



EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE

Home of Examinations and Assessment, Zone 6, Zwelitsha, 5600

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AUTOMOTIVE
2018 NSC CHIEF MARKER'S REPORT

| | |
|---------------------------|----------------------|
| SUBJECT: | AUTOMOTIVE |
| PAPER: | 1 |
| DURATION OF PAPER: | 3 HOURS |
| DATES OF MARKING: | NOVEMBER 2018 |

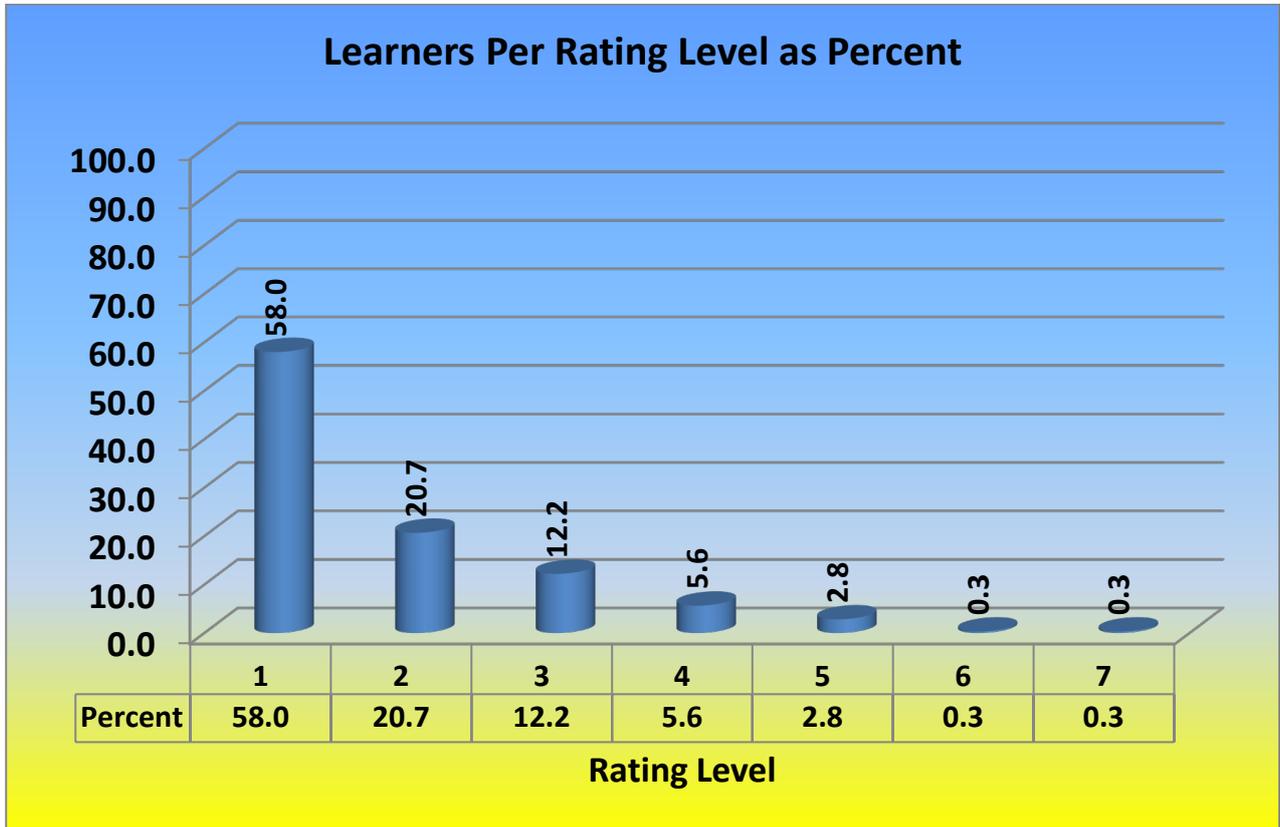
SECTION 1: (General overview of Learner Performance in the question paper as a whole)

The learner performance was not good in questions 3, 5, 6, 8, 9, and 10. Learners failed to convert from mm to cm as instructed by the examiner in the question paper.

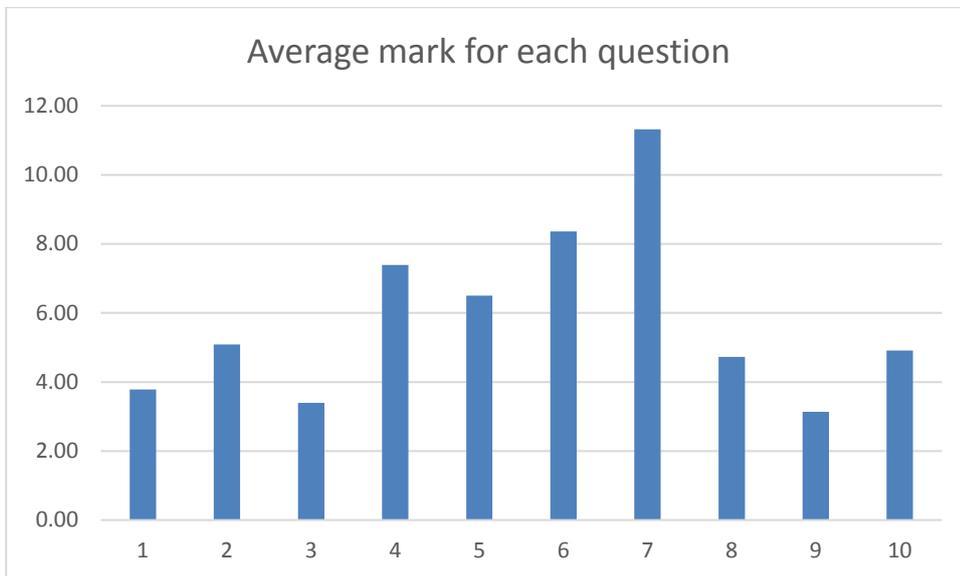
Learners were supposed to use the brake arm length when calculating the torque, but they use the diameter instead. Labelling of the wheel alignment diagram was answered incorrectly by many learners

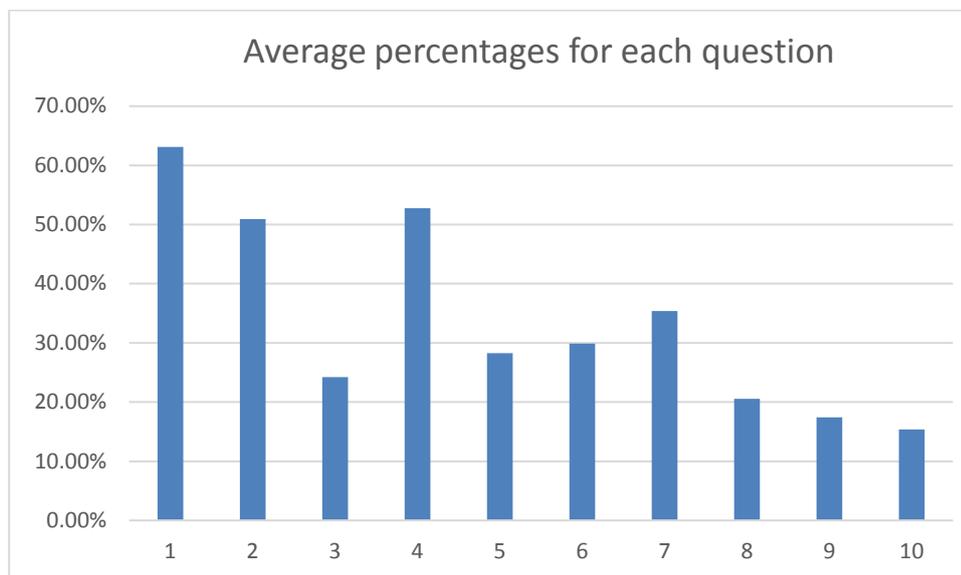
They are lacking behind in understanding the specific topics for automotive. Learners do not understand the reasons for conducting heat treatment processes. They failed to give correct answers in questions on wheel alignment, steering geometry, engines, automatic gearbox electronics and axles

| | | |
|--------------------|--------------|----------------|
| Total Wrote | | 319 |
| % Passed | | 42,0 |
| Levels | Total | Percent |
| 1 | 185 | 58,0 |
| 2 | 66 | 20,7 |
| 3 | 39 | 12,2 |
| 4 | 18 | 5,6 |
| 5 | 9 | 2,8 |
| 6 | 1 | 0,3 |
| 7 | 1 | 0,3 |
| | | 100,0 |



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?

QUESTION :1 MULTIPLE CHOICE QUESTION

This question was well answered. Few learners got less than level 3

Question 2: Safety

2.2. It was an open-ended question with many possible answers, yet few answers were included in the memo.

2.3. Learners did not state what the goggles protect eyes from. Which is the main reason as to why goggles are worn.

Most learners answered “helmet” which is not appropriate when using hydraulic press.

2.4. At least 60% of learners answered this this question properly.

Many students added the answer “machine layout” which was correct, even though it was not included in the memo.

2.5. This question was misleading, the reference to the employer confused many students as they thought the question was asking what the employee do in a case where there was an injury in the work place.

The examiner could have made the question more relatable to students by referring to principles.

The question created a huge language barrier

QUESTION 3: MATERIALS

The mark allocation for all of question 3 was inconsistent.

3.1 This question was taken from the textbooks, this is a disadvantage to students who didn't have textbooks.

Many students did not understand the question, they gave the types of steel as answers and not the properties of steel.

Most learners included “hard” as a property of steel, it had to be marked incorrect as it was not included in the memo.

3.2. Mark allocation

3.2.2. Mark allocation was inconsistent, as 2 marks were awarded for 1 statement. Yet in 3.2.1 1 mark was awarded for 1 statement.

3.3 Learners did not answer the question, in some instances they repeated the question.

The question was also unfair, asking for the reasons would have been easier for the learners.

3.4 Learners gave the factors not the properties.

3.5 This question was badly answered; many learners did not include the soaking.

Answer was supposed to be chronological order, many failed to give answer in that order.

QUESTION 4: MULTIPLE CHOICE QUESTION (SPECIFICS)

This question was fairly answered. Many learners got level 5 to 7

QUESTION 5 TOOLS AND EQUIPMENT

5.1.1 This question was well answered

5.1.2 This question was well answered expect that some learners labelled B as a screw not as an adapter crew.

5.1.3 Most students described the purpose of compression tester but did not mention that it is done when the piston is at the top dead centre.

5.3 Learners mostly got this right.

5.4 Well answered, however, learners took the simple route when it came to answering this question, they did not find the faults in the car.

5.5 It was well answered, within the examination guideline.

5.6 Approximately 80% of learners answered this question poorly.

5.7 This question was unfair; mark allocation was too much. Few learners answered it correctly.

QUESTION 6: ENGINES (SPECIFICS)

6.1 Students tried their best to answer this question adequately. They all knew that the crankshaft is balanced while at rest.

6.2 Well answered

6.3 The learners did not give the answers in order; however, they did not understand the procedure. The marking guide did not cater for all responses.

6.4.1 Well answered. They understood the order of the cylinder engine but the marking guide did not cater for all responses as they are in the textbook

6.4.2 Learners did not come up with the correct answer for the firing order of the V – 6-cylinder engine.

6.5.2 Terminology used created a big problem on the naming of the impellers. They wrote air inlet, gas outlet, air outlet and gas outlet. Learners did not mention which impeller is the turbine and compressor

6.6.1 Learners understood that boost increases the manifold pressure but failed to mention that the pressure is generated by the turbocharged and it exceeds the normal atmosphere pressure.

6.6.2 Learners understood this question.

6.7 Learners answered the question as “it takes out the exhaust gasses”

6.8 They all knew that the oil cooler is to cool oil but did not mention that the oil cooled by the oil cooler is used to lubricate the turbocharger.

QUESTION 7 FORCES (SPECIFIC)

7.1 Some of learners defined torque as force times distance. They rewrote the formula instead of giving the definition.

7.2 It was not well answered. They have little understanding

7.3 Well answered.

7.4.1 Question was well answered, except for those who didn't convert mm to cm in order to the answer in cm cubed as it was instructed in the question paper.

7.4.2 This question was poorly answered. The formula in the question paper confused learners. It is not in their textbooks and the value of the clearance was no given in the data.

7.4.3 Students who used the incorrect formula in the question paper to get clearance volume did not get this question correct.

7.5.3 Poorly answered.

Some student used $g=9.8\text{m/s}$ whereas the question was clearly stated in the instructions that $g=10\text{m/s}$.

To get a radius they calculated the diameter by two instead of using the brake arm length as the radius.

QUESTION 8 (MAINTENANCE (SPECIFIC))

8.1 This question was well answered

8.2 This question was not clear to learners. All of them did not mention the percentage as the specification of the gasses

8.3 and 8.4 Learners were careless when it came to answering these questions.

They mentioned the causes instead of the results of a leakage.

8.5 Most learners got the compression test procedure correct but the learner responses were not in order

8.6 Well answered.

8.7 This question was not well answered

QUESTION 9 (AUTOMATIC GEARBOX) SPECIFIC

9.1 Well answered.

Most students understood the difference between automotive and manual gearbox.

9.2 Most students understood the advantages of an automotive gearbox.

9.3.1 they understood the function of the torque converter

9.3.2 Few learners got the labels correct.

9.4 Poorly answered ,90% of learners got this wrong. They were unable to state the different

QUESTION 10 (AXLES, STEERING GEOMETRY, AND ELECTRONICS)

10.1 This question was well answered

10.2.1 It was well answered

10.2.2 The labelling of the alignment wheel drawing was poorly answered

10.2.3 Learners were asked to label the different parts of the wheel alignment diagram. Learners who got D incorrect were unable to give the definition.

10.3 Most learners attempted answering this question but, in their diagram, they did not show the direction in where the car was moving so as to see that the diagram is for toe out not toe in

10.4 Many learners attempted to state the purpose of the king pin inclination.

10.5 This question was poorly answered. They mentioned the gasses that one analysed by the gas analyser.

10.7 Poorly answered question. Very few learners attempted this question by giving the advantages of the speed-control unit

10.8 This question was well answered question. Most learners showed a full understanding of the purpose of a pressure regulator

10.9 This question was poorly answered. Only 5% of learners were able to give the methods used to increase the output frequency of an alternator.

10.10 Poorly answered. Most learners failed to state the functions of the slater and the stator windings

10.11 Poorly answered. They were unable to state the function of the rotor assembly

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

3) Annealing, tempering and hardening of steel. Learners were not well prepared to answer questions in that manner.

5.6) Dynamics balance of steel. Poor practical activity on wheel balancing.

6.4.2) V-6 Cylinder engine – There were few options given in memo.

5.7) Poor practical exposure.

6.6.1) Simulations is required for effective understanding.

6.7) Simulation is required for effective understanding. Theoretical explanation is not helping the learners.

7.4.2 & 7.4.3) The learners were confused by the given Clearance Volume (CV) formula.

7.5.2 & 7.5.3) Problems in unit conversations. CA marks should have been considered (consistence accuracy).

8.2 & 8.3) They were confused by the answers.

8.7) Cooling system pressure testing were confused with compression testing.

9.4) It was confused with a single epicyclic gear system. They gave levels instead of the gear drive.

10.10 & 10.11) Not well thought out. It is highly electrically inclined.

9.5) they did not understand the question.

10.3) The learners misunderstood due necessary requirement for the labelling.

10.5) The question is too chemistry inclined and need a teacher teaching Physical Science or Technological Science.

10.7) They were mixing the advantages of speed control with the purpose of speed control.

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

Teachers need to emphasize on the terminology and accuracy of answers in the mathematical questions throughout the year in terms of units and rounding off in the calculations.

The entire curriculum needs to be covered and extensive revision need to take place with the help of past exam question papers, with similar content for example the calculations where the learners loose most of their marks, not entering the units for the questions provided.

The integration of technology in teaching and learning could be accomplished by using You tube videos on the practical components where the teacher cannot fully explain or breaking down the concepts to the learners.

Industry tours should be arranged for the holistic development of the learners, which will give them a better understanding of the world of work.

The teachers should properly conduct the practical tasks so that they can complement the theory taught in class.

Collaboration among subject teachers and subject advisers in supporting the teachers with no or little knowledge of practical expertise.

The cognitive development has to be addressed by the teachers as they integrate the subject terminology in the various chapters.

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

Some of the questions need learners' practical orientations which are not given to them.

Time is needed to integrate the practical and theoretical concepts.

Language barriers

-Misconception with regard to the different topics

-Level of understanding of questions

-Re-training of teachers for content gap.