higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PATTERN MAKERS' THEORY N2

2 December 2022

This marking guideline consists of 4 pages.

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QUESTION 1

1.1 Possibilities – are those results easily obtained,✓ by considering the amount of waste to be removed✓ and the methods of pattern construction.✓ Joints must be formed,✓ and the parts held together during turning and shaping.✓ (5)

1.2 Operation – the means of revolving✓ the faceplate✓ or tool rest unit✓ and at safe speeds to give the best finish✓ (5)

1.3 Control – is necessary for the safety✓ of the machine and the operator.✓ Loose or not firmly set tools✓ do not produce good work.✓ Sharp tools are necessary every time;✓ and they always require control.✓ (5)

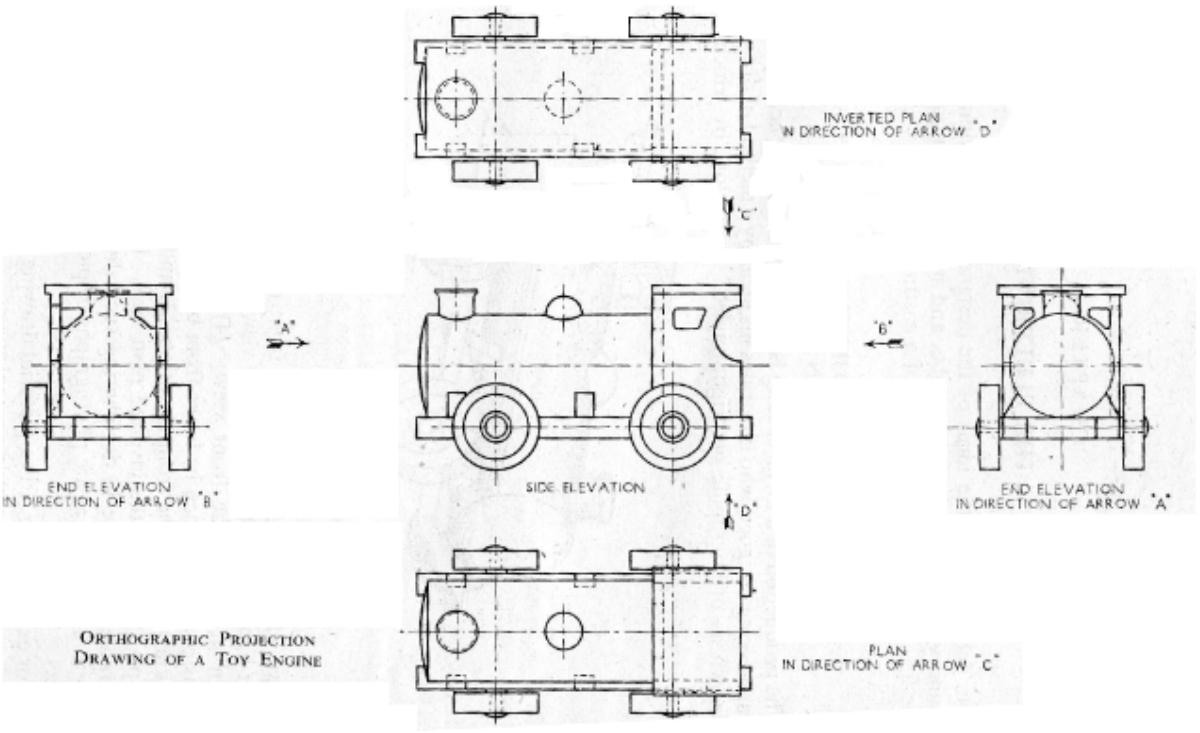
[15]

QUESTION 2

- The type and form of material to be used✓
- The type of pattern to suit the method of moulding to be adopted✓
- The provision of core boxes✓
- Constructional details, including the provision of loose pieces, core prints, etc.,✓
- Considerations regarding the value of allowances to be used✓
- The method of gating and feeding to be followed, and✓
- The provision of various foundry aids.✓ It is a good practice to prepare separate drawings✓ for patterns and core boxes from the component drawing✓ so that all details can be indicated thereon.✓

[10]

QUESTION 3



ORTHOGRAPHIC PROJECTION
DRAWING OF A TOY ENGINE

(5 × 4) **[20]**

QUESTION 4

4.1 Blowholes
4.2 Blowholes
4.3 Blowholes - gasses
4.4 Blowholes - surface
4.5 Blowholes
4.6 Blowholes
4.7 Broken in runners
4.8 Cold shut
4.9 Cold lap
4.10 Contraction crack

(10 × 1) **[10]**

QUESTION 5

- Time
- Temperature
- Mass
- Analysis
- Pressure

(10 × 1) **[5]**

QUESTION 6

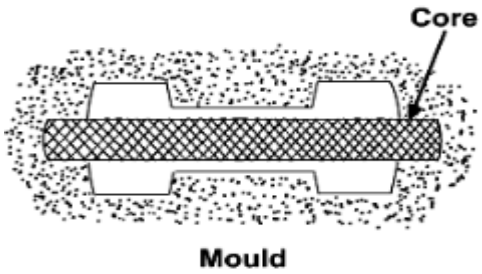
6.1 Moisture and incorrect storage. (2 × 1) (2)

6.2 For die casting and machine moulding (2)

6.3 Metal is easy to machine with a longer life span (2)

6.4 To keep it lubricated, prevent cracking (1)

6.5



✓✓ (2)

6.6 The construction of the pattern and the core box (2)

6.7 No, it depends on the intricacy of the pattern (1)

6.8 3-5 mm (1)

6.9	When machining is required	(1)
6.10	When it is too long	(1)
6.11	Laminated wood	(1)
6.12	In woodworking, a rip-cut is a type of cut that severs or divides a piece of wood parallel to the grain. The other typical type of cut is a crosscut, a cut perpendicular to the grain. Unlike cross-cutting, which shears the wood fibres, a rip saw works more like a series of chisels, lifting off small splinters of wood.	(2)
6.13	Rotate towards you.	(1)
6.14	When making a three-part mould	(1)
		[20]

QUESTION 7

7.1	Yes	(1)
7.2	To do the layout and construct the pattern	(1)
7.3	The cutting edge called the toe	(1)
7.4	The shrinkage of the metal, the way it solidifies.	(1)
7.5	For durability and grain structure, multiple castings	(1)
7.6	• Flask is used to keep the mould in tack,✓ easy to move,✓ • Top and bottom✓✓	(4)
7.7	1/120 allowance	(1)
7.8	To keep the cores in position,✓ insert them the correct way.✓	(2)
7.9	Coating the completed pattern, for surface finish	(2)
7.10	By using a G clamp or weight on the pattern	(2)
7.11	Moulders use it to rap the pattern, to remove the pattern from the mould	(1)
7.12	Fillets are rounding off sharp corners, in the pattern	(2)
7.13	No, a solid loose pattern can be used.	(1)
		[20]

TOTAL: 100

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