higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

MOULDERS' THEORY N2

(11021152)

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

Drawing instruments may be used.

This question paper consists of 6 pages.

011Q1E2214

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
MOULDER'S THEORY N2
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. Use only a black or a blue pen.
5. Start each question on a new page.
6. Write neatly and legibly.

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QUESTION 1: CORES AND CORE MAKING

1.1 List the steps in core making. (4)

1.2 Name the different types of cores. (6)

1.3 What are the essential qualities of core sand? (5)

1.4 List the types of core boxes. (5)

[20]

QUESTION 2: MOULDING AND MOULDING SAND

2.1 List the different types of moulding machines. (5)

2.2 What are the types of moulding used in the foundry? (9)

2.3 What are the advantages of dry sand moulding? (5)

[19]

QUESTION 3: GENERAL MOULDING OPERATIONS

3.1 List the properties of moulding sand. (6)

3.2 What are the elements of a gating system? (6)

3.3 What is a core and a core print? (4)

3.4 List the various casting processes. (8)

3.5 What are fins and run out? (2)

3.6 What are cold shuts and hot tears? (2)

3.7 List the specific advantages of the CO_2 moulding process. (4)

3.8 Define *AFS grain fineness number*. (5)

3.9 The strength of the dry sand mould depends on …

A sand quality.
B sand grains.
C binders.
D additives. (1)

3.10 Uncontrolled permeability in the green sand moulds leads to blow holes.

Explain this statement. (5)

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3.11 … sand is the most versatile sand.

A Loam
B Chromite
C Kaolinite
D Olivine

(1)
[44]

QUESTION 5: PATTERN PROCESSES

5.1 Loose piece patterns are …

A a kind of piece pattern.
B used when the pattern cannot be drawn from the mould.
C similar to core prints.
D never used in foundry works.
E Any of the above.

5.2 Which type of pattern is used for the mounting several patterns at a time?

A Combined pattern
B Loose, piece pattern
C Sweep pattern
D Match-plate pattern

5.3 Wood for pattern is considered dry when moisture content is …

A 0%.
B 5%.
C less than 15%.
D less than 25%.
E None of the above.

5.4 The draft allowance on a metallic pattern compared to a wooden pattern …

A is the same.
B is more.
C is less.
D depends on the size.
E None of the above.

5.5 A match-plate pattern is used in ...

A green sand moulding.
B bench moulding.
C pit moulding.
D machine moulding.
E None of the above.

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5.6 The draft allowance on a pattern is provided in order to ...

A provide good draft of air in the sand moulding.
B provide for distortion that might take up space.
C remove the pattern easily from the moulding.
D increase the strength of the mould walls.
E None of the above.

5.7 The mould is housed in a ...

A flask.
B cope.
C drag.
D cheek.
E None of the above.

5.8 The allowances provided in disposable patterns are ...

A shrinkage and finish.
B distortion.
C draft.
D shake.
E shrinkage, finish, and distortion.

5.9 Surfaces to be machined are marked on the pattern in ...

A black.
B yellow.
C red.
D blue.
E green.

5.10 Colour is used on patterns to identify …

A pattern allowances.
B cope and drag.
C location of core printing.
D pattern material
E None of the above.

(10 × 1) **[10]**

QUESTION 5

Make a neat, vertical sectional sketch of a mould showing the following:



- Riser (feeder)
- Pouring basin
- Down gate
- Runner
- Chaplets between the core and the mould face **[7]**

TOTAL: 100

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