

Stations 3-4 S. $12\frac{1}{2}$ degrees, E. 300 feet.

Stations 4-5 S. 50 degrees, W. 140 feet. (20)

7. Find the bearing and length of the closing line from Station 5 to Station 1. (10)

8. How often should a mine be surveyed and mine plan brought up to date? (10)

Fire Boss Examination.

Paper No. 1. Time allowed, one and one-half hours.

The value attached to each question is given in parenthesis. Candidates must obtain 60 per cent. of the allotted marks to pass.

COAL MINES ACT.

1. What is the interpretation of "fire boss" as laid down by The Coal Mines Act? (10)

2. What is the interpretation of "shotlighter" as laid down by The Coal Mines Act? (10)

3. Give a detailed account of the duties of a fire boss from the time he reaches the mine at the beginning of his shift until he leaves at the end of his shift. (20)

4. What does The Coal Mines Act state with reference to places not in the actual course of working? (10)

5. State fully the provisions of General Rule 8 regarding the use of any explosive in the mine? (20)

6. State the provisions of General Rule 7 regarding the use of safety lamps, also state under what conditions the use of safety lamps is required. (20)

7. What does The Coal Mines Act state regarding the appointment of stations at the mine? (10)

Fire Boss Examination.

Paper No. 2. Time allowed, two and one-half hours.

The value attached to each question is given in parenthesis. Candidates must obtain 60 per cent. of the allotted marks to pass.

VENTILATION.

1. Name the different gases found in mines. Which are explosive and which non-explosive? State where you would look for them and how they are detected. (10)

2. If an explosion of gas occurred in your safety lamp, what would you do? (10)

3. What are the dangers arising from the improper care and handling of safety lamps by the workmen? (10)

4. In case the light in your safety lamp became extinguished while you were making an examination of a gaseous mine, how would you proceed and what provisions would you make for such emergency? (10)

5. What care and attention should safety lamps receive in the lamp room and how should lamps be inspected before they are handed over to the workmen for use? (10)

6. State the use of the water gauge and where you would apply it. (10)

7. What are the advantages of splitting air currents and for what purpose are regulators used? (10)

8. What are the anemometer, barometer and thermometer used for in coal mining? (10)

9. In an airway 10 feet 6 inches wide, 4 feet 6 inches high, we find the velocity of the air to be 300 feet per minute; what is the area of the airway, and how many cubic feet of air per minute are passing in the airway? (10)

10. Find the number of square feet of rubbing surface in an airway 4 feet high by 9 feet wide and 1,000 feet long. (10)

Fire Boss Examination.

Paper No. 3. Time allowed, two hours.

The value attached to each question is given in paren-

thesis. Candidates must obtain 50 per cent. of the allotted marks to pass.

PRACTICAL WORK.

1. What, in your opinion, is a miner's first duty on entering his working place in the morning? Who should have preceded him there according to law? (10)

2. Name the precautions you would require a miner to take when about to restand a prop knocked out by flying coal from a blast? (10)

3. Show by sketch how to set props in a level seam. (10)

4. How would you set a single post on a pitching seam? (10)

5. State how you would commence to remove a large body of fire damp, and what precautions you would take. State what danger there may be in doing the work. (10)

6. State the character of brattices to be used in gaseous mines, and how should they be constructed? (10)

7. What are the principal things to be looked after in haulage roads? (10)

8. What dangers arise from lack of judgment in placing shots in coal mining? (15)

9. What is coal dust? State what dangers arise from the same when blasting is carried on where it is present; also, what you would do to prevent a possible accident due to the presence of coal dust. (15)

Fire Boss Examination.

Paper No. 4. Time allowed, one and one-half hours.

The value attached to each question is given in parenthesis. Candidates must obtain 50 per cent. of the allotted marks to pass.

ARITHMETIC.

1. Multiply twenty thousand and seven by eighteen thousand seven hundred and four. (15)

2. Add the following numbers together: 768, 9476, 8, 93268, 396, 18, 64538, 9654, 9273642, 7. (15)

3. Divide 9878546 by 298 and work the answer to three decimal places. (15)

4. From 9350008 subtract 8370109. (10)

5. The velocity of the air in an airway 7 feet wide by 5 feet high is 750 feet per minute. What is the volume of air passing in the airway in an hour? (15)

6. From an entry 9 feet 6 inches wide and 5 feet 6 inches high, driven at the rate of 4 1-2 feet per day, how many cubic yards of material are taken out in five days? (15)

7. A shaft measures 7 feet by 15 feet and is sunk to a depth of 160 feet. How many cubic yards of material were removed in sinking it? What did the work cost at 15 cents per cubic foot? (15)

An underground lake, discovered in exploiting the Campine coalfields in Lower Belgium, is to be used as a source of supply for the country round about. The region is ill supplied with water. What available surface water there is, is often contaminated. The water from the underground lake is pure except for the presence of a small proportion of ferruginous matter. This can easily be removed. At present rain water is the principal direct source of supply.

The report of the Alaska Treadwell Gold Mining Company for the year ending May 31st, 1910, shows record results. The tonnage crushed was 744,226 tons. The yield per ton was \$2.79, 58 cents higher than the average for the year previous. The cost of mining and milling per ton was \$1.57, but the profit per ton was \$1.22, almost twice as much as heretofore. The ore reserves are calculated at 5,899,364 tons.