



mineral resources
& energy

Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

MINE MANAGER'S CERTIFICATE OF COMPETENCY EXAMINATION

MINING TECHNICAL SERVICES

MINING 11 (COAL)

DATE: 08 MAY 2024

TOTAL MARKS: 100

TO PASS: 50

TIME ALLOWED: 3 HOURS
(09h00 to 12h00)

INSTRUCTIONS:

- This question paper consists of **FOUR** pages including the cover page.
- **All** questions must be answered and are to be presented in a neat and readable manner. Answer books will not be marked if not readable.
- Read the instructions on the front page of your answer book carefully.
- The use of a non-programmable calculator is allowed.
- Use a pen that writes in ink and should not be erasable.
- Do not use a red pen.
- Restrict the use of highlighters.
- No cellular phones, computers, laptops and any other related devices shall be allowed in the examination venue.

QUESTION 1

RISK MANAGEMENT

- 1.1 Name five Health and Safety Hazards and two dangers associated with each of the hazards mentioned above which may give rise to employees having to exercise their right to refuse dangerous work (RRDW) or leave dangerous working places. (10)
- 1.2 List five things you would do as a Manager to ensure that the employees are able to exercise their right to refuse dangerous work (RRDW) or leave dangerous working places? (5)
- 1.3 What are leading indicators? List 4 examples of leading indicators that you will use to manage health and safety. (5)

(20)

QUESTION 2

OCCUPATIONAL HYGIENE

- 2.1 Briefly describe the Occupational Health Milestones and Targets as adopted for the Coal Mining Industry. (3)
- 2.2 List the pathological effects that the elements of the Milestones and Targets may have on your employees. (4)
- 2.3 Describe how you as the manager of a mine will ensure that you achieve the target values as set in the milestones at your operation. (8)
- 2.4 Define the following:
 - a) Thermal Capacity
 - b) Industrial Water
 - c) Exposure
 - d) Occupational Hygiene
 - e) Medical Surveillance

(5)

(20)

QUESTION 3

SUSTAINABLE DEVELOPMENT

- 3.1 What does MPRDA stand for? (1)
- 3.2 According to section 5A of the MPRDA what is the definition of an illegal miner? (3)
- 3.3 List the requirements according to the MPRDA before any person may explore, remove or mine any minerals. (6)
- 3.4 What are the objectives of the Social and Labour Plan according to the MPRDA? (5)
- (15)**

QUESTION 4

ROCK ENGINEERING

- 4.1 You are appointed as a Production Manager at Goodluck Colliery which mines the No.2 Seam on a Bord and Pillar layout. The mine is running out of reserves and the Mine Planner has identified an additional block of coal that can be mined. The Geologist has indicated that the No.2 Seam in that block occurs at an average depth to roof of 35,0m and is 3,5m thick on average. It has been proposed that the block be exploited using a Continuous Miner, mining 7,0m bords on 25m x 25m centers.
- 4.1 Calculate the Pillar Safety Factor using the Salamon and Munro pillar strength formula (7)
- 4.2 The Salamon and Munro formula was developed for pillars mined using drill and blast method. What would happen to the Safety Factor calculated above if the pillars are developed using a Continuous Miner? Justify your answer. (5)
- 4.3 Calculate the percentage areal extraction (3)
- 4.4 Is the proposed pillar design optimal? (5)
- (20)**

QUESTION 5

INFRASTRUCTURE

While approaching the section, you overheard people in the waiting place make this statement “PDS is a waste of money and delays production...”

5.1 What is PDS (2)

5.2 Give 3 reasons why you support or disagree with the statement that you overheard. (3)

5.3 As a manager what processes would you put in place to ensure compliance and effectiveness of the system in an underground operation. (10)

(15)

QUESTION 6

COAL PROCESSING

6.1 Train loading and handling time is one of the key measures that you as a Mine Manager will have to manage.

Discuss five key aspects that contribute to train loading and handling times at an operation. (5)

6.2 What systems would you employ to ensure you minimize coal theft between the mine and the customer when coal is transported by trucks. (5)

(10)

TOTAL 100