



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**T1310(E)(N21)T
NOVEMBER 2005**

**NON-NATIONAL CERTIFICATE:
ENGINEERING CERTIFICATE OF COMPETENCY**

**LEGAL KNOWLEDGE: MINES
(13050026)**

**21 November (X-Paper)
09:00 – 12:00**

CLOSED-BOOK EXAMINATION

Non-programmable calculators may be used.

This question paper consists of 7 pages.

**DEPARTMENT OF EDUCATION
REPUBLIC OF SOUTH AFRICA**
NATIONAL CERTIFICATE:
ENGINEERING CERTIFICATE OF COMPETENCY
LEGAL KNOWLEDGE: MINES
TIME: 3 HOURS
MARKS: 100

Answer ALL the questions.

INSTRUCTIONS AND INFORMATION

1. NO answers in pencil will be allowed.
 2. This is NOT an open-book examination. Candidates are NOT allowed to use any notes, textbooks or reference work during this examination.
 3. Answers must be clearly and correctly numbered. Illegible answers will NOT be marked.
 4. Rule off across the page on completion of each question.
 5. ALL calculations must be shown.
 6. Candidates who have NOT been accepted by the Commission of Examiners will be disqualified.
 7. Candidates arriving 30 minutes late will NOT be allowed to sit for the examination. NO candidates writing the examination may leave the examination room before one hour after commencement has passed.
 8. Questions are based on the requirements and practical application of the Mine Health and Safety Act, 1996 (Act No. 29 of 1996) and the regulations framed under Schedule 4. Answers must be confined to these requirements.
 9. NO cellular phones are allowed into the examination room.
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QUESTION 1

- 1.1 Define *competent person*. (4)
- 1.2 What are the statutory requirements for the appointment of a person to be in charge of machinery at a mine where the designed power rating of machinery used in the generation of power, together with the power supplied from outside sources do not exceed the equivalent of 2 500 kilowatts? (3)
- 1.3 What reasonable measures must be taken by the person appointed to be in charge of machinery at a mine or works where the designed power rating of machinery used in the generation of power, together with the power supplied from outside sources, do not exceed the equivalent of 2 500 kilowatts? (3)
[10]

QUESTION 2

- 2.1 Who shall provide an inspection register for a boiler? (1)
- 2.2 Who shall provide a log book for a boiler? (1)
- 2.3 What shall be recorded in the boiler register? (3)
- 2.4 What shall be entered in the boiler log book? (3)
- 2.5 When shall the entry be made in the boiler log book? (1)
- 2.6 Who must make and sign the entry in the boiler log book? (1)
[10]

QUESTION 3

- 3.1 Define *lifting machine*. (3)
- 3.2 What are the statutory requirements for the raising of a person on the forks of a fork-lift? (3)
- 3.3 What are the requirements for any winch operated by hand? (1)
- 3.4 What are the requirements for any winch operated by hand when it is used for the raising of persons? (2)
- 3.5 Define *gauge pressure*. (1)
[10]

QUESTION 4

- 4.1 What safety measures shall be taken during repairs of machinery? (8)
- 4.2 What precautions shall be taken before any person sets a machine in motion? (1)
- 4.3 Who shall be in charge of the operation of or attendance to machinery? (1)
- [10]

QUESTION 5

- 5.1 What shall be provided where an earth fault gives rise to a condition dangerous to persons? (1)
- 5.2 What are the statutory requirements for the operation of any machine with a movable boom in the close proximity of overhead power lines? (6)
- 5.3 Define *earthed* (in connection with electricity). (1)
- 5.4 What is the criterion for calculating the cross-sectional area of any earthing conductor? (1)
- 5.5 Regulation 21.1.2 states: Any place where electric apparatus is installed and which may constitute a danger to persons shall be:
- 5.5.1 Fenced off or enclosed effectively;
- 5.5.2 Provided with notices at all entrances prohibiting unauthorised access; and
- 5.5.3 Kept closed and locked at all entrances, if unattended by an authorised person to prevent unauthorised access.

What are the requirements of the regulations where the incorrect switching of unattended switchgear by an unauthorised person may constitute danger to persons and the switchgear is not enclosed as required in regulation 21.1.2? (1)

[10]

QUESTION 6

- 6.1 What device or combination of devices must the employer install at all entrances to a shaft and where must this device or combination of devices be installed? (2)
- 6.2 What are the responsibilities of the employer with regard to any self propelled mobile machine entering a shaft station? (4)
- 6.3 What are the responsibilities of the engineer or person appointed in terms of regulation 2.13.2 with regard to access configuration and devices at entrances to shafts? (3)
- 6.4 When may a self-propelled mobile machine enter the shaft station under power? (1)
[10]

QUESTION 7

- 7.1 Section 11 of the Act requires every employer to assess and respond to risk.
- 7.1.1 What must the employer periodically review in terms of section 11?
- 7.1.2 Why must the employer do these periodical reviews?
- 7.1.3 Who must the employer consult with respect to these reviews? (4)
- 7.2 Section 11 of the Act requires every employer to assess and respond to risk. According to section 11, what measures must be determined by the employer before personal protective equipment is provided? (6)
[10]

QUESTION 8

- 8.1 Who must approve special signals for winding purposes on a shaft? (1)
- 8.2 The engineer must conduct dynamic tests with respect to licensed winders. What must be tested during these dynamic tests and at what frequency must these dynamic tests be carried out? (3)

- 8.3 A derailment occurred on an incline shaft of a mine. The winder is a licensed double drum winder. The downgoing skip left the rails and overturned and winding ceased when the derailment device tripped the winder. The winder was hoisting rock at the time of the occurrence and no persons were injured. What shall the engineer examine before winding operations are resumed? (2)
- 8.4 What form must be used to report the dangerous occurrence described in QUESTION 8.3? (1)
- 8.5 What shall the engineer examine at least once a week at intervals not exceeding 10 days on a licensed winder? (2)
- 8.6 How shall the engineer conduct his examinations on a licensed winder? (1)
[10]

QUESTION 9

- 9.1 Whenever visitors enter a certain mine, they have to sign a visitors' sheet. On this visitors' sheet the visitors are required to fill in, in various columns on the sheet, their names, car registration, purpose of visit, company represented and time in and out. The last column requires a signature accepting an indemnity printed overleaf. The indemnity overleaf states the following:

(The Company)

In consideration of the Company permitting me to visit and/or affording me access to the Company's mine and/or works. I hereby release and discharge the Company, its employees, agents, and any associated company, from all and any claim of whatsoever nature or kind which I might otherwise have for any loss, damage, or injury caused or suffered by me or any of my servants, agents, employees or contractors whilst on or about the Company's property, as aforesaid, and whether such loss or damage be to person or property, and whether it arises out of any act of negligence or default on the part of the Company, its servants employees or otherwise.

I further release and indemnify the Company, its employees, agents, and any associated company, from and against any claim which may be made against it, or them, or any of them, by my servants, employees or any persons claiming by, through, or under me or them, and in particular my or their dependants, of any, who may sustain any damage. Loss or injury, directly or indirectly howsoever arising out of, or in conjunction with my or their visits to, or presence at the property of the Company, as aforesaid, and whether such loss, damage, or injury is occasioned as a result of the negligence or default on the part of the Company, its agents or servants.

What are the legal implications of this indemnity, particularly with regard to the Mine Health and Safety Act? (4)

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- 9.2 According to section 3(1) of the Act, the employer must appoint one or more managers at a mine.
- 9.2.1 What qualifications must the managers have? (1)
- 9.2.2 What must the managers be responsible for? (2)
- 9.2.3 What must the employer provide the managers with? (1)
- 9.2.4 What must the employer do to ensure that the managers perform their functions? (1)
- 9.3 What must an employer consider before assigning a task to an employee? (1)
[10]

QUESTION 10

- 10.1 What must the employer provide every health and safety committee with? (4)
- 10.2 For what contraventions of non-compliances is an employer liable to a fine in terms of section 55D of the Act? (6)
[10]

TOTAL: 100
