higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

FOUNDRY THEORY N1

(11020221)

2 August 2021 (X-paper)
09:00–12:00

This question paper consists of 4 pages.

136Q1G2102

Copyright reserved

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
FOUNDRY THEORY N1
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 question on a new page.
5. Only use a black or blue pen.
6. Write neatly and legibly.

Copyright reserved

QUESTION 1

1.1 Name the different types of gates used for pouring metal. (3)

1.2 Name SEVEN component parts of a gating system. (7)

1.3 Where are the following gates used?

1.3.1 Pencil gates

1.3.2 Wedge gates

1.3.3 Finger gates

1.3.4 Ring gates

1.3.5 Ingate

(5 × 2) (10)
[20]

QUESTION 2

2.1 Is feeding a casting a necessity? (10)

2.2 What class of casting should be fed? (5)

2.3 Explain how is feeding done. (5)
[20]

QUESTION 3

3.1 What are the advantages of centrifugal castings? (6)

3.2 What are some of the important precautions to take when rod-feeding castings? (2 × 2) (4)

3.3 Which of the following castings would give a higher yield?

a) A casting with an exothermic riser

b) A casting with an open sand riser

(1 × 1) (1)

3.4 If a casting has not been properly fed, where would one expect to find a shrink hole? (1)

3.5 What is a feeder? (2)

3.6 Make a neat sketch of a pencil gate and state its advantages. (3 + 3) (6)
[20]

Copyright reserved

QUESTION 4

4.1	What methods can be used to charge an electric arc furnace?	(2)
4.2	Give a brief description of a coreless type induction furnace and state what metals are normally melted in such a furnace.	(8)
4.3	What type of equipment is used to analyse metal from the furnace bath and what are the advantages thereof?	(4)
4.4	How would one thin down a thick slag to create more fluidity?	(2)
4.5	What are ladles used for?	(2)
4.6	What types of ladles are used in the industry?	(2)
		[20]

QUESTION 5

5.1	Make neat, labelled sketches of THREE different types of cores.	(6)
5.2	Name THREE methods of venting cores.	(12)
5.3	Why are vent holes necessary in cores?	(2)
		[20]

TOTAL: 100

Copyright reserved