higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MANUAL MANUFACTURING
NQF LEVEL 2

(6030092)

20 November 2019 (Y-Paper)
13:00–16:00

This question paper consists of 6 pages and 2 addenda.

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TIME: 3 HOURS
MARKS: 100

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. ALL drawings must be neat and fully labelled.
5. Complete ADDENDA A and B and place it in the ANSWER BOOK.
6. Write neatly and legibly.

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QUESTION 1

1.1 Explain why guards are used on machines with pulleys and chains. (3)

1.2 List FOUR possible dangerous parts on machinery that need to be protected by safety guards. (4)

1.3 You are requested by your supervisor to fix a broken safety guard on a machine and the tools issued to you are the following: pliers, item PL 2987; flat screwdriver, item FSD 25378; and two metric 13 spanners, items SP 44567.

You found that one of the spanner's open ends is damaged and that the plier's insolation is damaged. A fault report needs to be completed.

Complete ADDENDUM A for both tools and place it in the ANSWER BOOK. (8)

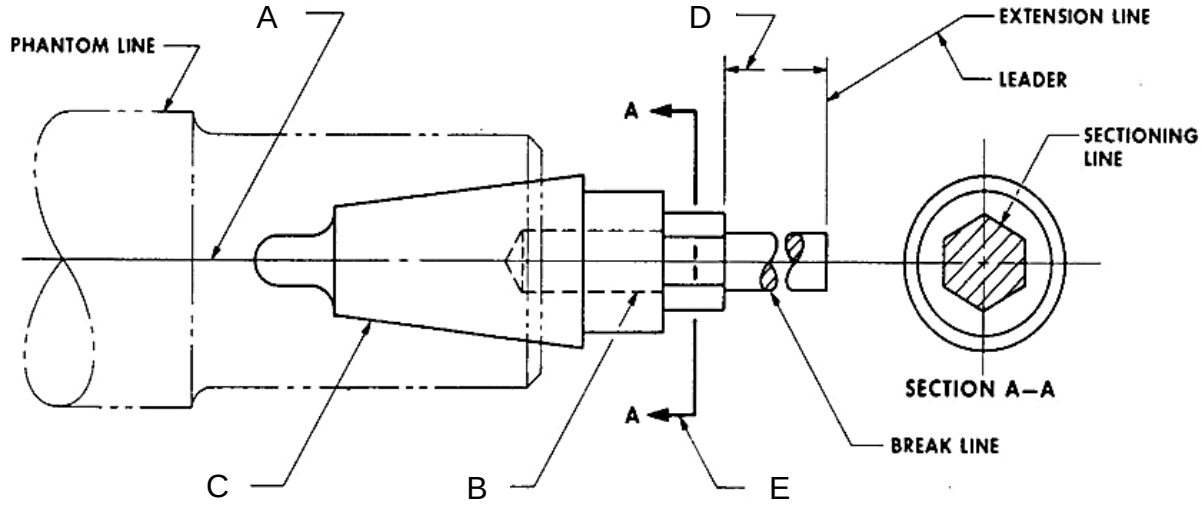
[15]

QUESTION 2

2.1 Draw a fully labelled diagram to explain the ratio of an arrow head used in technical drawings. (3)

2.2 Explain what is meant by *dimensioning of angles and slanted edges*. (2)

2.3 Refer to FIGURE 2 and identify the different types of lines. Write only the symbol (A–E) with the correct answer in the ANSWER BOOK.



(5)

[10]

QUESTION 3

3.1 Refer to FIGURE 3 and identify the parts of the vernier protractor. Write only the letter (A–D) with the correct name in the ANSWER BOOK.

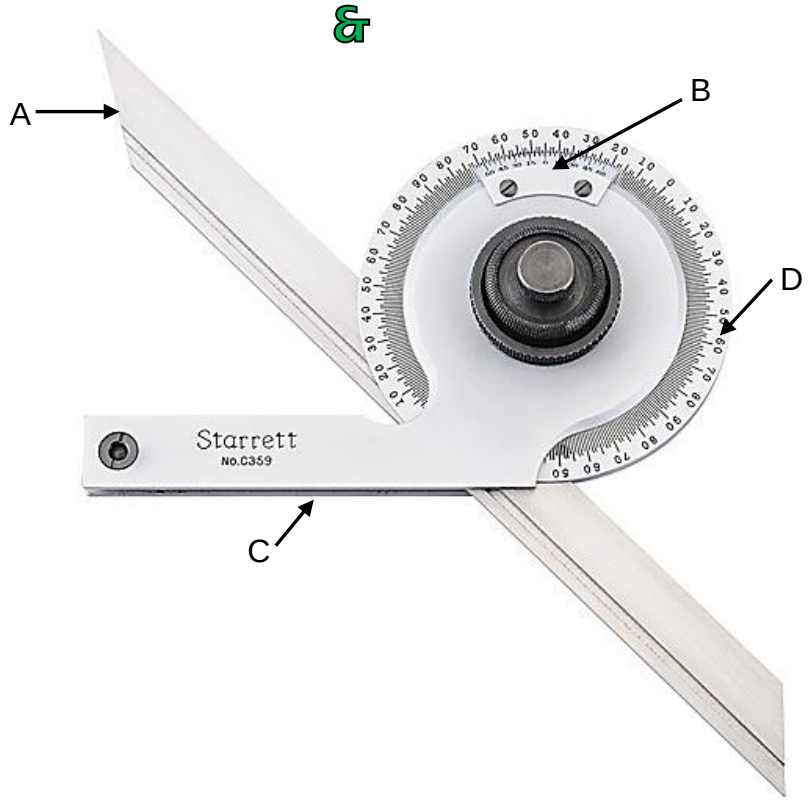


FIGURE 3 (4)

3.2 With the aid of a labelled diagram, illustrate how internal measurement is performed using a measuring tape. (5)

3.3 Draw TWO diagrams explaining the difference between a right-hand thread and a left-hand thread. (6)

3.4 Draw FOUR fully labelled diagrams to illustrate the difference between the grades of files. (4 × 2) (8)

3.5 Name TWO types of chisels. (2)

[25]

QUESTION 4

4.1 Explain what the function is of the electrode holder used for arc welding. (3)

4.2 List FOUR tests that can be performed to make sure the certain material can be weld. (4)

4.3 Give FIVE safety considerations before and during soldering. (5)

4.4 Draw THREE diagrams for the following welding techniques to indicate detail, section and elevation.

4.4.1 Fillet welding both sides (3 × 2) (6)

4.4.2 Bevel welding arrow sides (3 × 2) (6)

4.5 Explain the process to follow to tin the tip of a soldering iron. (4)

4.6 Explain the mechanical cleaning process of a soldering iron. (2)

[30]

QUESTION 5

5.1 Give FOUR possible accidents that may occur due to poor housekeeping. (4)

5.2 Complete the table below to explain the difference between Tufnol and nylon. (At least THREE properties and THREE uses must be listed.)

MATERIAL	PROPERTIES	USES
Tufnol		
Nylon		

TABLE 1 (6 × 1) (6)

5.3 On 22 June 2018 at 09:40 you were busy working on a computer numerical control (CNC) milling machine and your supervisor, Mr Peterson, entered an unauthorised section of the CNC milling machine area. He did not see a block of aluminium laying on the floor. He stumbled over the aluminium and fell and landed on his right shoulder. He could not move his shoulder because of the pain.

You heard his scream of anguish and offered to help. You assisted him by taking him to the medical room, where the on-site nurse took over for further assistance.

Complete the accident report ADDENDUM B and hand it in with your ANSWER BOOK. (10)
[20]

TOTAL: 100

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ADDENDUM A **EXAMINATION NUMBER:** | | | | | | | | | | | | | |

QUESTION 1.3

Faulty tool report:			
Tool name:			
Description:			
Item number:		**Date:**	
Fault description:			
Reporting person:		**Signature:**	
For office use			
Stock number:			

Repair of tool					
Service provider:	**Date sent:**	**Date back:**	**Cost of repairs:**	**Responsible person:**	**Signature:**

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ADDENDUM B **EXAMINATION NUMBER:**

QUESTION 5.3

ACCIDENT REPORT

NAME OF INJURED:	DATE REPORTED:
LOCATION OF INCIDENT:	DATE & TIME OF INCIDENT:
DESCRIPTION OF DAMAGE:	

DAMAGE/INJURY/LOSS

BUILDING		**EQUIPMENT**		**FLOOR**		**MACHINERY**		**VEHICLE**		**INJURY**	**PRODUCT**

GENERAL CAUSES

STRUCK	**FALL**	**HANDLING**	**TRANSPORT**	**FIRE**	**MACHINE**	**ELECTRICITY**	**FALLING OBJECTS**	**STRUCK AGAINST**
Was this in the course of normal duties?							**YES**	**NO**

UNSAFE ACTS		**UNSAFE CONDITIONS**		**PERSONAL FACTORS**
OPERATING WITHOUT AUTHORITY		INADEQUATELY GUARDED		LACK OF KNOWLEDGE/SKILL
OPERATING AT UNSAFE SPEEDS		UNGUARDED		PHYSICAL/MENTAL CONDITION
DISABLING SAFETY DEVICES		DEFECTIVE TOOLS AND EQUIPMENT		INCOMPATIBILITY
USING EQUIPMENT UNSAFELY		HAZARDOUS ARRANGEMENT		IMPROPER ATTITUDE
USING UNSAFE EQUIPMENT		UNSAFE DESIGN OR CONSTRUCTION		MOTIVATION
UNSAFE LOADING/PLACING		POOR LIGHTING		**JOB FACTORS**
TAKING UNSAFE POSITION		UNSAFE CLOTHING		INADEQUATE WORK STANDARDS
WORKING ON UNSAFE OR MOVING EQUIPMENT		POOR FLOOR CONDITION		HIGH-RISK CONDITIONS
TRANSFER TO ANOTHER JOB		POOR VENTILATION		

CONTROL STEPS TO PREVENT REOCCURRENCE

PERSONAL FACTORS		**JOB FACTORS**		
ATTEND TRAINING		WRITE WORK STANDARDS		MODIFY
GIVE PERSONAL INSTRUCTION		REVISE WORK STANDARDS		LOCKOUT
HAVE MEDICAL TIMETABLE		JOB SAFETY STANDARDS		HOUSEKEEPING
ATTEND SHE COMMITTEE MEETING		REVIEW PROCESS		REMOVE
COUNSEL/WARN/ENFORCE		GUARD		PROVIDE PROTECTION
		REPAIR		IMPROVE

EMPLOYER FOLLOW-UP ACTION

ACTION TAKEN	**BY WHOM**	**WHEN**
NAME & SIGNATURE OF EMPLOYER:		**DATE:**

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