

FIRST DAY.—TIME: 2 P.M. TO 5 P.M.

SUBJECT B.—*On the Timbering of Shafts, Adits, Main Drives or Levels, Passes, Stopes, and generally on the Systems of timbering Mines, and also in filling up Old Workings.*

1. Give the dimensions of timber for a main adit in heavy ground—(a) if for a double line of rails, (b) for a single line of rails. State how you would make each set, and what provision you would make if the ground was liable to swell. Give your reasons fully.
2. How far apart do you consider it most economical to have passes, and how would you timber them in heavy ground? Give dimensions of passes, and size of timbers.
3. Give the dimensions of planking you would use in timbering a shaft 4 ft. by 10 ft. in the clear; state how you would join the timber at the corners so as to make it thoroughly secure. Also give the dimensions of compartment if it were used for pumping and winding, and state how you would secure the guides for cages, and give their dimensions.
4. How would you secure the ground in stoping out a lode 6 ft. wide—(a) timbering the stope, (b) to secure the ground after being stoped out?
5. Describe how you would secure the timber in a main adit so as to prevent more than two sets of laths coming down in the event of a cap breaking. Also give your reasons why all empty spaces should be filled up on the top of the laths.

SUBJECT D.—*Tapping Water in Mines.*

1. What precaution would you take if you were conveying a drive under a place where it was known there was a lodgment of water, and not more than 10 ft. of solid ground overhead?
2. If you had to tap a lodgment of water by an uprise, what provisions would you make to secure the uprise and carry on the operations with safety?
3. In approaching a place where there was a lodgment of water by a drive or adit, and the ground was of a loose character, how would you secure it to render operations being carried on with safety? And state the precautions you would adopt in tapping the water.

SECOND DAY.—TIME: 9 A.M. TO 12 NOON.

SUBJECT E.—*On Blasting and the use of Explosives.*

1. What explosive do you consider best for use in hard rock, or in stoping out a lode? Give your reasons fully.
2. What is the relative strength of dynamite, rackarock, and blasting-gelatine in comparison with blasting-powder?
3. Give the composition of the deleterious gases generated by the use of the following explosives: Blasting-powder, dynamite, rackarock, and blasting-gelatine.
4. What method would you use to thaw dynamite when in a frozen condition, and at what temperature does it freeze?
5. What explosive do you consider best to use in wet ground? Give your reasons fully.
6. If a shot were to miss fire, state what precautions you would take, and how you would proceed in blasting the rock.

SUBJECT F.—*A Knowledge of Arithmetic and the Method of keeping Accounts.*

1. If the wages of the workmen were £2 14s. per week of forty-eight hours, how much would the wages of 19 men working 2 weeks 4 days 3 hours amount to, 8 hours to be taken as a day's work?
2. If a piece of work took 1 man 22 days, who was paid at the rate of £2 12s. 6d. per week of forty-eight hours, how much would the work cost?
3. If the repairs to a main adit cost £40 16s., and took 2 men 51 days, how long would it take 7 men to accomplish the work, and what would be the difference in the cost if each of the 7 men were paid 9s. 6d. per day?
4. If the assay of ore gave 2 oz. 16 dwt. 12 gr. of gold to the ton, and only 62 per cent. of that amount was recovered in the battery treatment, how much gold would be recovered from 125 tons of ore?
5. If the average thickness of a lode were 3 ft. 2 in., and a block were left 90 ft. long and 45 ft. high, how many cubic yards would it contain?

SUBJECT G.—*A Knowledge of Part VI. of "The Mining Act, 1891."*

Oral.

QUESTIONS USED IN EXAMINATION OF FIRST-CLASS MINING MANAGERS.

("The Coal-mines Act, 1891.")

FIRST DAY.—TIME: 9 A.M. TO 12 NOON.

[Candidates must attempt to answer every question. All calculations to be shown in detail.]

SUBJECT 1.—*On the Sinking of Shafts and Construction of Main Roadways, opening out a Mine, and the Division of a Mine into Districts.*

1. Describe fully the process of timbering a 15 ft. by 6 ft. shaft, giving dimensions and particulars of materials used and mode of binding them together. Give a sketch of a short length of timbering to illustrate your description.