basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

QUALITATIVE ANALYSIS OF LEARNER RESPONSES
AND
EVALUATION OF THE QUESTION PAPERS (PER PAPER)
NATIONAL SENIOR CERTIFICATE 2025
WESTERN CAPE EDUCATION DEPARTMENT

SUBJECT	**MECHANICAL TECHNOLOGY (FITTING AND MACHINING)**		
QUESTION PAPER	**1**	**2**	**3**
DURATION OF PAPER	**3 HOURS**		
INTERNAL MODERATOR	**MR MS BEYERS**		
CHIEF MARKER	**MR RJ MOOLMAN**		
DATES OF MARKING	**FROM: 29 NOVEMBER 2025**	**TO: 10 DECEMBER 2025**	
HEAD OF EXAMINATION	**MS LM BREDENKAMP**		

REPORT 2: QUALITATIVE ANALYSIS OF LEARNER RESPONSES

SECTION 1: ***(GENERAL OVERVIEW OF LEARNER PERFORMANCE IN THE QUESTION PAPER AS A WHOLE)***

The overall learner performance was poor. An average of 42.5% across all questions was achieved. While candidates showed competence in some areas, they demonstrated significant weaknesses in complex calculation and specialised technical questions. The candidates generally performed better in terminology and foundational multiple-choice questions but struggled severely with calculation-intensive sections and specific knowledge questions.
Applied mathematical skills and in-depth understanding of specialised components and procedures are significant areas for improvement.

SECTION 2: ***COMMENT ON CANDIDATES' PERFORMANCE IN INDIVIDUAL QUESTIONS***

(It is expected that a comment will be provided for each question)

QUESTION 1
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
This is a multiple question that is generally answered well.
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
No
(c) Provide suggestions for improvement in relation to Teaching and Learning.
This question requires understanding, knowledge and some language proficiency.
(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
It was clear.

QUESTION 2
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
A median of 50% indicates that most learners achieved average marks. This indicates that candidates have not mastered the required knowledge of safety measures. There is a weakness in retaining or applying foundational, generic safety information, most of which was introduced in grade 11 and before.
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Candidates were unable to recall foundational and specific safety knowledge, which is a key component of the generic curriculum. This section required simple factual recall (Remembering/Knowledge level), indicating that learners struggled with rote memorisation or exposure to specific safety protocols.
(c) Provide suggestions for improvement in relation to Teaching and Learning.
Candidates should be taught to interpret questions correctly. Safety protocols must be emphasised during practical lessons.
(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
Use past question papers to guide and familiarise candidates with answering.

QUESTION 3
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
The median mark was 21,4%. This indicates that the content related to materials science, including

heat treatment, quenching media, and metal testing, was largely unmastered by the candidates
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Candidates are not familiar with the terminology used and commonly misinterpret the questions. e.g. candidates answer about specific heat treatment when a general answer is required.
(c) Provide suggestions for improvement in relation to Teaching and Learning.
Teachers should use the specific terminology relating to materials often when teaching so as to facilitate learning of the terminology.
(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
Teachers need to master this chapter first to have the capacity to explain concepts in a simplified manner.

QUESTION 4
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
This is a multiple question that is generally answered well.
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
NA
(c) Provide suggestions for improvement in relation to Teaching and Learning.
This question requires understanding, knowledge and some language proficiency.
(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
None

QUESTION 5
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
Candidates achieved a high median for this question, scoring 66,7%. This result is substantially higher than the overall examination median of 33%, indicating a relative strength in this topic, which accounted for 18 marks and was allocated 20 minutes.
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
NA
(c) Provide suggestions for improvement in relation to Teaching and Learning.
By focusing on both the precise application of standard formulae (tapers and keyways) and considering machining limitations and consequences, learner performance in this key area can be elevated further.
(d) Describe any other specific observations relating to responses of learners and comments

that are useful to teachers, subject advisors, teacher development etc.
The focus for teacher development should shift from foundational recall (which performed well) to ensuring precision in practical calculations and comprehensive understanding of the operational and mechanical limitations associated with the listed machining techniques.

QUESTION 6
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
The question was not well answered. It required complex calculations related to spur gear cutting, including circular pitch, number of teeth, and dedendum (6.1), as well as intricate calculations for internal dovetails (6.2) and differential indexing using a dividing head (6.3)
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
The overall low performance indicates a challenge in bridging the gap between theoretical formulas (provided on the sheet) and their accurate application in multi-step mechanical calculations required for machining specialised components like gears and dovetails.
(c) Provide suggestions for improvement in relation to Teaching and Learning.
Learners should use past question papers, to see how to answer these questions
(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
All calculations must adhere to the instruction to **show ALL calculations and units**. Subject advisors should ensure calculation processes are consistently taught to minimise marks lost due to errors in transposition or numerical substitution, especially since the required formulas are provided.

QUESTION 7
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
It was poorly answered. The average score was 23,1%. This score is significantly below the overall examination average of 33%. It required identifying the principles of material hardness measurement, labelling components of the Brinell hardness test and a screw thread micrometer, calculating the depth of a V-screw thread, and determining the reading of a depth micrometer
(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Learners should get more exposure into this terminology of this topic.
(c) Provide suggestions for improvement in relation to Teaching and Learning.
Learners should get more practical exposure towards using this tools.
(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.
There is a substantial weakness in understanding fundamental measurement principles, instrument labelling, and application of related calculations. Focus on the Theoretical Principles of Hardness

Testing and also Measurement Calculation and Reading. improvements should focus on identifying components of instruments and test setups and rigorous practice in basic technical measurement calculations that utilise the provided formula sheet accurately.

QUESTION 8

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

It was well answered. The average score of 33,3% is similar to the overall examination average of 33%. The poor performance suggests widespread difficulties with the complex calculations required, which included finding the resultant of a system of forces, calculating reactions on a beam subjected to uniform and point loads, interpreting a stress-strain diagram, and performing stress and strain calculations for a brass bar

(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

It was poorly answered as candidates struggled with the advanced application, unit conversion, and multi-step calculations required

(c) Provide suggestions for improvement in relation to Teaching and Learning.

Learners should use past question papers, to see how to answer these questions

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

There appears to be a significant disparity in the quality or depth of instruction and learner retention concerning applied mathematics. Interventions may be needed to bridge the gap of those who cannot apply the fundamental conversion and mechanical principles.

QUESTION 9

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

It was poorly answered with an average score of only 16,7%. The content covered included the definition of thermoplastics, types of thermo-hardened and thermoplastic composites, the purpose of preventative maintenance, and maintenance measures for chain drives

(b) Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Language proficiency is poor thus questions are misinterpreted. 9.3 and 9.4 may came across as ambiguous.

(c) Provide suggestions for improvement in relation to Teaching and Learning.

Learners should practise using past question papers to see how to answer these questions

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

Subject development should concentrate on improving material classification recall, emphasising the core function and specific procedures of preventative maintenance, and connecting

theoretical material names to real-world components.

QUESTION 10	
(a)	***General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?***
It was poorly answered with an average of 25%.	
(b)	***Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.***
A combination of weak foundational knowledge of screw thread terms and inability to do technical calculations accurately, especially those involving trigonometric concepts for specialised thread cutting.	
(c)	***Provide suggestions for improvement in relation to Teaching and Learning.***
Learners should practise using past question papers to see how to answer these questions	
(d)	***Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.***
Teacher development should focus on structured problem-solving methods for multi-start threads, emphasizing that the Helix Angle is the critical element determining the necessary cutting tool angles. Consistent application of the provided formulas is essential.	

QUESTION 11	
(a)	***General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?***
It was poorly answered and was also the lowest performing section of the entire question paper with an average of 10,7%. The content included hydraulic system calculations (ram area and mass lifted) and belt and gear drive system calculations (rotational frequency, power transmitted, and speed ratio)	
(b)	***Why was the question answered poorly? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.***
It was poorly answered as candidates struggled with the advanced application, unit conversion, and multi-step calculations required.	
(c)	***Provide suggestions for improvement in relation to Teaching and Learning.***
Since this question covers complex hydraulic and mechanical drive calculations, improvement strategies should focus heavily on applied mathematics, formula application, and conceptual understanding of force transmission. Learners should practise using past question papers to see how to answer these questions.	
(d)	***Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.***
System and Control calculations require significant reinforcement, particularly focusing on the correct application and unit conversion within mechanical and hydraulic system formulas.	