higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

CONCRETE STRUCTURES
NQF LEVEL 4

(12020514)

22 November 2024 (X-paper)
09:00–12:00

This question paper consists of 6 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
CONCRETE STRUCTURES
NQF LEVEL 4
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. Start each section on a new page.
5. Use only a black or blue pen.
6. Write neatly and legibly.
7. Use a pencil for all your drawings.

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QUESTION 1

Study the image below and answer the questions that follow:

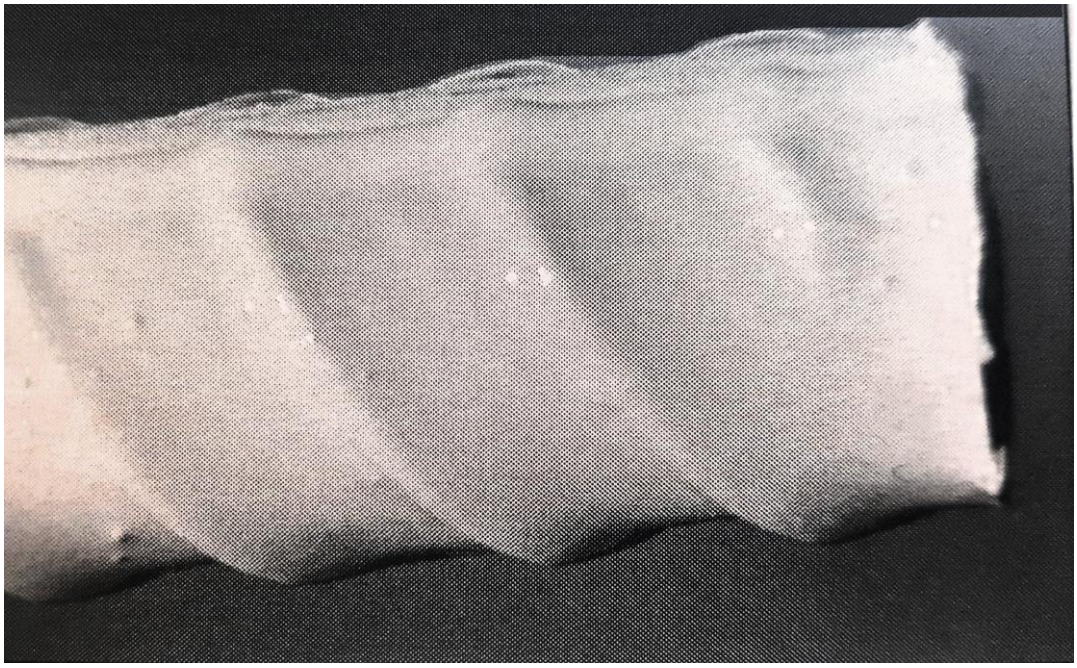

FIGURE 1

1.1 Identify the type of reinforcement steel on FIGURE 1. (1)

1.2 Explain why it is important not to drop rebar. (2)

1.3 State the type of coating used on the reinforcing steel. (1)

1.4 Give a reason why bars are coated. (2)

1.5 Explain by means of a drawing the correct way of lifting this rebar. (4)

[10]

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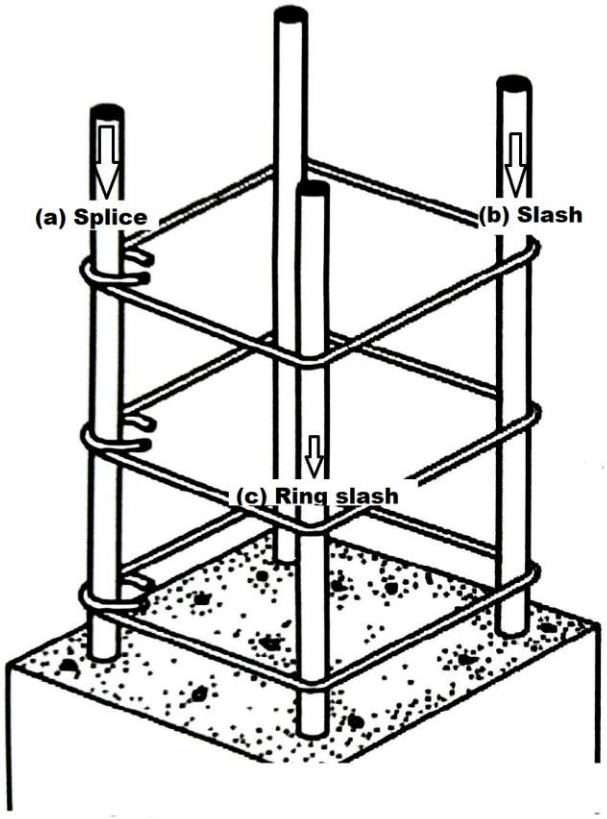
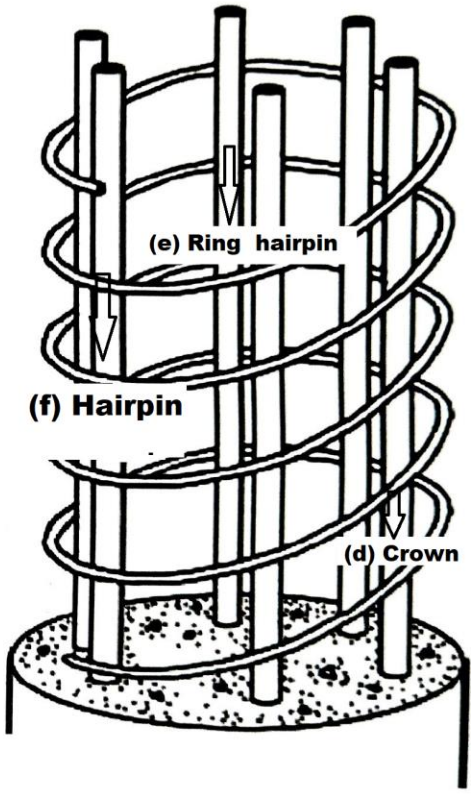
QUESTION 2

Study the picture of reinforcement column cages below and answer the following questions.





COLUMN A **COLUMN B**

2.1 By means of neat drawings, show how the SIX ties (a – f) are tied to COLUMNS A and B. (6 × 2) (12)

2.2 Explain the step-by-step procedure of how to tie all THREE ties in COLUMN B. (3 × 3) (9)

2.3 List the tools and materials used to tie a reinforcement column. (3)

2.4 State the safety precautions to be taken when tying the bars. (3)

2.5 Write down what is stated in the Safety Act that the employer should always follow in the workplace. (2)

2.6 Explain the use of ties shown in COLUMN A. (6)

[35]

QUESTION 3

Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–J) next to the question number (3.1–3.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1	Fitting for purpose; correct spacing of standards; and firm fixing.	A	Loading of scaffolding
3.2	Standards spaced to suit classification; permissible number of working platforms known by user; total number of platforms not exceeded.	B	Foundation
3.3	Soundness of structure, sufficient tie, sound condition, tightness of tie.	C	Platform
3.4	Complete lines, sufficient types, correct fittings.	D	Mobile
3.5	Grounds, sole boards, baseplates, jacks.	E	Access
3.6	Boards properly supported, boards in good conditions, trapdoors, toe boards, handrails, boards tied down.	F	Cantilever
3.7	Ladder secured 900mm above platform, ladders in good condition, properly supported.	G	Signage
3.8	Correct castors, height, braced, brakes.	H	Tie
3.9	Design and sketch provided, checked to sketch.	I	Bracing
3.10	Correct signs, correct positions.	J	Equipment

(10 × 1) **[10]**

QUESTION 4

4.1 Explain how to delay the stiffening of concrete into the mixer. (4)

4.2 State THREE benefits of adding water to reduce concrete mix . (6)

4.3 List FIVE factors to ensure thorough mixing in concrete. (5)

4.4 State FIVE basic principles of mixing concrete. (5)

4.5 Differentiate between the following terms:

4.5.1 Segregation

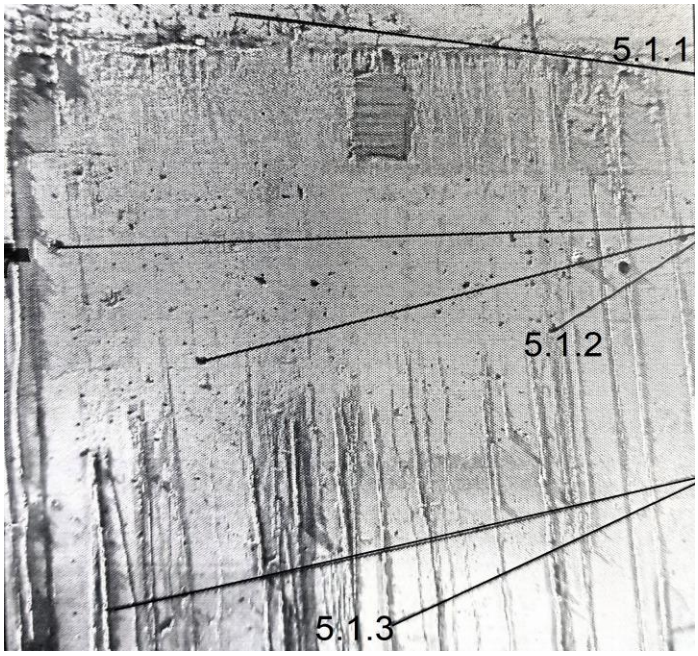
4.5.2 Slump test

(2 × 2) (4)

4.6 Explain when bleeding starts to occur in concrete. (1)
[25]

QUESTION 5

5.1 Label the picture below by writing only the answer next to the number (5.1.1–5.1.3) in the ANSWER BOOK.



(3)

5.2 State TWO uses of the following tools:

5.2.1 Bolster

5.2.2 Carborundum rubbing stone

5.2.3 Hardwood wedge

(3 × 2) (6)

5.3 Complete the following sentence by filling in the missing word. Write only the answer next to the question number (5.3) in the ANSWER BOOK.

Epoxy is a type of … or sealant that is generally mixed from two separate parts: resin and a hardener. (1)
[10]

QUESTION 6

6.1 Discuss the effectiveness of using buckets when storing wall components on site. (6)

6.2 List FOUR different types of panels used in construction. (4)
[10]

TOTAL: 100

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