

ANNEXURE E.

EXAMINATIONS FOR MINE-MANAGERS AND BATTERY SUPERINTENDENTS.

At the examinations held in December, 1916, six candidates sat for first-class mine-managers' certificates, one for second-class mine-managers' certificates, and three for battery-managers' certificates. The following were successful: First-class mine-manager—Charles Kingsford, Waihi; second-class mine-manager—George Tilsley; battery superintendent—E. D. White, Karangahake. One candidate for a battery-superintendent's certificate obtained a partial pass.

In addition to the above a second-class service certificate was granted to James Lynch, of Glenorchy, he having satisfied the Board of Examiners that, by virtue of the provisions of section 8 of the Mining Amendment Act, 1910, he was entitled to a service certificate.

The Board of Examiners under the Mining Act as at 31st March, 1917, was constituted as follows: Messrs. Thomas Gilmour, H. A. Gordon, H. P. Hornibrooke, H. S. Molineaux, P. G. Morgan (Chairman), Frank Reed, and E. H. Wilmot.

Since the above date vacancies have been created by the death of Mr. H. A. Gordon, who had been a member of the Board from its inception, and by the resignation of Mr. Thomas Gilmour.

QUESTIONS ASKED AT THE EXAMINATION HELD DURING DECEMBER, 1916, FOR MANAGERS' FIRST AND SECOND CLASS CERTIFICATES OF COMPETENCY UNDER THE MINING ACT.

SUBJECT I.—*Mining.*

1. Describe and sketch the method of timbering a three-compartment rectangular shaft intended for a large output of ore, the first 50 ft. being soft wet country. Show how you would secure the sides and keep back the water.
2. State whether you would use planking or framed sets, giving your reasons, how far apart would you open the levels, and the height of chambers.
3. In driving a crosscut or level through soft country which is liable to swell, show how you would secure the drive with timber.
4. On stoping out a lode 7 ft. wide, how far apart would you place the ore-passes? Describe how you would timber them, the class of timber you would use, and the size in the clear.
5. State where you would place the travelling or ladder road, and the most convenient size for travelling in.
6. Describe how you would put up a rise 100 ft. in ordinary country with safety to the miners working in it.
7. Describe the different methods of stoping and breaking out ore. State which method is the best in your opinion under existing circumstances.
8. Give a list of the different improvements which have been introduced in quartz-mines for breaking ore for the past forty years. State fully what you know about them.
9. In mining phraseology give the meaning of the following terms: "Horse," vug, rearing, stull, gad, and moil.
10. Show by sketch how you would construct a dam in a drive, 7 ft. high by 5 ft. wide, to keep water back safely to a height of 150 ft. from bottom of level. Give the total pressure in tons on the structure when the dam is full. Give the mode of construction, the material you would use, and your reasons for same.
11. State what precaution you would take in driving near an abandoned mine where an accumulation of water was known to exist.
12. Give the comparative strength of dynamite, gelignite, and blasting-powder, and the class of country each is best adapted for.
13. Explain how you would fire a round of holes with safety fuse in a straight drive or stope where you would have to travel, say, 200 ft. to a place of safety.

SUBJECT II.—*Mechanics.*

1. Show by sketch the position of the valves, and the intake and outlet orifices, of a double-acting pump, clearly illustrating the course of the water.
2. A dam in a drive 8 ft. high by 6 ft. wide is required to withstand a head of water 150 ft. high: state how it should be constructed, and give the pressure in pounds in the face of the dam.
3. Describe the safety appliances attached to a steam-boiler to prevent accident or damage to the boiler through excessive steam-pressure or insufficient supply of water.
4. What are the essential requirements of a winding-rope? State formula for calculating the working load of (a) flexible-steel ropes, (b) iron chains.
5. State fully the advantages and disadvantages of compressed air and electricity as a power for underground work.