QUESTION 1: GENERAL

1.1 Hazardous locations are identified using classes and divisions. These markings are still frequently found in industry today. Draw up a table showing a comparison between the old marking system and the one used today. (5)

1.2 What are the minimum criteria a person applying for accreditation with the Department of Labour as a master installation electrician should meet? (5)

1.3 An electric motor similar to three others is used in a hazardous location. The motor no longer carries any marking to confirm its suitability for use in this particular zoned area. The motor is still working. What measure(s) if any should be taken to ensure that the motor is suitable for use in this particular zoned area? (3)
[13]

QUESTION 2: OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

2.1 State the TWO regulations in the Occupational Health and Safety Act (Act 85 of 1993) that is of particular importance for electrical installations. (2)

2.2 How long is a certificate of compliance issued for an electrical installation valid for? (2)

2.3 Who can only do electrical construction work in a defined hazardous location according to one of the regulations referred to in QUESTION 2.1? (2)
[6]

QUESTION 3: SANS 10142 PART 1 OF 2003

The wiring of premises (low voltage installations)

3.1 Certificate of Compliance (CoC)

State at least 10 elements that should be considered during a visual inspection of an electrical installation and briefly describe each one. (10 × ½) (5)

3.2 According to a Certificate of Compliance 14 tests should be conducted. State 10 of these tests. (10 × ½) (5)

3.3 Additional Certificate of Compliance for a medical location

State SIX aspects which, according to the Additional Certificate of Compliance for a medical location, should be investigated by an accredited person when completing such a certificate. (6)
[16]

MIE P2 aug09 P2 T2270(E)(N22)T

MIE P2

QUESTION 4: SANS 10086 PART 1 OF 2003

The installation, inspection and maintenance of equipment used in explosive atmospheres. Part 1: Installations including surface installations on mines

4.1 Regarding the scope of this standard, answer the following questions:

4.1.1 What does this standard cover according to its scope? (3)

4.1.2 What is excluded from this standard according to the scope? (3)

4.1.3 Which standard covers aspects similar to the ones in this standard for the mining industry? (1)

4.2 This standard in particular deals with inspection, repair and maintenance of explosion prevention technology electrical equipment. Define the following terms:

4.2.1 Inspection (3)
4.2.2 Repair (3)
4.2.3 Maintenance (3)

4.3 As a master installation electrician you are required to conduct a detailed (*) inspection of a specialised electrical installation in a Zone 1 area. Electrical equipment in this area include:

1 • Electric motor supplied from a variable speed drive (VSD) located in a safe area

2 • Field isolator located inside the zoned area

3 • An incandescent luminary rated at 60 watts

4 • A switch located inside the hazardous location to switch the luminary

5 • A utility box (CCG of Pratley) used for termination of field instrumentation circuits

Draw up an inspection schedule sheet suitable for you to capture evidence that will allow you to report on whether the equipment was correctly selected and installed and whether all the protection requirements are in place. (20)
[36]

(*) Detailed insp't will, generally, require that the apparatus be isolated – see SANS 10086-1:03 Cl 3.8

PTO

MIE P2 Aug 09

QUESTION 5: SABS 089 PART 2

The petroleum industry. Part 2: Electrical installations in the distribution and marketing sector.

5.1 *Define the following terms as used in this standard:*

5.1.1	Combustible liquid	(3)
5.1.2	Grade of release of flammable substances	(6)
5.1.3	Open premises	(3)

5.2 Which TWO standards contain the basic principles of area classification *owing to the presence of flammable gases or liquids* which has a bearing on this standard? (2)

5.3 Give TWO examples of each of the *following zones with particular reference* to this standard:

5.3.1	Zone 0	(2)
5.3.2	Zone 1	(2)
5.3.3	Zone 2	(2)

5.4 The following TWO FIGURES are both underground bulk storage tanks containing flammable liquids. Considering the zone allocation you need to identify which description best fits the two diagrams. Write down the correct description next to the question number in the answer book.

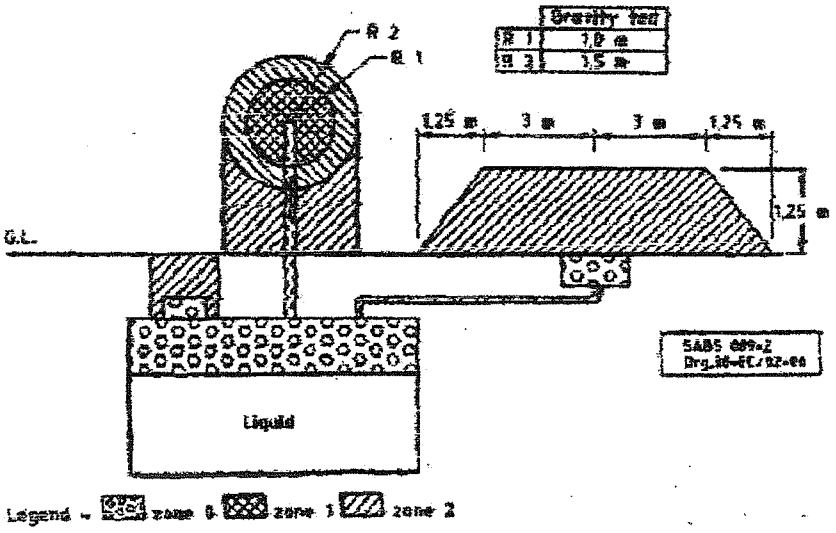


FIGURE A

PTO

MIE P2 Aug 09 P4

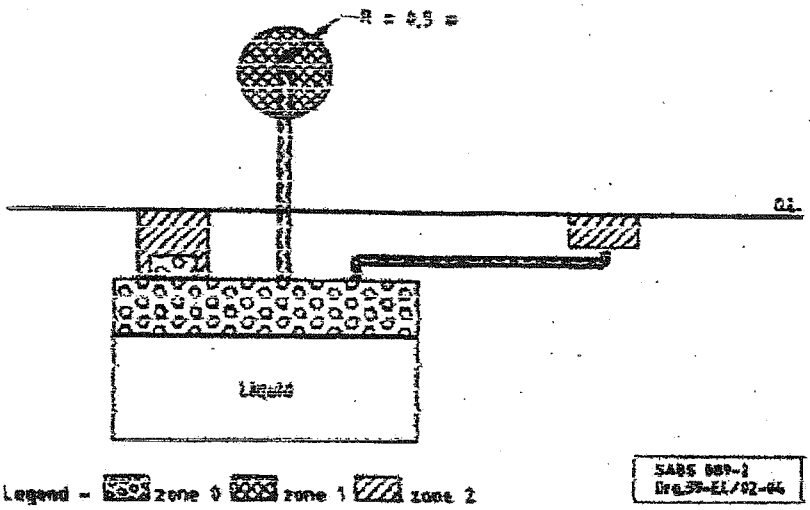


FIGURE 8

Descriptions:

5.4.1 Underground tank with class II and class III combustible liquids at temperatures below their flash points, with gravity filling. — Fig B (2)

5.4.2 Underground tank with class I flammable liquids or class II and class III combustible liquids at temperatures at or above their flash points with gravity filling. — Fig A (2) [24]

PTO

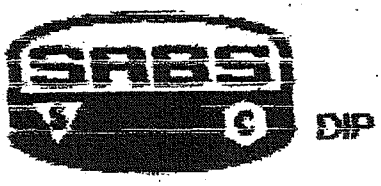
MIEP2 Aug 09 P5

QUESTION 6: SABS IEC 61241-17 - 2006

Electrical apparatus for use in the presence of combustible dust.

Part 1:1: Electrical apparatus protected by enclosures and surface temperature limitation.

Specification for apparatus



To which type of explosion protected equipment by manufacturers that has been approved by the SABS under a mark permit issued by them, may this certification mark be applied? [2]

QUESTION 7: SABS 0313 1999

The protection of structures against lightning.

Air-termination systems can be composed of any combination of the following elements. Name any THREE of these elements. [3]

TOTAL: 100

--ooOoo--