higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ROADS
NQF LEVEL 3

(12030363)

16 November 2022 (X-paper)
09:00–12:00

This question paper consists of 4 pages.

409Q1N2216

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TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

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

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QUESTION 1: ROAD BUILDING TERMINOLOGY

1.1 Name FIVE different types of materials which can be used to build different layers of the road. (5)

1.2 Give FIVE reasons why cutting must be done on the exposed surfaces during road construction. (5)

1.3 List FIVE different types of stabilising agents used to strengthen materials for building road layers. (5)

1.4 Name FIVE uses of a gabions. (5)
[20]

QUESTION 2: INTRODUCTION TO ROAD SURFACING

2.1 List FIVE different types of concrete that can be used as a road pavement. (5)

2.2 Briefly explain the process of compacting asphalt material during the formation of the wearing surface layer. (5)

2.3 Briefly explain the advantage of a *concrete road* over an *asphalt road* in terms of the following:

2.3.1 Durability

2.3.2 Weather conditions

2.3.3 Damage

2.3.4 Cost

2.3.5 Safety

(5 × 1) (5)
[15]

QUESTION 3: ROAD FURNITURE

3.1 Name FIVE different types of information that can be found on direction signs. (5)

3.2 Name FIVE locations where speed humps can be used. (5)
[10]

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QUESTION 4: ROAD SURVEYING

4.1 Name FIVE different types of tools that the surveyor must have during the setting of a curve in the road. (5)

4.2 Write the following abbreviations used for a horizontal curve in full:

4.2.1 T

4.2.2 E

4.2.3 PT

4.2.4 M

4.2.5 PI

(5 × 1) (5)

4.3 Draw a single-line diagram to show sag and crest curves in a road. (4)

4.4 Explain the maintenance procedures to be followed after having used a theodolite. (5)

4.5 What is a NADIR angle? (1)

4.6 Explain how to set up a simple manual theodolite before starting with the surveying process. (5)

[25]

QUESTION 5: EARTHWORKS

5.1 List FIVE characteristics of compacted soil. (5)

5.2 Name FIVE different types of machinery that can be used to do earthwork on road construction and specify their function. (10)

5.3 Name FIVE results of building gabions on uncompact soil. (5)

5.4 How does one know that the soil on which a road is to be built has been compacted thoroughly? (4)

5.5 Why is the testing of soil so important before it is imported to where a road is constructed? (4)

5.6 Name TWO types of soil tests. (2)

[30]

TOTAL: 100

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