

QUESTIONS USED IN EXAMINATION OF MINING MANAGERS FOR SECOND-CLASS CERTIFICATES.

SUBJECT No. 1.—*On the Sinking of Shafts and Construction of Main Roadways in opening out a Mine.*

1. Describe briefly what preparations you would make before proceeding to sink a shaft, stating—
 - (1.) The system of timbering you would adopt, showing how secured;
 - (2.) What precautions you would adopt to protect men from falling *débris*;
 - (3.) Precautions to be observed in firing shots in a sinking pit.
2. In starting opening out a mine with shaft, say, 500 ft. deep and seam 10 ft. thick, dip 1 in 6, what size shaft-pillars would you deem requisite—roof good, floor soft?
3. State your experience in working in—
 - (1.) Longwall;
 - (2.) Bord-and-pillar.

SUBJECT No. 2.—*Methods adopted in securing Shafts and the Workings in a Mine.*

1. How would you prepare a bed for wedging curb for carrying cast-iron tubing, and what condition of strata is essential?
2. Show by sketches how you would set timber in inclined seams so as to resist pressure of roof and sides.
3. When and where do you consider the use of timber chocks as packs advisable in a mine worked under the longwall system? Describe how you would set them, and the method you would adopt to withdraw them.

SUBJECT No. 3.—*The Various Methods of hewing and cutting Coal and securing Ground.*

1. Describe the process of getting coal by—
 - (a.) Bord-and-pillar; and
 - (b.) Longwall.
2. In clearing a heavy fall where roof bad, describe by sketches how you would proceed.
3. Under what circumstances are chocks useful in coal-workings?
4. What is meant by the term "gob-fire," and how would you proceed to seal up such a fire?

SUBJECT No. 4.—*Various Methods of Ventilating and Construction of Air-ways.*

1. What are the most dangerous gases met with in coal-mines? Why are they dangerous? Which of the gases have you had most experience with?
2. What size would you drive an airway to pass 10,000 cubic feet per minute?
3. What means of ventilating do you prefer? State reasons.
4. Explain your views as to what effect a heavy fall of the barometer has upon the condition of a mine.

SUBJECT No. 5.—*On Air-ways and Ventilation generally.*

1. What are the advantages of splitting air in mines? State where and when and how you would do it, and how you would provide for the proper quantity going in each direction.
2. Give sketch of an overcast air-crossing with sizes that you consider suitable to put over the main road in an extensive mine.
3. If you suddenly found you had a high-side goaf filled with firedamp, the goaf being 50 yards up and 100 yards wide, with a drawing-road on each side, describe step by step the course you would take to remove the gas, assuming you had sufficient air.

SUBJECT No. 6.—*On the Nature and Composition of Explosives and Dangerous Gases, and on Spontaneous Combustion.*

1. What kind of explosive do you prefer in a fiery mine, and how would you use it?
2. Give the composition of any of the flameless explosives of which you have had experience.
3. What does the Act stipulate in order to secure safety whilst charging shot-holes? and what precautions are to be taken in preparing coal for blasting?
4. What in your opinion is the best way of avoiding a dust-explosion?

SUBJECT No. 7.—*On the Drainage of Mines, and Pumping-appliances.*

1. Describe the kind of pumps of which you have experience.
2. In opening out dip workings with only moderate feeders of water, how would you carry them on? Give reasons.
3. A pumping-engine goes seven strokes a minute; length of stroke 8 ft., diameter of pump 15 in.: what is the quantity pumped per minute, in gallons?

SUBJECT No. 8.—*Haulage of Coal, and Different Systems in Use for Inclines and Shafts.*

1. How would you fit up an inclined plane to run 100 tons an hour? Describe appliances, and give reasons for adopting them.
2. Assume shaft 500 ft. deep, from which it is required to raise 50 tons an hour, what size engine would you put down?
3. Give brief description of any system of haulage with which you are acquainted, and state which system you prefer, giving reasons.