

071505T4MTP

MECHANICAL PRODUCTION TECHNOLOGY LEVEL 5

ENG/OS/ME/CR/02/5

Perform Grinding Operations

March/April 2026



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

WRITTEN ASSESSMENT

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

This paper consists of FOUR (4) printed pages

**Candidate should check the question paper to ascertain that all pages are printed as
indicated and that no questions are missing.**

SECTION A (40 MARKS)

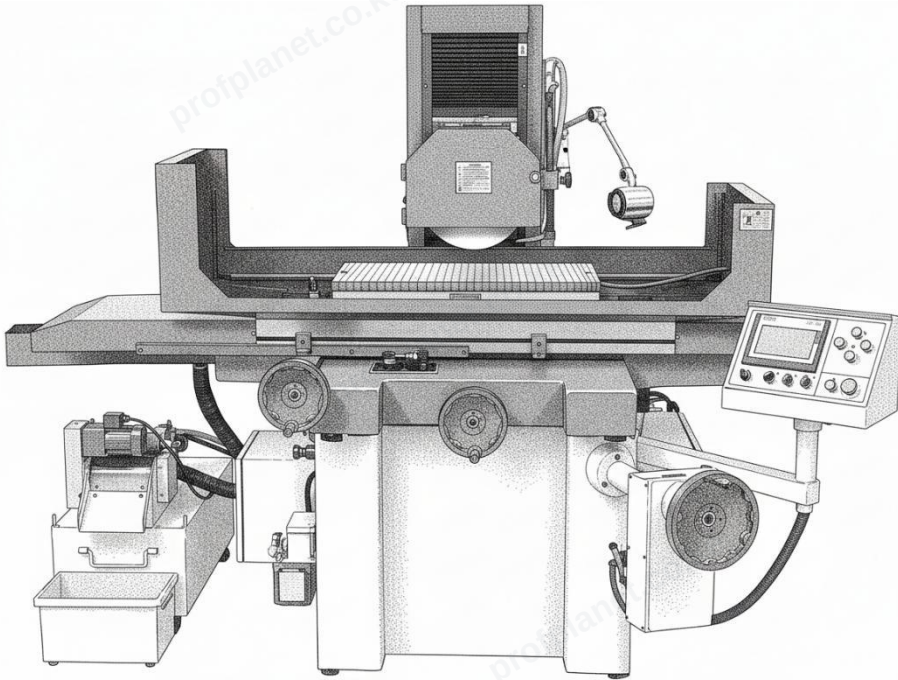
Answer ALL questions in this section

1. Identify FOUR personal protective equipment (PPEs) a trainee must wear when performing surface finish on a work piece using a grinder. (4 Marks)
2. While preparing to perform surface grinding on a metallic table in the workshop, you realize that the work area is not safe. What FOUR safety measures would you implement before starting the operation? (4 Marks)
3. You have been provided with several grinding wheels for different operations in the workshop. Identify FOUR types of grinding wheel bonds you would find on these wheels. (4 Marks)
4. While setting up a grinding machine for a workshop task, you inspect its main parts. State ONE function of each of the following parts (4 Marks)
 - i. Grinding wheel
 - ii. Spindle
 - iii. Table
 - iv. Wheel guard
5. A technician is required to select a grinding wheel for a surface finishing operation. State FOUR factors they would consider when selecting the wheel for this operation. (4 Marks)
6. A trainee is preparing to perform grinding operations on workpieces with different geometries. Identify FOUR common shapes of grinding wheels they would use. (4 Marks)
7. A trainee is required to mount a grinding wheel on a grinding machine. State THREE checks the trainee should carry out before mounting the wheel. (3 Marks)
8. While preparing for a grinding operation in the workshop, you have to choose between wet grinding and dry grinding. Explain what each term means and state ONE suitable application for each. (4Marks)
9. After completing a grinding operation on a mechanical component, it is important to ensure the part meets the required dimensions and tolerances. Identify FOUR tools you would use to check these requirements have been met. (4 Marks)
10. During the preparation of a grinding operation, you come across a grinding wheel with the specification code “W A 54 M 7 V 20”. What does the following represent in the code? (3Marks)
 - i. W
 - ii. A
 - iii. 54
11. After completing a centreless grinding operation, it is important to document and communicate the outcomes. Identify TWO types of reports you would prepare. (2 Marks)

SECTION B (60 MARKS)*Answer THREE questions in this section*

12.

- a. The diagram below shows a type of grinding machine. Use it to answer i and ii



- i. Identify the type of grinding machine depicted by the figure above giving ONE manufacturing scenario you would choose it to be the ideal machine if you had certain job to perform. (3 Marks)
 - ii. This grinding machine is equipped with different work-holding devices for various applications. Explain THREE of these devices. (6 Marks)
- b. A batch of cylindrical shafts shows poor roundness after centreless grinding.
- i. Identify ONE possible cause of this defect. (2 Marks)
 - ii. Explain THREE corrective measures. (9 Marks)

13.

- a. Discuss the following terms as used in grinding operations; (8 Marks)
- i. Abrasive
 - ii. Bond
 - iii. Wheel structure
 - iv. Grit Size

- b. You are tasked with selecting abrasive materials for a cylindrical grinding operation. Describe FOUR abrasive materials you would choose and state ONE typical application for each. (12 Marks)

14.

- a. A trainee ground steel shafts in a workshop, but the finished surfaces showed scratches, burns, and unevenness. Explain FOUR possible causes of the poor surface finish. (8 Marks)
- b. After prolonged use, grinding machines require regular care to ensure accuracy and safety. Explain FOUR routine maintenance practices carried out on these machines (8 Marks)
- c. A work piece is rotating on a cylindrical grinding machine with a grinding wheel of radius 30 mm revolving at 100 rpm. Calculate the cutting speed of the wheel. (4 Marks)

15.

- a. After a grinding process, specific housekeeping activities are performed to ensure the safety and quality of future operations. Explain FIVE activities you will do to ensure this. (10 Marks)
- b. A technician used coolant when performing internal grinding on a hollow shaft, Explain FIVE roles played by the coolant during this operation. (10 Marks)