to be sufficiently ventilated to maintain the equipment at a safe working temperature and to be provided with fire extinguishing appliances.

9.4.1 What type of fire extinguishing appliances must be provided?

9.4.2 What must be done about fire extinguishing appliances in the case of unattended premises?



(2 × 1) (2)

- 9.5 How must the door or cover of switchgear with an interlocking device be arranged? (1)

- 9.6 Where a power line crosses a proclaimed road, railway or tramway or a conductive communication line, the supplier or user shall cause the clearance to comply with the requirements of the incorporated health and safety standard.

When must the clearance of the crossing span not be less than 4,5 m?

(1)

- 9.7 No person shall install or use an electric fence or electric fence energiser other than in accordance with the relevant incorporated health and safety standard.

What special requirement is applicable for the charging apparatus of a fence energizer which receives its energy from a battery charged by means of charging apparatus which receives power from an electric supply? (1)






[10]





## QUESTION 10

- 10.1 Define the following terms as used in the Construction Regulations, 2014:
- 10.1.1 fall prevention equipment
- 10.1.2 fall protection plan  (2 × 1) (2)
- 10.2 Name TWO aspects that a fall protection plan must include. (2)
- 10.3 How must a chute be designed when used for the disposal of rubble on a construction site? (1)
- 10.4 A contractor shall ensure that the operation of a bulk mixing plant is supervised by a competent person who has been appointed in writing, is aware of all the dangers and is conversant with the precautionary measures. The contractor shall also ensure that devices to start and stop the bulk mixing plant are provided.
- 10.4.1 How must these devices be constructed?  (2 × 1) (2)
- 10.4.2 Where must these devices be placed?
- 10.5 Only a trained person may use an explosive powered tool which is safe.
- 10.5.1 How must the firing mechanism of the explosive powered tool be designed?
- 10.5.2 What must one do with the explosive powered tool when it is not in use?
- 10.5.3 Who must keep a written control of the issuing and collection of the cartridges and nails or studs of an explosive powered tool?  (3 × 1) (3)
- TOTAL: 100**

