

**DAPARTMENT OF EDUCATION  
REPUBLIC OF SOUTH AFRICA**

**NON-NATIONAL CERTIFICATE**

**ENGINEERING CERTIFICATE OF COMPETENCY**

**NOVEMBER 2019**

**OCCUPATIONAL HEALTH AND SAFETY ACT**

## QUESTION 1

- 1.1 Define the following terms as given in the Act:
- 1.1.1 Occupational health practitioner (2)
  - 1.1.2 Occupational medical practitioner (2)
  - 1.1.3 Remuneration (1)
- 1.2 Every employer has a general duty to his employees to provide and maintain, as far as is reasonably practicable, a working environment that is safe and without risk to their health.
- 1.2.1 What general duty has an employer or self-employed person to persons other than their employees? (1)
  - 1.2.2 What general duty has a person who designs, manufactures or imports any article for use at work? (1)
  - 1.2.3 What general duty has a person who erects or installs any article for use at work on or in a premises? (1)
- 1.3 Without derogating from any specific duty imposed on an employer by this Act, every employer shall as far as is reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards.  
Name TWO case of which you have to inform the health and safety representatives. (2)
- [10]**

## QUESTION 2

- 2.1 Name TWO general duties of an employee at work other than reporting when involved in an incident. (2)
  - 2.2 What are the duties of an employee with regard to any item provided in the interest of health or safety? (1)
  - 2.3 What are the duties of the chief executive officer? (1)
  - 2.4 At what stage must an employer designate health and safety representatives? (1)
  - 2.5 Who shall be eligible for designation as health and safety representatives for a workplace or section thereof? (1)
  - 2.6 What number of health and safety representatives for a workplace or section thereof shall be designated in the case of shops and offices? (1)
  - 2.7 What number of health and safety representatives shall be designated for a workplace or section thereof other than shops and offices? (1)
  - 2.8 How will you determine the number of health and safety representatives you have to designate where a large number of employees perform work at a workplace other than that where they ordinarily report for duty? (1)
  - 2.9 When must you establish a health and safety committee? (1)
- [10]**

### QUESTION 3

- 3.1 Define the following terms as given in the Asbestos Regulations, 2001:
- 3.1.1 Asbestos dust (1)
  - 3.1.2 Asbestos work (1)
- 3.2 In order to carry out a thorough inspection of the steam pipes in the old part of the factory, you have to remove all the asbestos lagging on the pipes.
- 3.2.1 What must you do prior to the commencement of this work? (1)
  - 3.2.2 You have enclosed and zoned the area and provided the persons who must remove the asbestos lagging with suitable protective clothing and equipment. The asbestos waste is contained safely and sealed as prescribed. May you allow the persons who remove the trolleys with the asbestos waste from that area without using protective clothing and equipment? (1)
- 3.3 Before any employee may be exposed to asbestos dust, he/she must be adequately and comprehensively informed and trained.
- 3.3.1 At what intervals must refresher training be given? (1)
  - 3.3.2 Name TWO conditions when such training should be given more frequently. (2)
- 3.4 An employer shall cause his/her undertaking to be assessed to determine if any person may be exposed to asbestos.
- 3.4.1 At what intervals must such assessments be carried out? (1)
  - 3.4.2 When making the assessments, name TWO items which the employer must take into account other than the details of expected exposure. (2)
- [10]**

### QUESTION 4

- 4.1 Define the term *point of operation* as given in the Driven Machinery Regulations, 2015. (1)
- 4.2 When will it not be necessary to securely fence or guard moving or revolving components of machinery? (1)
- 4.3 Explain the guard arrangement of the following sanding machines:
- 4.3.1 A drum sanding machine. (1)
  - 4.3.2 A belt sanding machine (1)
- 4.4 You may not operate a grinding wheel on a power-driven grinding machine at a speed exceeding that stipulated by the manufacturer. What further requirement is set for the use of a grinding wheel larger than 100 mm in diameter? (1)
- 4.5 Who may operate machinery used for the purpose of grinding, cutting, fettling, polishing or similar applications? (1)

4.6 Where the opening at the point of operation of a guillotine is greater than 10 mm, you have to provide proper guarding or other means to push away or sense the operator's body when in the danger zone.  
Name TWO conditions under which you may permit the use of the guillotine without such guarding or other means. (2)

4.7 Power-driven lifting machines must be fitted with a brake or other device capable to hold the safe working load.  
Name TWO conditions under which it must be capable of holding this working load. (2)  
**[10]**

### QUESTION 5

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

5.1.1 Safety accessory (1)

5.1.2 Transportable gas container (1)

5.2 Name TWO types of pressure equipment which are excluded from the Pressure Equipment Regulations. (2)

5.3 Importers of pressure equipment shall assume the liability of the manufacturer in terms of the Pressure Equipment Regulations and ensure that it complies with certain minimum requirements.  
To what must the imported pressure equipment comply? (1)

5.4 The manufacturer of a steam generator shall permanently fix a data plate to it in a conspicuous place which indicates certain information of the original design. You have carried out modifications to your steam generator which is a change to the original design conditions.  
What must you do now? (1)

5.5 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 which is incorporated into the Regulations or alternatively with the written approval of an approved inspection authority.

5.5.1 What are the requirements for a pressure measuring device on pressure equipment? (1)

5.5.2 What are the requirements for safety valves on pressure equipment? (1)

5.6 Every fire-tube steam generator shall be subjected to an external inspection every 12 months and a witnessed hydraulic test every 36 months, by an approved inspection authority for in-service inspections.  
What else must the inspection authority do during the 36 month test and inspection? (1)

5.7 The inspections and tests of transportable gas containers shall be carried out by an approved testing station, approved by the chief inspector.  
What does the chief inspector require before granting approval of a testing station? (1)  
**[10]**

### QUESTION 6

6.1 Define the term *assessment* as given in the Regulations for Hazardous Substances, 1995, as amended (HCS). (2)

- 6.2 A person who is or may be exposed to HCS shall obey a lawful instruction given by or on behalf of the employer.  
Name THREE types of instructions the employer may give. (3)
- 6.3 An employer who carries out work at a workplace which may expose any person to the intake of an HCS shall, after consultation with the relevant health and safety representative or relevant health and safety committee, cause an immediate assessment to be made, to determine if any employee may be exposed by any route of intake.
- 6.3.1 At what intervals must the assessment be repeated? (1)
- 6.3.2 Name the TWO reasons why the assessment has to be reviewed forthwith. (2)
- 6.4 You have to ensure that any workplace or part of a workplace under your control, where the concentration of an HCS in the air is, or may be such that the exposure of employees working in that workplace exceeds the recommended limit without the wearing of respiratory protective equipment, is zoned as a respirator zone.  
Name the TWO things you have to do with regard to this zone. (2)
- [10]**

## QUESTION 7

- 7.1 Define the following terms as given in the Electrical Installation Regulations, 2009:
- 7.1.1 Electrical contractor (1)
- 7.1.2 Electrical tester for single phase (1)
- 7.2 Who may do electrical installation work as an electrical contractor? (1)
- 7.3 You have a valid certificate of compliance for the electrical installation of your entire factory in the form of annexure 1, accompanied by the prescribed test report, which you obtained during a complete overall during the December 2017 shut-down. Additions and alterations have been effected to the electrical installation during the December 2018 shut-down.  
Is your December 2017 certificate still valid or must you get a new one? (1)
- 7.4 When you moved to your current house in April 2017 you obtained a certificate of compliance. In December 2018 you obtained an additional certificate that only covers some alterations and now you want to sell the house.  
Do you need a new certificate of compliance? (1)
- 7.5 A supplier has carried out an inspection and test at your factory and detected a fault or defect in the electrical installation which, in the opinion of the supplier, constitutes an immediate danger to persons.
- 7.5.1 What must the supplier do? (1)
- 7.5.2 What must the supplier do where the fault or defect is of such a nature that it may indicate negligence on the part of the registered person who did the work and issued the certificate of compliance,? (1)
- 7.6 Who may issue a certificate of compliance? (1)
- 7.7 Prior to the issuing of a certificate of compliance after completion of the electrical installation, a fault is detected in a part of the electrical installation.
- 7.7.1 What must the registered person do? (1)

7.7.2 What must the registered person do if such fault or defect, in his opinion, constitutes an immediate danger to persons in the case where electricity is already supplied?

(1)  
[10]

## QUESTION 8

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

8.1.1 Client (1)

8.1.2 Excavation work (1)

8.2 For what type of construction work do you not have to apply for a construction work permit and are the duties of the client not applicable? (1)

8.3 What must the client do where he/she requires additional work to be performed as a result of a design change or an error in construction due to his/her actions? (1)

8.4 Name TWO aspects which the designer of a structure must make available in a report before the contract goes to tender. (2)

8.5 A contractor must, before the commencement of any construction work and during such work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on site. Name TWO items which must be included in the risk assessments. (2)

8.6 A contractor who performs excavation work must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be made safe. Name TWO specific precautionary requirements the contractor has to carry out. (2)

[10]

## QUESTION 9

9.1 Define the following terms as given in the Noise-induced Hearing Loss Regulations, 2003:

9.1.1 *Exposed* (1)

9.1.2 *Noise-rating limit* (1)

9.2 You have installed new machinery in the factory which creates a noise above the noise rating limits, even after applying engineering control measures to reduce the noise at its source. You have zoned and demarcated this area of the factory as a noise zone and all employees who may be exposed to the noise have to go through a training programme.

9.2.1 Name TWO items which must be incorporated in the training programme. (2)

9.2.2 When must refresher training be conducted? (1)

9.2.3 Who must provide the training? (1)

9.2.4 What must you do when mandatories or persons other than employees may be affected by noise exposure? (1)

9.3 You have to ensure that the exposure of your employees to noise is either prevented or, where this is not reasonably practicable, adequately controlled. In the noise zone you

therefor have to reduce the exposure to noise by implementing noise control measures in an order of priority.

Name the first TWO measures of noise control. (2)

- 9.4 During alterations at your factory an obsolete stack has to be demolished. The contractor informed you that he intends to use explosives to implode the stack. In terms of the Explosives Regulations, 2002, what is required before explosive material may be used for blasting on your premises? (1)

[10]

## QUESTION 10

- 10.1 Define the following terms as given in Regulations for Hazardous Biological Agents, 2001 (HBA):

10.1.1 Decontaminate (1)

10.1.2 Disinfect (1)

- 10.2 The chief inspector may publish a document (Annexure B) categorising biological agents according to hazard and categories of containment with the classification of each agent. What must you do where a biological agent has not been assigned a classification? (1)

- 10.3 To determine if any person may be exposed to a HBA, you have to make a risk assessment. Name TWO matters you have to take into account when making the risk assessment. (2)

- 10.4 Define the term '*competent person*', as given in the General Machinery Regulations, who must be appointed by a municipality for the machinery solely used for the distribution of electricity in the following cases:

10.4.1 The maximum demand over any continuous period of 30 minutes is 2 800 kVA. (1)

10.4.2 The maximum demand over any continuous period of 30 minutes is 8.5 MVA. (1)

- 10.5 Define the term '*competent person*', as given in the General Machinery Regulations, who must be appointed in a factory where the sum of the power generated by machinery on the premises (including power derived from other sources) is 8 500 kW. (1)

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

10.6.1 Name TWO cases other than electrical installations in domestic premises, domestic appliances used as such and any vehicle or earth-moving plant where it is not required to designate such a competent person. (1)

10.6.2 Under what conditions is it not required to appoint such a competent person? (1)

[10]

**TOTAL**

**[100]**