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T2350(E)(N20)T

DEPARTMENT OF EDUCATION
REPUBLIC OF SOUTH AFRICA

NON-NATIONAL CERTIFICATE
SPECIALISED ELECTRICAL INSTALLATION CODES
(Second Paper)
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Write neatly and legibly.

QUESTION 1: GENERAL

1.1 Who is responsible for the safety of an electrical installation according to the Occupational Health and Safety Act (Act 85 of 1993)? (1)

1.2 Explain the responsibility of a Master Installation electrician according to the same Act. (4)

1.3 Explain the significance of the following two dates as far as the certification of electrical installations are concerned:

1.3.1 1 January 2004 (2)
1.3.2 23 October 1992 (2)

1.4 What is the main objective of the Occupational Health and Safety Act and the regulations incorporated in the Act? (1)

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QUESTION 2: SANS 10142 PART 1 2003

The wiring of premises (Low voltage installations)

2.1 Certificate of Compliance (CoC)

2.1.1 Name the FOUR categories of responsibilities for which provision is made on the last page of the Certificate of Compliance. (4)

2.1.2 State EIGHT inspections listed on the Certificate of Compliance that needs to be done by an accredited person when inspecting an electrical installation. (8 × ½) (4)

2.1.3 Certain tests shall not be carried out in specialised electrical installations, due to the characteristics of the intrinsic safety features of Exi equipment, such equipment can be damaged by the tests. Name TWO of these tests. (2)

2.2 Additional Certificate of Compliance for a medical location

On the additional certificate for a medical location, provision is made for two signatures on the front page. Who should sign in the space provided and what does their signatures signify? (4)
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2.3 Additional Certificate of Compliance for a hazardous location

When certifying a specialised electrical installation, additional documentation needs to be added to the certificate. Name FOUR of these additional documents. (4)
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QUESTION 3: SANS 10086 - 1 2003

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

3.1 Define the following terms used in this standard:

3.1.1 Closed inspection (2)
3.1.2 Detailed inspection (2)
3.1.3 Inspection (2)
3.1.4 Maintenance (2)
3.1.5 Repair (2)

3.2 With which SANS standard do electrical installations in hazardous locations have to comply? (1)

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3.3 During an inspection there are numerous factors regarding electrical protection and wiring techniques that must be assessed. Explain each one of the following aspects briefly:

3.3.1	Flanged joints on long runs of piping that carry flammable substances	(2)
3.3.2	The dissipation of static electricity	(5)
3.3.3	Emergency switch-off	(2)
3.3.4	Unused openings	(4)
3.3.5	Cable jointing	(4)

[28]

QUESTION 4: SABS 089 - 2

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

The use of bulk storage containers in the petro-chemical industry is common. These tanks and their associated equipment must be bonded and earthed. Give a brief explanation of the method that should be used with the following type of structures/tanks.

4.1.1	Horizontal tanks and some raised vertical tanks above ground	(2)
4.1.2	Vertical tanks installed with bottom in contacts with a ground bed	(2)
4.1.3	Underground tanks	(2)
4.1.4	Floating roof tanks and floating blanket tanks	(2)

4.2 The pumping, transfer, mix and agitation of certain liquids result in static electricity. This can have dangerous consequences if the fluids involved are flammable. Write down recommendations to minimise static electricity and hazardous practices associated with static electricity that can be used in the following cases:

4.2.1	Static electricity generated by filters and strainers	(3)
4.2.2	Rails at sidings	(2)
4.2.3	Small (up to 250 ℓ) portable containers	(3)
4.2.4	Metallic piping and components	(3)
4.2.5	Stray currents and isolating flanges	(3)
4.2.6	Staging track, on which tank wagons stand for filling or decanting	(5)

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QUESTION 5: SABS 0313:1999 ?

The protection of structures against lightning

The protection of structures against lightning are based on certain basic principles, according to this standard. Name FIVE of them. **[5]**

QUESTION 6: GENERAL

6.1 Flare stacks are considered an alternative method to prevent the build-up of a flammable atmosphere. There are two methods by which the ignition of the flammable gas is achieved. Name these TWO methods. (2)

6.2 Petrol stations form part of the marketing and distributing sector of the petroleum industry. Area classification for petrol stations is dealt with in which standard? (1)

6.3 If petrol stations contain hazardous locations, why then are motor vehicles allowed to enter these zones yet they are not explosion protected? (3)

6.4 Battery charging bays used for the recharging of lead acid wet cells are considered hazardous locations. Why is this? (2)

6.5 What measures can be employed to make the area mentioned in QUESTION 6.4 safe? (4)
[12]

TOTAL: 100