higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# MARKING GUIDELINE

## NATIONAL CERTIFICATE

## FOUNDRY THEORY N1

## 31 JULY 2018

**This marking guideline consists of 5 pages.**

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**QUESTION 1**

- A die is a reuseable mould,
- usually made of steel,
- for the mass production
- of small parts
- on low-melting alloys,
- usually zinc or aluminium allows. **[6]**

**QUESTION 2**

- Reciprocating
- Rotary **[2]**

**QUESTION 3**

- During casting it is important,
- standing in readiness to stop, or try to stop
- any possible run-outs.
- A lot of wastage can be avoided and
- the danger of an accident is minimised. **[5]**

**QUESTION 4**

- The various metals used for castings
- contract after solidification
- in the mould and
- the patterns must be made larger than the casting by
- an amount known as patternmaker's contraction. (5 × 2) **[10]**

**QUESTION 5**

- Moisture is essential to the working
- of moulding sand
- due to the plasticity
- it imparts to the clay band,
- but the working properties vary
- as the moisture content varies and
- for any particular sand
- there is a moisture content
- which gives the best
- all-round result. **[10]**

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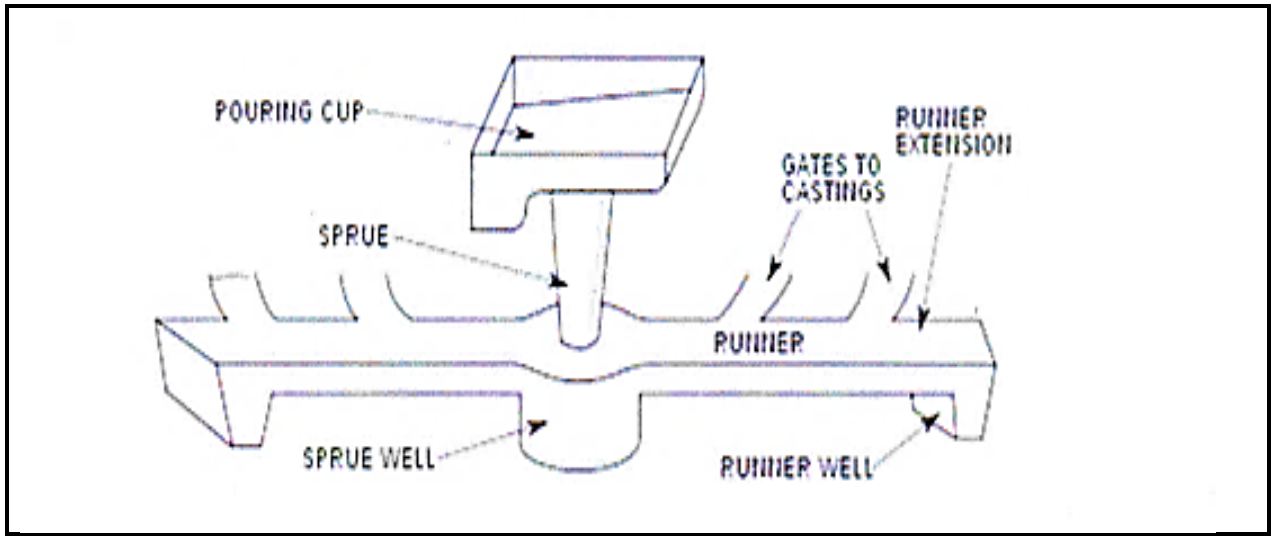
## QUESTION 6

- It should hold together and
- keep a faithful surface impression
- when the pattern is removed.
- Be sufficiently porous
- to allow gasses to escape.
- Too high a proportion of clay
- will cut down porosity.
- When rammed up with care
- the sand should resist the pressure of the metal.
- It should not distort.
- The sand should have good refractory qualities. **[11]**

## QUESTION 7

- It helps to resist metal penetration by
- forming a film of gas
- between the surface of the mould and
- the molten metal.
- It prevents adhesion of sand particles
- to the surface of the casting. **[6]**

## QUESTION 8




**[10]**

## QUESTION 9

- Pouring basin
- Downgate
- Ingate **[3]**

## QUESTION 10

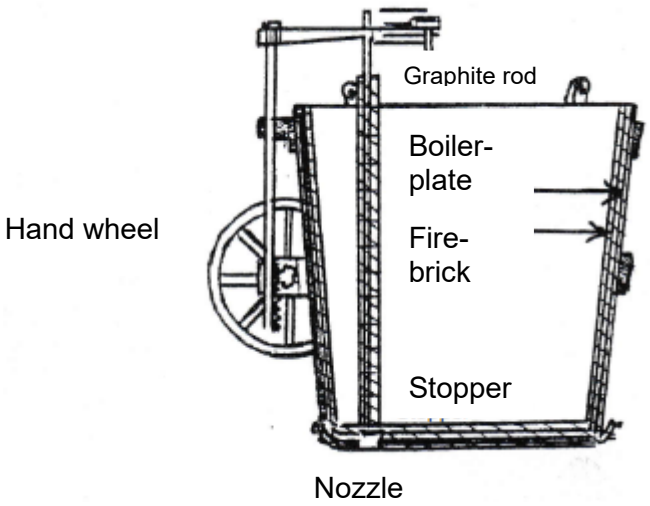
- It is a metal moulding box
- fitted with a hinge at one corner. **[2]**

## QUESTION 11

11.1 D
11.2 B
11.3 A
11.4 E
11.5 C

(5 × 1) **[5]**

## QUESTION 12




**[10]**

## QUESTION 13

- Blowholes
- Cold shunts/Misruns
- Cracked castings
- Cross-joint
- Crushed casting
- Flash/Fin
- Hard-casting
- Dirty casting
- Porosity
- Rough casting
- Scab
- Shrinkage cavity
- Swollen casting
- Gas holes
- Burn-on
- Cold lap (Any 8 × 1) **[8]**

## QUESTION 14

- A riser or feeder head supplies liquid metal
- to thick sections.
- It must be sufficiently large enough so that the metal in it will remain fluid
- until the casting has solidified.
- The riser openings also serve to permit mould gasses and steam to escape
- as the mould is being filled. (6 × 2) **[12]**

**TOTAL: 100**

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