



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

FITTING AND TURNING NQF LEVEL 3

(6011043)

**21 November 2018 (X-Paper)
09:00–12:00**

This question paper consists of 6 pages.

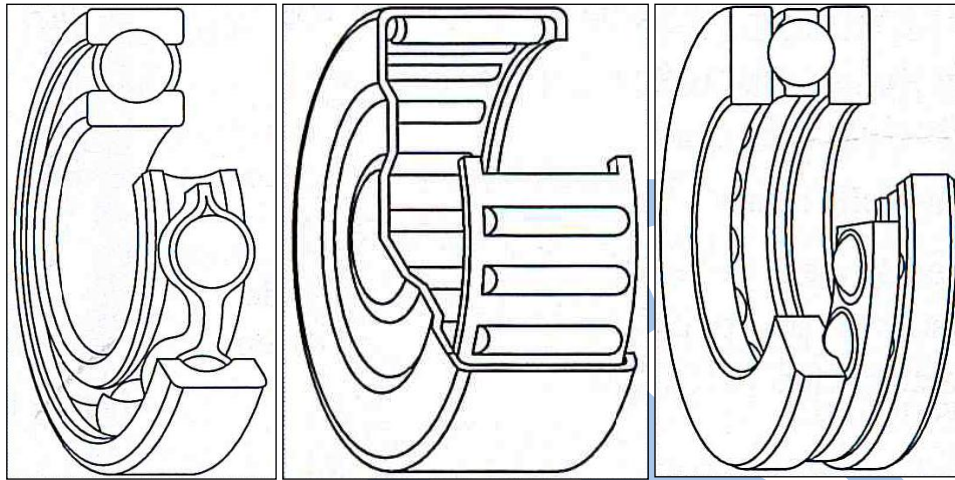
TIME: 3 HOURS
MARKS: 100

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. Write neatly and legibly.
-

QUESTION 1: BEARINGS

- 1.1 Explain the function of a bearing. (2)
- 1.2 Name the different types of bearing shown below by writing the answer next to the letter (A–C) in the ANSWER BOOK. (3)



A

B

C

- 1.3 State THREE advantages and TWO disadvantages of plain (sliding) bearings. (5)
- 1.4 State the purpose of a planned-maintenance schedule with regard to bearings. (2)
- 1.5 Name THREE types of material used in the manufacturing of plain bearings. (3)

[15]

QUESTION 2: COUPLINGS

2.1 Figure 1 below shows the diagram of a coupling.

2.1.1 Name the type of coupling. (1)

2.1.2 Label the components by writing the answer next to the letter (A–E) in the ANSWER BOOK. (5)

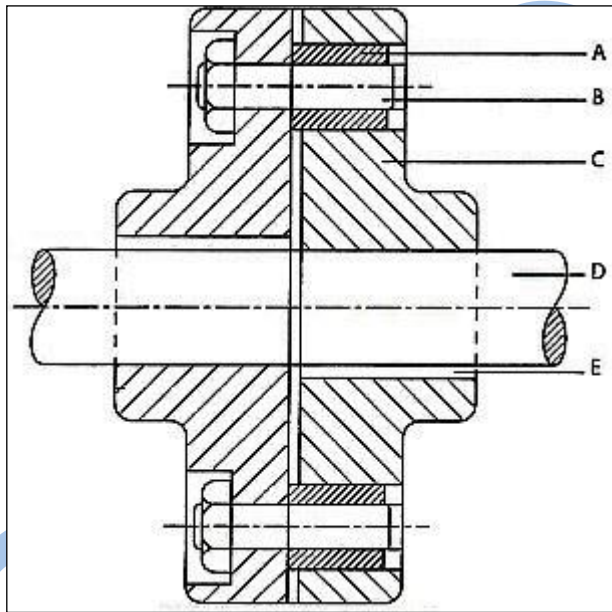


FIGURE 1

2.2 Name THREE parts that cause wear on a coupling. (3)

2.3 Tests have proven that precision alignment increases the bearing and seal life of machinery.

Is this statement true or false? (1)
[10]

QUESTION 3: BRAKES AND CLUTCHES

3.1 Explain the difference between a clutch and a coupling. (2)

3.2 State TWO advantages and TWO disadvantages of drum brakes over disc brakes. (4)

3.3 State TWO causes of slip on a clutch and explain how each can be remedied. (4)
[10]

QUESTION 4: BELT DRIVES, CHAIN DRIVES AND GEAR DRIVES

- 4.1 Figure 2 below shows a representation of a V-belt drive. Label the components by writing the answer next to the letter (A–D) in the ANSWER BOOK. (4)

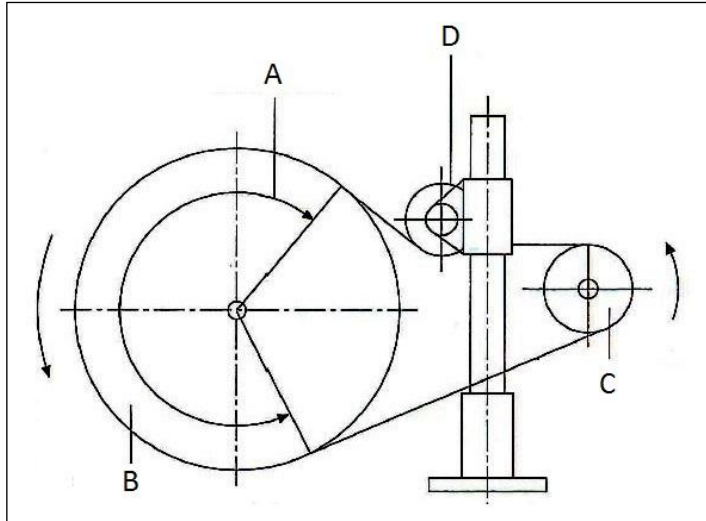


FIGURE 2

- 4.2 List THREE advantages and THREE disadvantages of V-belt drives compared to chain and gear drives. (6)
- 4.3 Name TWO chain lubrication methods. (2)
- 4.4 Explain the importance of a clean working area when working on a gear drive. (2)
- 4.5 Name the gear that allows the direction of the drive gear and the driven gear to be the same. (1)

[15]

QUESTION 5: PIPES, PIPE FITTINGS AND VALVES

- 5.1 State FIVE safety precautions when working with pipes and pipe fittings. (5)
- 5.2 State TWO advantages and TWO disadvantages of plastic piping. (4)
- 5.3 Name the tool used to remove burrs after a pipe has been cut. (1)

[10]

QUESTION 6: CENTRE LATHE

- 6.1 State FIVE malfunctions that can occur during the machining of a work piece on a centre lathe. (5)
- 6.2 A work piece with a diameter of 200 mm must be turned on a centre lathe.
Calculate the spindle speed in revolutions per minute if the cutting speed(S) is given as 15 m/min.
(Hint: $S = \pi \times D \times N$) (3)
- 6.3 State TWO advantages and TWO disadvantages of a three-jaw chuck. (4)
- 6.4 Describe in FIVE steps how you would fit a selected cutter in the tool post and adjust it to be set at centre height. (5)
- 6.5 Name TWO common types of material that cutting tools are made of. (2)
- 6.6 Name the cutting fluid mostly used during the machining process. (1)
- [20]**

QUESTION 7: MILLING MACHINE

- 7.1 State FIVE reasons for using cutting fluids when doing machining on a milling machine. (5)
- 7.2 Explain how you would clean a milling machine after use. (5)
- 7.3 Name FOUR types of milling cutters. (4)
- 7.4 A milling cutter is 70 mm in diameter and has 12 teeth. The cutting speed for the material is given as 25 m/min and a feed of 0.08 mm per tooth.
Calculate the feed in mm/min.
(Hint : $S = \pi \times D \times N$ and $f = f_t \times T \times N$) (6)
- [20]**

GRAND TOTAL: 100