MIE P1 Aug 2009

Relay contact
Contactors
Electric motor
Petrol engines
Wire wound resistors

QUESTION 1: GENERAL

1.1 Name EIGHT sources of ignition commonly found in modern day production processes that could ignite a flammable/explosive atmosphere. (4)

1.2 Define the following terms when associated with area classification of flammable atmospheres:

1.2.1	Ignition temperature	(2)
1.2.2	Flashpoint	(2)
1.2.3	Flammability/explosive limits (upper and lower)	(4)
1.2.4	Material safety data sheet	(3)
		[15]

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

2.1 Name TWO regulations in the OHS Act that specifically deal with the electrical industry. (2)

2.2 The following is an extract from the Electrical Installation Regulations Occupational Health and Safety Act 1993, (Act 85 of 1993):
'Every user or lessor of an electrical installation, as the case may be, shall on request produce the certificate of compliance for that installation to an inspector or the suppliers. (3) Sub-regulation 1 shall not apply to electrical installations existing prior to the coming into force of this regulation (23 October 1992). Provided that any additions or alterations are affected to such an installation, the user or lessor of the electrical installation, as the case may be, shall obtain a certificate of compliance for the whole installation ...'

Explain the meaning of this paragraph. (3)

Cont Reg: Reg 22

2.3 The construction regulations in the OHS Act also contain certain critical aspects which specifically deal with electrical construction work on a construction site and more specifically temporary constructions. Name any FIVE of these aspects. (5)
[10]

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QUESTION 5: SANS 60079 - 0 OF 2005 - ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES. PART 0: GENERAL REQUIREMENTS

5.1 List the temperature values for the following temperature classes used on explosion prevention technique equipment:

5.1.1 T2
5.1.2 T3
5.1.3 T1
5.1.4 T6
5.1.5 T4
5.1.6 T5

(5)

5.2 Marking of explosion prevention technique electrical equipment must include a number of elements. Name at least SIX of these elements. (6 × ½) (3)

5.3 All explosion prevention technique electrical equipment (Ex) must be sold with instructions from the supplier/manufacturer. List FOUR items that must be included as a minimum in the instructions supplied with the equipment to the end user.

(2)
[10]

QUESTION 6: SANS 600 79 - 10 OF 2005 - ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES. PART 10: CLASSIFICATION OF HAZARDOUS AREAS

This standard essentially deals with the classification of hazardous areas. There are four main concepts dealing with area classification. Keeping in mind the theme (classification of hazardous areas), consider each concept below and write brief notes on the aim of each one:

6.1 Safety and area classification (5)
6.2 Area classification procedure (3)
6.3 Ventilation (3)
6.4 Documentation (4)
[15]

QUESTION 7: SABS-IEC 61241 PART 3 OF 1997 - ELECTRICAL APPARATUS FOR USE IN THE PRESENCE OF COMBUSTIBLE DUST. PART 3: CLASSIFICATION OF AREAS WHERE COMBUSTIBLE DUSTS ARE OR MAY BE PRESENT

7.1 Good housekeeping will prevent the build-up of dust layers. Which technique for cleaning should not be used to achieve this? (1)
Pressure

7.2 Aspiration systems have an inherent risk which can result in ignition of a dust cloud. State this risk. (1)

7.3 Why is the moisture content of maize products critical for purposes of mass storage in bulk silos? (2)

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7.4 Briefly explain the sequence of events which could cause a primary dust explosion to turn into a secondary dust explosion. (3)

7.5 Which method of explosion prevention technique for electrical equipment (Ex) is most suitable to prevent the ignition of combustible dust atmospheres? (1)

7.6 What does the term *hybrid dust mixture* mean? (2)
[10]

TOTAL: 105

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