higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NON-NATIONAL CERTIFICATE

SPECIALISED ELECTRICAL INSTALLATION CODES
(First paper)

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This marking guideline consists of 5 pages.

MJ

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QUESTION 1

1.1 Means any person who with the aid of specialized knowledge✓ or equipment or after such investigations, tests, sampling or analyses✓ as he may consider necessary,✓ and whether for reward or otherwise, renders a service✓ by making special findings, purporting to be objective findings ✓ (5)

1.2
(i) standard
(ii) complied
(iii) work
(iv) respect
(v) prevalent
(vi) premises
(vii) certificate
(viii) findings
(ix) person
(x) service

(10 × 1) (10)
[15]

QUESTION 2

2.1 An area in which an explosive gas atmosphere is or may be expected to be present✓ in quantities such as to require special precautions✓ for the construction, installation and use of equipment.✓ (3)

2.2 Hazardous area classification based upon the frequency of the occurrence✓ and duration of an explosive atmosphere.✓ (2)

2.3
2.3.1 False
2.3.2 False
2.3.3 True

(3 × 1) (3)

2.4
(i) Continuous grade of release
(ii) Primary grade of release
(iii) Secondary grade of release

(3 × 1) (3)

2.5 Non-hazardous area (1)
[12]

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QUESTION 3

3.1 3.1.1 Hazard might arise due to the presence of flammable gas or vapour,✓ but the principles may be used in the assessment of a hybrid mixture.✓

3.1.2 The effects of consequential damage✓ following a fire or an explosion.✓

(2 × 2) (4)

3.2 Whether the dust is combustible or not. (1)
Material characteristics for the dusts that are present (1)
Nature of dust releases from particular process sources (1)
Operational and maintenance procedures for the plant,✓ including housekeeping✓ (2)
Other equipment and safety information (1)
[10]

QUESTION 4

4.1 4.1.1 C
4.1.2 E
4.1.3 A
4.1.4 B
4.1.5 D
4.1.6 F
4.1.7 H
4.1.8 G

(8 × 1) (8)

4.2 It is prepared for parts of equipment that are incomplete✓ and require further evaluation prior to incorporation in Ex Equipment.✓ (2)
[10]

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QUESTION 5

5.1
5.1.1 False
5.1.2 True
5.1.3 True
5.1.4 False
5.1.5 True (5)

5.2
- Electrostatic charges can be induced on a conductive object✓ that is brought into the vicinity of a charged body.✓
- The part of the object that is closest to the charged body will exhibit a charge✓of opposite polarity to that on the body.✓
- Under such conditions the over-all electrostatic charge on the object is zero,✓ but substantial charges, with their inherent dangers,✓ can be present at particular parts of the object.✓ (7)

[12]

QUESTION 6

6.1 Test laboratory that is accredited by a government-endorsed accreditation body✓and approved by the regulator(s) to carry out tests specified in the appropriate standards✓and to issue certificates (known as IA certificates) for explosion-protected apparatus (EPA)✓ indicating that such apparatus complies with safety requirements and any other requirements of the relevant regulator(s)✓ (4)

6.2
- a return airway✓
- any location not more than 180 m from any working face,✓ and
- any other location determined by risk assessment✓ (3)

6.3 When a vented type of lead acid cell is on charge, hydrogen and oxygen are released from the cell and could form an explosive gas atmosphere.✓ A gas mixture with a hydrogen concentration of between 4% (volume fraction) and 75% (volume fraction) is explosive,✓ and burning is enhanced by oxygen enrichment.✓ The volume of gas produced will be considerably greater under boost charge, particularly as the battery nears full charge.✓

Sparks, arcing and excessively hot surfaces can ignite the gas, causing an explosion.✓ Sparks can be caused by electrical apparatus, electrostatic discharges, abrasion of metal,✓ or the making and breaking of electrical connections.✓ (7)

[14]

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QUESTION 7

7.1
Ex: Explosion protected/protection✓
ia: Intrinsic safety protection✓
IIC: Gas group (surface)✓
T4: Temperature class✓
Ga: Equip Protection Level✓ (5)

7.2 7.2.1
(a) Protection type Ex ib is not suitable for Zone 0,✓✓ can only be used in Zone 1 and 2✓✓ (4)
(d) As protection type Ex ia is not suitable for the hazardous area (Zone 0),✓✓ the equipment /apparatus cannot be used✓✓ (4)

7.2.2
(b) Gas Group IIB is not suitable for IIC environment,✓ can only be used in Zone 1 and 2✓ (2)
(c) Equipment temperature class is too high✓ for the flammable substance✓ (2)
(d) The equipment cannot be used in the hazardous area as a result of the incorrect gas group✓✓ and the high temperature class of the equipment or apparatus✓✓ (4)

7.2.3
(c) The equipment surface temperature is too high✓ for the flammable substance in the hazardous area✓ (2)
(d) The equipment cannot be used in the hazardous area as a result of✓✓ the high temperature class of the equipment or apparatus✓✓ (4)

[27]

TOTAL: 100

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