

Written Assessment Guide
For
“Dies & Mould
Technology”

Level 4
Perform Heat Treatment

1st -5th March 2021



National Vocational & Technical
Training Commission

Title of Qualification: National Vocational Certificate Level 4, (Dies and Mould Technology) "CAD/CAM Supervisor	CS Code:	Level:4	Version:
Competency Standard Title: Perform Heat Treatment	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Assessors Guide (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name:..... Registration/Roll Number: Candidate Signature:
Written Assessment Outcome	COMPETENT ☐ NOT YET COMPETENT ☐ Name of the Assessor: Assessor's code: Signature of the Assessor:

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WRITTEN ASSESSMENT

Question	Candidate's answer
1. What is heat treatment cycle?	A. Heat treatment cycle consists of three stages. i. Heating of workpiece up to a specific temperature ii. Soaking iii. Cooling of workpiece with a specific cooling rate
2. State the names of different heat treatment processes?	A. Different heat treatment processes are Annealing, Normalizing, Quenching, Hardening, Tempering and case hardening etc.
3. What is soaking time?	A. The soaking time is the duration for which a workpiece is held at heat treatment temperature.
4. What is the purpose of soaking time?	A. The purpose of soaking time is homogeneous heating of the workpiece.
5. Why heat treatment process is performed?	A. Heat treatment process is mostly performed to change physical and mechanical properties of a material by changing its microstructure or grain size. It is also used to remove internal stresses of a workpiece.
6. State the names of any four phases of steel?	A. Ferrite, Austenite, Cementite, Pearlite, Martensite, etc.
7. What is Eutectoid reaction?	A. The reaction during which a solid on cooling changes into the mixture of two new solid phases, at a specific temperature and composition, is known as eutectoid reaction.

Question	Candidate's answer
8. What is Eutectic reaction?	A. The reaction during which a liquid on cooling changes into the mixture of two new solid phases, at a specific temperature and composition, is known as eutectic reaction.
9. What is peritectic reaction?	A. The reaction during which a solid phase and a liquid phase changes into a second solid phase, at a specific temperature and composition, is known as peritectic reaction.
10. What is eutectoid steel?	A. The steel with carbon percentage almost 0.8 is known as eutectoid steel. Its microstructure consists entirely of pearlite.
11. What is hypo-eutectoid steel?	A. The steel with carbon percentage less than eutectoid composition is known as hypo eutectoid steel. Its microstructure consists of ferrite and pearlite.
12. What is hyper-eutectoid steel?	A. The steel with carbon percentage more than eutectoid composition is known as hyper eutectoid steel. Its microstructure consists of pearlite and cementite.
13. Define hardening of steel?	A. Hardening of steel consists of following steps. i. Heating of steel up to austenite range ii. Soaking at austenitic temperature iii. Quenching in suitable medium iv. Tempering
14. What is case hardening of steel?	A. Case hardening of steel is a heat treatment process by which surface of low carbon steel or medium carbon steel is made hard and wear resistant while its core remain ductile and tough.
15. Enlist the names of any four case hardening processes.	A. 1. Carburizing, 2. Nitriding, 3. Cyaniding, 4. Flame Hardening, 5. Induction hardening, etc.