



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

PLANT AND EQUIPMENT NQF LEVEL 3

(12030263)

**10 December 2020 (Y-paper)
13:00–16:00**

This question paper consists of 6 pages.

517Q1N2010

<p>TIME: 3 HOURS MARKS: 100</p>

INSTRUCTIONS AND INFORMATION



1. Answer all the questions.
 2. Read all the questions carefully.
 3. Number the answers according to the numbering system used in this question paper.
 4. Start each section on a new page.
 5. Use only a black or blue pen.
 6. Write neatly and legibly.
-

QUESTION 1

- 1.1 Discuss why class B fires are dangerous. (2)
- 1.2 Name THREE prerequisite elements of fire. (3)
- [5]**






QUESTION 2

- 2.1 Define the terms given below:
- 2.1.1 *Work* (2)
-  2.1.2 *Mechanical advantage* (2)
- 2.1.3 *Safety factor* (3)
- 2.2 Name THREE different types of knots that can be used during a lifting process. (3)
- 2.3 List the THREE different classes of levers. (3)
- 2.4 Name THREE factors that can cause a crane to overturn during the lifting process. (3)
- 
- 2.5 List FOUR hand signals that would be used by a signaller to guide the operator during lifting. (4)
- [20]**

QUESTION 3

- 3.1 Complete the following sentences by filling in the missing word or words from those given in the list below. Write only the word or words next to the question number (3.1.1–3.1.10) in the ANSWER BOOK.



motor bikes; internal; external; efficiency; zero; 10%; petrol; diesel
40%; 25%; 95%; power; force; torque

- 3.1.1  ... combustion engines are the ones in which petrol, diesel or other fuel is burned inside the engine.
- 3.1.2 Motor cars, tractors, trucks, and ... all use internal combustion engines.
- 3.1.3 The ... of an engine is the ratio between the amount of energy in the fuel tank and the amount of energy the engine produces to perform useful work.
- 3.1.4 When the engine idles, the efficiency is ... because it does not perform any useful work. 
- 3.1.5 ... engines are more efficient in comparison with other engines.
- 3.1.6 Diesel engines can reach an efficiency of about ...
- 3.1.7 The efficiency of electric motors is much higher than that of internal combustion engines and can reach up to ...
- 3.1.8 ... is a measure of how quickly work is done.
- 3.1.9 ... is a force that tends to rotate or turn things.
- 3.1.10 ... is a force acting over a distance. 

(10 1) (10)

×

- 3.2 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–L) next to the question number (3.2.1–3.2.10) in the ANSWER BOOK.


COLUMN A		COLUMN B	
3.2.1	Part of a machine that turns around a central part 	A	rotor
3.2.2	Produces a magnetic field	B	electric current
3.2.3	Current in which the flow or electric charge reverses direction	C	alternating current
3.2.4	Energy in the form of heat	D	internal combustion engine
3.2.5	Fitted to the engine block	E	spark plugs
3.2.6	Current when the electric charge flows in one direction only	F	lubrication
3.2.7	Used by a petrol engine to ignite petrol	G	kinetic energy
3.2.8	Puts oil or grease between two moving parts	H	pistons
3.2.9	Energy that an object has because of its motion 	I	dipstick
3.2.10	Produces lots of excess heat	J	thermal energy
		K	direct current
		L	cylinder head

(10 × 1)


(10)
[20]**QUESTION 4**

- 4.1 Define the term *transmissions*. (2)
- 4.2 Give FIVE reasons why transmissions are needed in an engine. (5)
- 4.3 List THREE types of gears.  (3)
[10]

QUESTION 5

- 5.1 Name TWO basic types of services that are performed on vehicles. (2)
- 5.2 Name FOUR documents to consult before maintenance can be done on a vehicle. (4)
- 5.3 Describe the TWO types of terminals on a vehicle battery.  (2)
- 5.4 Briefly explain the correct procedure to follow when checking the oil level. (12)
[20]

QUESTION 6

- 6.1 Describe TWO types of impellers. (2)
 - 6.2 List FOUR items you will need when fitting a plug to an extension cord or cable. (4)
 - 6.3 State FOUR power tools commonly used in the construction industry.  (4)
 - 6.4 State FIVE general safety instructions to adhere to when you work with a compressor. (5)
- [15]**

QUESTION 7



List 10 parts of an oxy-acetylene set. [10]

TOTAL : 100