higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ROADS
NQF LEVEL 3

(12030363)

21 November 2018 (X-Paper)
09:00–12:00

This question paper consists of 5 pages.

NCV

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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.

NCV

QUESTION 1: ROAD-BUILDING TERMINOLOGY

1.1 Give ONE word/term for each of the following descriptions by choosing a word/term from the list below. Write only the word/term next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

profile; catch pit; bollard; bitumen; road shoulder; skid resistance; pavement; catch-water drain; carriageway; culvert

1.1.1 The strip of land bordering a road

1.1.2 A black, tarry substance found as natural deposits in the earth, or made from crude oil

1.1.3 The ability of the road to stop cars from sliding on its surface

1.1.4 The asphalt layer on the finished surface on the road that traffic moves on

1.1.5 The part of the road for vehicles, not for pedestrians

1.1.6 A rigid structure used to control traffic by closing off certain areas so that vehicles cannot drive there

1.1.7 An opening cut on the edge of the road in the sidewalks

1.1.8 The drains build parallel to the road, but outside the road prism, to divert any water that would flow into the road prism away from the road

1.1.9 A drain that passes under a road or sidewalks

1.1.10 A wooden post that the surveyor installs at a pre-determined distance from the middle of the road

(10 × 1) (10)

1.2 Define the following terms used in road works:

1.2.1 Drainage

1.2.2 Pedestrian crossing

1.2.3 Road reserve

1.2.4 Gabion

1.2.5 Apron

(5 × 2) (10)
[20]

QUESTION 2: INTRODUCTION TO ROAD SURFACE

2.1 Briefly explain why gravel roads need to be surfaced. (2)

2.2 Road marking on our roads helps the motorist about something ahead of the road.

Name FIVE other things that road markings show the motorist of the vehicle on the road. (5)

2.3 Briefly explain the purpose of priming the base layer of the road. (2)

2.4 Name TWO reasons, why water need to be sprayed before the prime coat. (2)

2.5 Differentiate between *slurry seal* and *cape seal.* (4)
[15]

QUESTION 3: ROAD FURNITURE

3.1 Most of the roads in South Africa have roads sign which show motorists detail about the road ahead.

Name FIVE things that the warning signs show on the road. (5)

3.2 Briefly explain the difference between:

3.2.1 Pedestrian guardrail

3.2.2 Median barrier

(2 × 2) (4)

3.3 Name ONE common place where a robot would be placed. (1)
[10]

QUESTION 4: ROAD SURVEY

4.1 What is the use of the radius of the curve on the road? (1)

4.2 Briefly explain the difference between *horizontal curve* and *vertical curve* used on roads. (2 × 3) (6)

4.3 Name FIVE steps need to be followed when you are setting out horizontal curves using the tangent. (5)

4.4 Where are inverted leveling staffs used for? (1)

4.5 Name FIVE instruments used to level the ground. (5)

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4.6 Briefly explain FIVE procedures to be followed when setting up theodolite. (5)

4.7 Define the following terms used when setting up theodolite:

4.7.1 Parallax

4.7.2 Station

(2 × 1) (2)
[25]

QUESTION 5: EARTHWORK

5.1 Name and explain FIVE different types of compaction equipment used to compact the soil. (5 × 2) (10)

5.2 Compaction squeezes out air from the soil and is usually done by a mechanical construction plant.

Explain TWO ways in which the soil would be compacted. (2 × 2) (4)

5.3 Name FIVE things needed when you perform a modified AASTHO test. (5)

5.4 Briefly discuss FIVE procedures to be carried out when you perform a relative density test of the material used in road construction. (5)

5.5 What does the following abbreviations stand for:

5.5.1 CBR

5.5.2 DD

5.5.3 RD

(3 × 2) (6)
[30]

TOTAL: 100

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