

**THE EXAMINATION IN MINING LAW RELATING
TO HEALTH AND SAFETY 2007**

Wednesday, 13th June 2007

SAMPLE ANSWERS

INSTITUTE OF MATERIALS, MINERALS & MINING

QUESTION A1

i Acts and Regulations to be investigated:

The Mines (Control of Ground Movement) Regulations 1999

Reg 4(1)	Manager's duty to ensure ground control measures are taken to secure every place in the mine
Reg 5(a)	Manager shall ensure that all factors likely to affect ground movement are assessed to establish appropriate ground control measures
Reg 6(1)(b)	Design document - was it reviewed in the light of the fault?
Reg 12(1)	Any person installing supports shall do so according to the rules. Was support in this area correctly installed?

Mines & Quarries Act 1954

Section 46	Where a conveyor is installed in a road, there shall be provided and maintained effective means of transmitting signals from every point in that road
Section 123(3)	After an accident, two members of a panel appointed for that mine, including an employee's representative may inspect the place
Section 123(6)	Duty of persons employed at the mine to afford members of panel facilities and assistance to enable them to carry out inspection - in the case of a mine this responsibility lies with the manager to furnish them with information

RIDDOR Regulations 1995

Reg 3(1)(e)	Where there is a dangerous occurrence, a responsible person shall notify the relevant enforcing authority by the quickest, practicable means.
Schedule 1	Major injuries includes fractured leg
Schedule 2, Part 2, 40	Any fall of ground that results from the failure of an underground support system and prevents persons travelling through the area affected by the fall is a dangerous occurrence.

Escape and Rescue from Mines Regulations 1995

Reg 6(1)	Requirement on the owner of a mine to have available appropriate equipment for escape and rescue purposes
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Health and Safety (First Aid) Regulations 1981

Reg 3(1)	Employer to provide equipment and facilities as are adequate and appropriate in circumstances enabling first aid to be rendered to his employees
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Mines (Safety of Exits) Regulations 1988

- Reg 7(4)(a)(ii) Requirement for two separate ways from the mine shall not apply when no more than 18 people work in a heading
- Reg 7(5) For 18 man heading
- (a) notice given to HSE at least 7 days in advance and
 - (b) notice given to nominated person

ii Approved Codes of Practice to consider:

The Mines (Control of Ground Movement) Regulations 1999

- ACOP 6 (c) ground control measures include installation of support materials such as rockbolts
- ACOP 13 Require very detailed assessment where rock bolts are to be used in weak or variable ground (the fault zone)
- ACOP 15 Was assessment reviewed when there was a material change in ground conditions when the fault line was encountered?
- ACOP 21 Did the design document set out measures for the fault area?

Health and Safety (First Aid) Regulations 1981

- ACOP 19 The owner should provide portable first aid boxes for each person appointed to be a first aider
- ACOP 21 Owner makes a Scheme for the siting of adequate first aid stations in all parts of the mine. These should include all inbye districts.

Mines (Safety of Exits) Regulations 1988

- ACOP 29 Manager should ensure support system is adequate for extra risk involved in single entry headings
- ACOP 30 Suitable communications system should be provided to give warning of any emergency
- ACOP 32 HM Inspector will check the content of the manager's notification to HSE regarding more than 9 man working in the heading

QUESTION A2

i

Mines (Shafts and Winding) Regulations 1993

- Reg 10 Owner shall ensure winder has effective brake locking and interlocking devices
- ACOP 84 Brake locking to be interlocked with shaft side equipment and prevent winding if:
(b) any platform or shaftside equipment protrudes into the path of a conveyance
- ACOP 86 Safety circuit should not be dependent upon single line components and should be protected against electrical faults
- Reg 11(2) When winding apparatus is modified competent persons shall examine all aspects and report (report not written)
- Reg 11(4) Manager to ensure that after modification winder is not used unless the report mentioned in Reg 11(2) states that the apparatus is safe to use
- Reg 13(2) Owner shall specify the maximum winding rope life
(not the manager)
- Reg 16(1)(a) Competent persons operating winding apparatus to be given instructions as to their duties
- ACOP 179(b) After cessation of winding exceeding 2 hours, winding engineman to complete at least one wind in both directions before winding persons
- Reg 17(1) Manager shall ensure winding apparatus is regularly, adequately, examined, inspected, tested and maintained (brake lock system was defective)

Management and Administration of Safety and Health at Mines Regulations 1993

- Reg 6(2)(b) Owner to ensure mine is managed and worked in accordance with statutory provisions
- Reg 6(5) The above applies whether or not they expressly impose duties on him or some other person
- ACOP 27 Regulation 6 makes it clear that if a statutory provision is contravened (even if it is by a duty holder other than the owner) the owner is guilty of an offence, unless the owner has proved that he used all due diligence to secure compliance
- Reg 9(3)(a) Duty of manager to manage and control undertaking of mine in accordance with relevant statutory provisions
- ACOP 40 Manager has duty to ensure safety through his arrangements for supervision and inspection, and to ensure observance by others of the relevant legislation

Reg 11(1)(b) Duty of manager to ensure that all plant and equipment is systematically inspected examined, tested and maintained

The Electricity at Work Regulations 1989

Reg 21(1) No telephone or signalling system taken or used below ground unless approved pursuant to Regulation 20(1)

ACOP 1(a) Apparatus so approved:
(a) telephones, communications and signalling (including shaft signalling) necessary in emergency for escape or rescue

Mines (Safety of Exit) Regulations 1988

Reg 3(4) Where due to an accident, dangerous occurrence etc, one exit is available, the manager shall:

- ensure scheme of action is brought into effect
- restrict number of persons below ground
- forthwith notify HSE by quickest practicable means
- post notice in covered accommodation

Reg 5 Manager shall ensure from each landing at a shaft used as an exit there is a road ladderway or stairway to a landing at another shaft

Reg 6(a) Manager shall ensure every road is suitably constructed and maintained, safe and convenient to walk and normally at least 1.7m high and kept free from obstruction

ACOP 19 Routes suitable for access on foot should be made and maintained to avoid sudden changes in direction, height, width and gradient
Roadway floors to reduce risk of slipping and stumbling

ii Ways of preventing a recurrence of the incident

1) Provide back-up interlock switches with cross monitoring to detect failure of a single switch

2) Alter construction of switches to improve resistance to shaft environment

3) Ensure appropriate testing following any modifications to winding and shaft equipment

4) Audit instructions and competency of persons operating winding equipment

QUESTION A3

i

MASHAM 1993

- Reg 10(4) Every person appointed to the management structure, to the extent of his responsibility and authority and subject to any instructions given to him by a mine senior person, shall
- (a) carry out his duties with all due diligence
 - (b) ensure compliance with relevant statutory provisions
 - (c) ensure the safety of all persons below ground at the mine for whom he is responsible

ii

MASHAM 1993

- Reg 12(7) Any person who inspects a district shall have the duty:
- (a) to assess the condition of the district with respect to the health and safety of persons
 - (b) having regard to his knowledge and experience and authority, to secure remedies to dangers to take where necessary immediate steps to prevent danger that has arisen or is about to arise
 - (c) to report on those matters which still require corrective action to the person responsible in the management structure

iii

MASHAM 1993

- ACOP 106 Person needs to be suitably qualified and aware of statutory provisions relevant to his inspection
He must have experience and authority sufficient to identify threats to safety and to secure their remedy
- ACOP 107 Person should be provided with and use approved instruments to examine for presence of firedamp and oxygen
The proper functioning of the ventilating system
Pay due regard to any matter that could affect health and safety - dust barriers, etc
- ACOP 108 Person takes whatever steps appropriate to avoid danger
Where place found to be dangerous (presence of firedamp) person takes steps to prevent danger by fencing or immobilising equipment
- (Would also accept reference to ACOP 109)*

iv

Mines & Quarries Act 1954

Section 55(5) Where in any part of a mine, the ventilation is interrupted or ceases to be adequate, duty of the manager to secure that access to that part of the mine is except for the purpose of restoring the ventilation or in the case of an emergency

v

Mines Miscellaneous Health & Safety Provisions Regulations 1995

Reg 4(1) Owner shall ensure the health and safety document prepared which demonstrates:-

- (a) risks persons exposed to
- (b) demonstrates measures including design, use and maintenance of the mine and its equipment
- (c) how (b) is co-ordinated

Reg 4(2) (a) Plan detailing measures to protect persons from the risk of explosion

(b) a Fire Protection Plan detailing likely sources of fire, precautions against, detect and combat outbreaks and spread

vi

Mines Miscellaneous Health & Safety Provisions Regulations 1995

Reg 6(1)(a) Every employer shall ensure that additional health and safety requirements set out in Part 1, Schedule 1 are complied with

Part 1,
Schedule 1 Work Permits

- 1(1) Where document shows need, a system of work permits to be used for carrying out hazardous operations which may interact to cause serious hazards
- (2) Work permits specify conditions and precautions taken before, during and after and issued by employer or person in charge

vii

Coal Mines (Owner's Operating Rules) Regulations 1993

Reg 3(1) Owner shall ensure mine not worked unless operating rules in force and they have been notified to HSE

- Reg 3(2) Manager ensures
- (a) Rules brought to attention of all persons
 - (b) operations undertaken in accord with rules
 - (c) rules observed by all persons

- Reg 4 Operating Rules relate to:-
- (a) ventilation of heading
 - (b) fires

viii

(Ventilation) Regulations 1956

- Reg 23(1) Person appointed to exercise supervision or inspection of district shall be able to start any fan below ground

- Reg 23(2) Such person shall not start fan unless he is satisfied it is safe to do so

ix

Examples of bad practice

1. Use of corrugated sheets where this is a high spontaneous combustion risk
2. Use of timber lagging which can be ignited
3. Environmental monitoring not in place
4. Not reporting CO found
5. No probe available by Official to examine heading properly
6. Official who works in a mine known to have a high spontaneous combustion risk should be aware of signs e.g. smell

QUESTION A4

i

Electricity at Work Regulations 1989

- Reg 12(1)(b) Where necessary to prevent danger suitable means shall be available for the isolation of any electrical equipment
- Reg 12(2) Isolation means the disconnection and separation of the electrical equipment from every source of electrical energy in such a way that the disconnection and separation is secure
- Reg 13 Adequate precautions shall be taken to prevent electrical equipment which has been made dead in order to prevent danger while work is carried out on or near that equipment, from becoming electrically charged during that work if danger may thereby arise

The Coal and Other Mines (Ventilation) Regulations 1956

- Reg 23(1) No person other than the deputy in charge of a district affected or an official of the mine authorised by the manager or a person authorised by such a deputy or official shall start, stop, remove or alter any fan installed below ground at any mine

MASHAM Regulations 1993

- Reg 11(3)(b) The manager shall ensure that a sufficient number of suitably qualified and competent persons are appointed to supervise the maintenance and inspection of all plant and equipment

ii

Electricity at Work Regulations 1989

- Reg 12 ACOP 1(c) Suitable means for cutting off the supply may be initiated automatically or manually and should be arranged to minimise the loss of electrical power to equipment essential to the safety of persons such as ventilating fans.
- Reg 12 ACOP 1(d) Suitable means for cutting off the supply may be initiated automatically or manually and should be clearly marked so as to show its relationship to the equipment, which it controls.
- Reg 12 ACOP 4 In providing means of isolation account should be taken of the accessibility and ease with which the procedure can be carried out, the circumstances under which it may be required and the need to prevent mistaken operation and to avoid restoration of power while work is being carried out, e.g. by the provision of facilities for padlocking, removable isolator handles and the posting of notices
- Reg 13 ACOP 1 Isolation should be carried out by a person competent that no danger would arise during the work or when the electricity supply is restored. The competent person should be a member of the electrical engineering staff and where it is necessary for one member of the staff to isolate for another then the member responsible should be a supervisory electrician.
- Reg 13 ACOP 2 During the time persons are working on equipment precautions should be taken to ensure the equipment remains isolated – earthing

- Reg 13 ACOP 3 A safe method of work is essential to ensure the continued effectiveness of measures taken – padlocks etc
- Reg 13 ACOP 4 Permit to work systems should form part of the isolation procedure for circuits above 250 volts

MASHAM Regulations 1993

- Reg 11 ACOP 84(b) The appointment of persons as supervisory technicians to undertake the duties of regulation 11(3)(b)

iii

Mines Miscellaneous Health & Safety Provisions Regulations 1995

- Reg 4(1) The owner shall ensure that the health and safety document has been prepared, which
- b) demonstrates measures including design, use and maintenance have and will be taken to safeguard health and safety of persons

- Reg 4(2)(b) A fire protection plan detailing the likely sources of fire, the precautions to protect against, detect and combat outbreaks and spread of fires

iv

The Coal and Other Mines (Fire and Rescue) Regulations 1956

- Reg 5 Manager to secure provision and readiness for use of
- a) an adequate supply of water; or
b) sufficient fire extinguishers and supply of dust or sand; and
c) equipment for conveying and using water, dust or sand
- at places in relation to each working face and along main intake and return roadways

v

The Coal and Other Mines (Fire and Rescue) Regulations 1956

- Reg 11(1) If there appears smoke or other sign indicating a fire has or will break out, the person in charge of that part of the mine affected by such a fire, shall cause all persons likely to be affected to leave it

Please note: Statutory References shown are included to aid future candidates only. They are not required to be provided in an Examination.

QUESTION B1

The Coal Mines (Precautions against Inflammable Dust) Regulations 1956

i

Reg 5(1)

Manager's duty to make and ensure there are arrangements in place for every length of road which is required to be ventilated, for any dust on roof, sides and floor, which can be raised into the air to contain not less than the minimum percentage of incombustible matter.

ii

Reg 10A(1)

In every roadway where coal is carried by conveyor or which is an area throughout which flame caused by an ignition, at a working coalface or any such other place manager may determine, is likely to extend, the manager shall ensure that there is provided and maintained a stonedust barrier of a type approved by the HSE

Reg 10A(2)

Manager shall prepare a scheme specifying position and type of barrier to be used
A copy of scheme is kept in office or at other place as inspector may approve

QUESTION B2

The Mines and Quarries Act 1954

Section 37 Transport Rules

i

Section 37(1) Manager to have power to make transport rules to cover conditions under which vehicles may be used and for securing the safe operation of vehicles and conveyors and to avoid injury which may result from their use

ii

Section 37(1) Transport Rules should refer to:

(a) a standard height and width for each length of road in a mine in which vehicles run or conveyors are operated

(b) the maximum loads (weight, dimensions, number or other) carried in vehicles and maximum number that may be coupled together to run as a set or train

(c) the maximum speeds at which vehicles may run

(d) prohibit manriding of persons in vehicles or on conveyors except in circumstances and in accordance with such conditions as specified in the rules

Section 41 Safety measures relating to use of vehicles

iii

Section 41(1) So long as vehicles are used in a mine there shall be provided, maintained and used either on the track or on the vehicle, such safety devices necessary to prevent accidents caused by runaway vehicles.
Every device shall assume automatically the position it operates from, unless there is a good reason for not providing a device of that kind.

QUESTION B3

i

The Health and Safety at Work etc. Act 1974

Sec 2 General duties of employers to their employees

Sec 2(1) It is the duty of every employer to ensure, so far as reasonably practicable, the health, safety and welfare at work of all his employees

Section 2(2) These duties include:

- (a) provision and maintenance of plant and safe systems of work
- (b) arrangements for ensuring, so far as reasonably practicable, the use, handling, storage and transport of articles and substances
- (c) the provision of information, instruction, training and supervision to ensure the health and safety at work of his employees
- (d) to maintain in a safe manner any place of work under employer's control, and provision of safe access and egress
- (e) the provision and maintenance of working environment for employees that are safe

ii

MASHAM Regulations 1993

Reg 5 Duties of employees at work at a mine

Reg 5(3) Where an employee discovers danger has arisen or is about to arise he shall -

- (a) take immediate steps as are reasonable for a person in his position to prevent danger; and
- (b) where further action to prevent danger is required, report the matter to his supervisor

QUESTION B4

MASHAM 1993

i

Reg 24

The manager shall appoint suitably qualified and competent person to organise and undertake the training at the mine. He will ensure that person has the time and facilities and support of a sufficient number of suitably qualified and competent persons to enable him to carry out his duties effectively.

ii

Reg 25

The manager, after consulting the person appointed to organise training, shall prepare a scheme outlining:-

(a) arrangements for:-

(i) supervision and training of persons above or below ground, including work at or near the coal face.

(ii) the training of operators of plant and equipment

(b) reports and records of training to be made and kept at the mine or some other approved place

QUESTION B5

The Coal Mines (Owner's Operating Rules) Regulations 1993

i

Reg 4 ventilation of blind ends
The mine fires
Schedule frictional ignition

ii

Reg 5 ensure that copies of current rules are kept and
 made available in covered accommodation

The Mines Miscellaneous Health & Safety Provisions Regulations 1995

iii

Reg 4(1)(a) Owner ensures Health and Safety documentation demonstrates that:-
+ (b)

- the risks have been assessed
- adequate measures have been and will continue to be taken to safeguard the health and safety of persons at work

iv

Reg 4(2)(a)
(b) (c) + (d)

- Plan to protect from the risk of explosion
- Fire Protection Plan showing likely sources of fire
- the protective equipment and measures required to protect against harmful atmosphere
- zones where rock bursts or gas outbursts may occur

QUESTION B6

Use of Electricity in Mines, Electricity at Work Regulations 1989

i

(a)

Reg 20 Below ground at the mine
 At any place on the surface
 Where any exhauster in a firedamp drainage system is installed

(b)

Reg 20 Cut off the supply of electricity to any electrical equipment in the place where the
 firedamp is detected.
 If not possible, take all reasonable precautions to make the equipment safe.
 If the action does not fall within his normal duties, report to an official.

(c)

Reg 20 The equipment made safe must remain in that condition until an official directs that
 precautions are no longer necessary.
 In the event of electricity being cut off the time, duration and location must be
 recorded.

(d)

Reg 20 Any equipment approved to remain energised above 1.25% firedamp (or M1
 equipment).

ii

Reg 24
(1)(a) Suitable schematic diagrams of all electrical distribution systems above 250 volts shall
 be prepared and kept at the office of the mine.

Reg 24
(1)(b) Show all planned settings of any circuit protective devices.

Reg 24(2) Copies of portions of the schematics provided shall be displayed where the switchgear
 is installed.

Reg 24(3) Plans on a suitable scale shall be kept at the mine showing, so far as is reasonably
 practicable, the position of all permanently installed switchgear supplied at a voltage
 greater than 250 volts.