higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

COMPUTER INTEGRATED MANUFACTURING
NQF LEVEL 4

24 November 2023

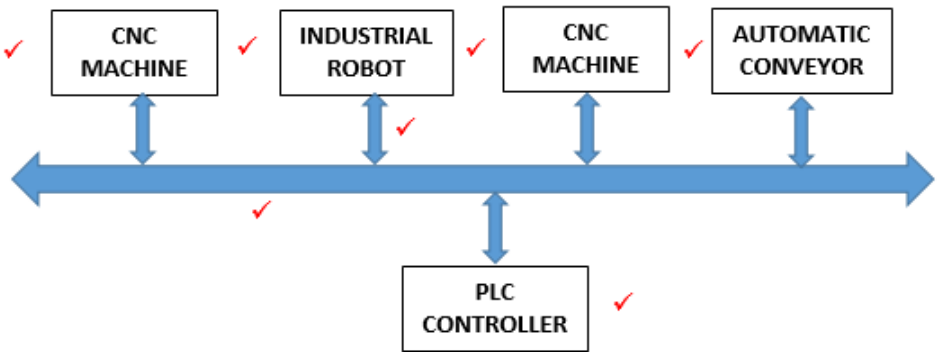
This marking guideline consists of 7 pages.

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QUESTION 1

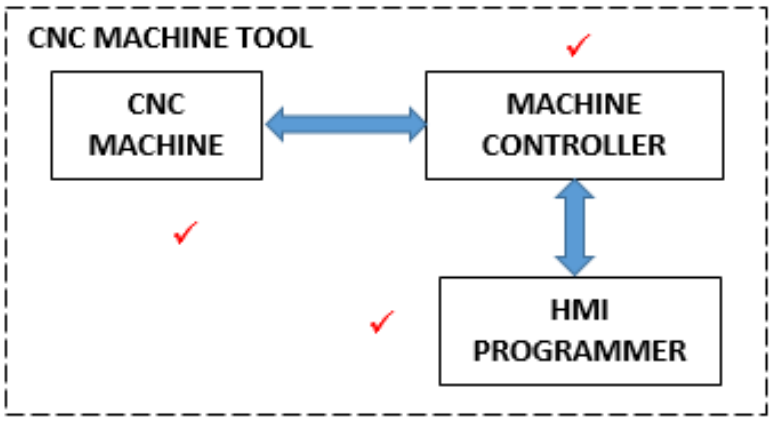
1.1
- The industrial robot flange is the point where the end effector is fitted.
- The end effector is the tool that does the work. (2 × 2) (4)

1.2



(MARKER TO USE DISCRETION)
(7 × 1) (7)

1.3



(MARKER TO USE DISCRETION) (3)
(3 × 1)

1.4 The main function of the robot manipulator is to move the end effector from work point to point. (1)
[15]

QUESTION 2

2.1 2.1.1 Miscellaneous codes or M-codes are basically switching codes that turn a function on or off.

2.1.2 Technology codes are codes that control spindle speed and feed rate.

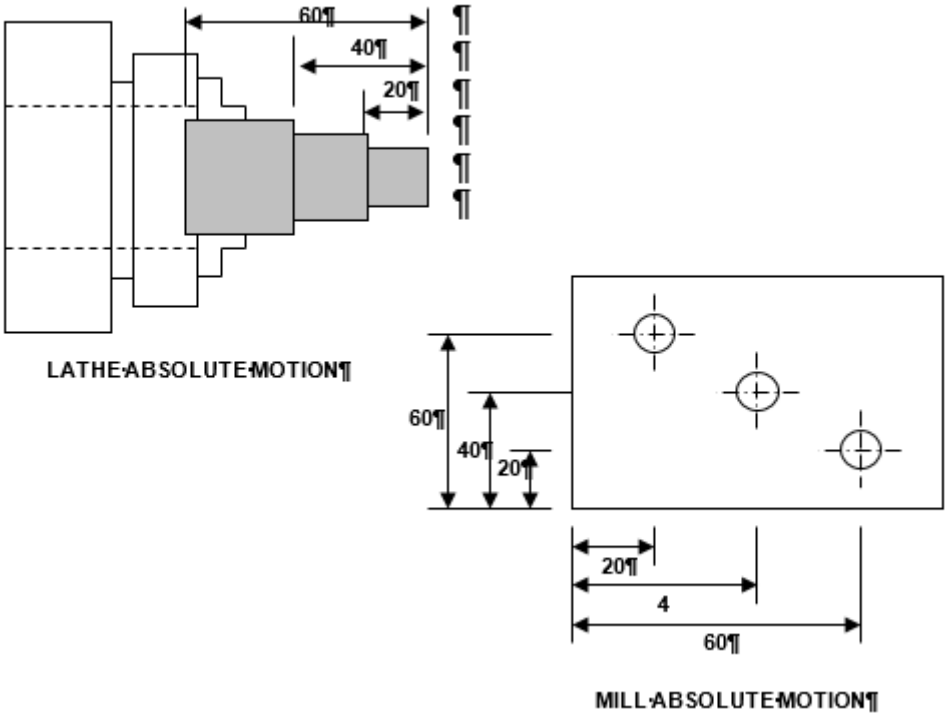
2.1.3 Preparatory codes or G-codes are used to control cutting tool motion.

(3 × 2) (6)

2.2 It is necessary to determine a tool path with coordinates for the following reasons:

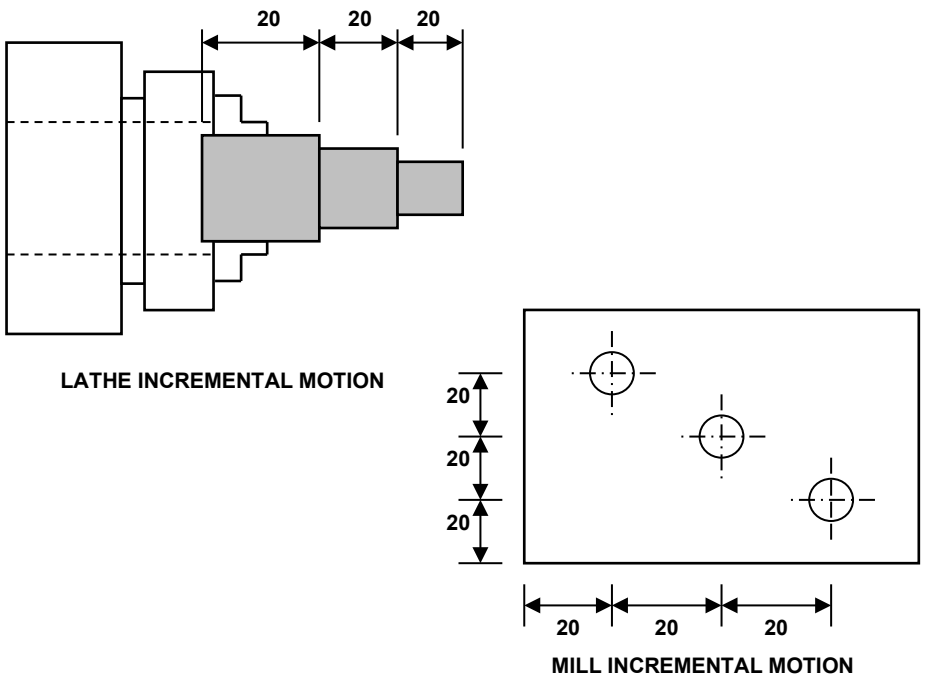
- So that the path in which the tool will travel can be seen.
- The coordinates determine where (X Y) the tool will travel too.
- The action that must be taken for the (Z) direction. (3)

2.3 G90¶



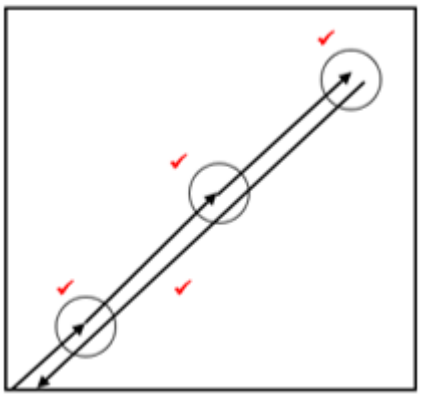
Any drawing THREE marks ✓✓✓ (6)

G91



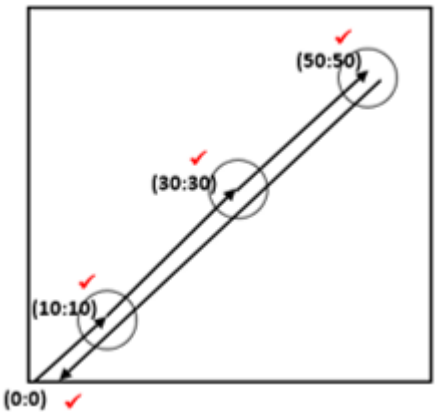
Any drawing THREE marks✓✓✓ (6)

2.4 2.4.1



(4)

2.4.2



(4)

2.4.3 ; (Test)✓
10810✓
N05 S3000✓
N10 F400✓
N15 M03✓
N20 M30✓
✓ (7 × 1) (7)
[30]

QUESTION 3

3.1 3.1.1 Articulated robot system.

3.1.2 Teach-in is when the robot manipulator is physically moved or jogged to the required position and then taught to the controller.

3.1.3 Degrees of axis refers to the number of drives or the degrees of movement of the drive.

3.1.4 Air programming refers to the undefined motion of the PTP command.

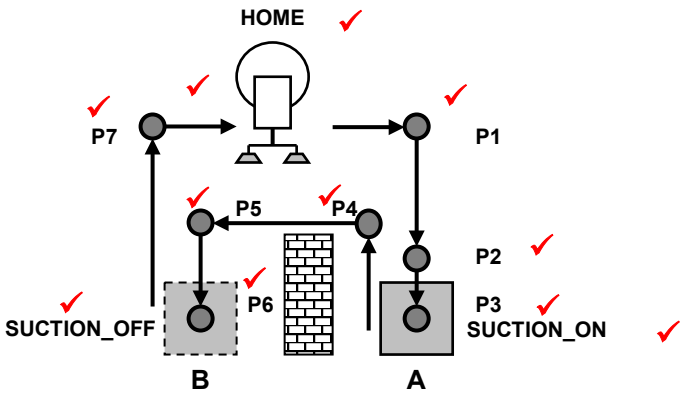
3.1.5 The command that one would use to go around a programmed point is the CONT command.

(5 × 2) (10)

3.2 The dead man's switch must be depressed✓✓ at the same time as the jog button when moving the manipulator when programming the various positions.✓✓

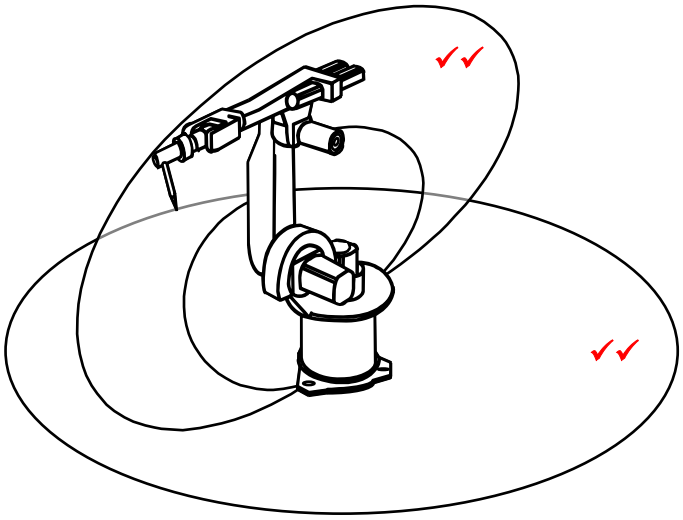
(MARKER TO USE DISCRETION)
(2 × 2) (4)

3.3



(MARKER TO USE DISCRETION) (12)

3.4



(MARKER TO USE DISCRETION)

(2× 2) (4)
[30]

QUESTION 4

4.1
- The results of inspections, tests and calibrations; ✓
- Consumer complaints and comments and related actions; ✓
- Actions taken to correct product and system deficiencies; ✓
- Location of products within the production and distribution systems so that prompt and effective recall can be accomplished, if required;✓
- and information as required by regulations. ✓ (5)

4.2
- Automated equipment does not tire, does not lose concentration and does not make mistakes.
- Automated production lines reduce damage or breakages due to incorrect handling.
- Automated processes result in less material wasted and less reworking, so improving the product output (3)

4.3 4.3.1 QC denotes a more traditional post-machining inspection system.

4.3.2 QA implies a more comprehensive approach, with emphasis on total quality.

(2 × 1) (2)
[10]

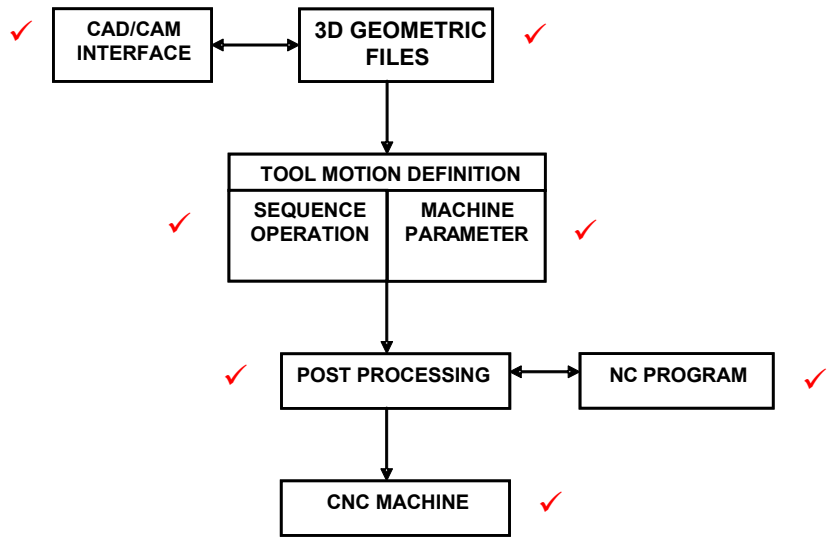
QUESTION 5

5.1 The outputs of a CAD system are blueprints/working drawings. (2)

5.2
- Solid model
- Geometric model
- Wire model (3)

5.3
- Solid works
- AutoCAD
- Autodesk
- CNC soft
- Master Cam
- Bob Cam (Any relevant answers 3 × 1) (3)

5.4



(MARKER TO USE DISCRETION)

(7 × 1) (7)

[15]

TOTAL: 100

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