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SURGICAL INSTRUMENTS MANUFACTURING TECHNICIAN

ASSESSMENT PACKAGE

National Vocational Certificate Level 2

Version 1 - October, 2019

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SURGICAL INSTRUMENTS MANUFACTURING TECHNICIAN

ASSESSMENT PACKAGE

National Vocational Certificate Level 2

Version 1 - October, 2019

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code: 072200880	Level: 2	Version: 01
Competency Standard Title: Perform Grinding	**Assessment Date (DD/MM/YY):** **Time Duration:**		

Candidate Details	Name: ..... Registration/Roll Number: .....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **1. Assessment Task 1:** Perform wheel grinding of a surgical instrument as per assessor's instructions **2. Assessment Task 2:** Perform filling as per technical drawing or sample given by assessor **3. Assessment Task 3:** Perform drilling as per dimensions given by assessor **And complete:** **4. Knowledge assessment test (written or oral)** **5. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Mount grinding wheel on bench grinding machine as per job requirement and perform dressing of grinding wheel using appropriate dresser if required **Performance Criteria** 3: Grind the instrument to remove excess material as per product requirement **Performance Criteria** 4: Control size of instrument during and after grinding by using appropriate gauges. Prepare report of completed work and manage PTC
	Assessment Task 2 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Select appropriate file (size and shape) according to job finish requirement and clamp the instrument using appropriate vice **Performance Criteria** 3: File the instrument according to required shape and size **Performance Criteria** 4: Control shape and size of instrument during and after filing using appropriate gauges. Prepare report of completed work and manage PTC

	Assessment Task 3 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Prepare pedestal drill machine using drill bits and fixtures according to job requirement and sharpen the drill bit using tool grinder if required **Performance Criteria** 3: Clamp the work piece and drill on drill machine using fixtures and drill chuck **Performance Criteria** 4: Drill holes in work piece as per required sizes **Performance Criteria** 5: Perform countersink on drilled holes where required **Performance Criteria** 6: Perform reaming in drilled holes **Performance Criteria** 7: Perform tapping in drilled holes **Performance Criteria** 8: Control quality of instrument during and after drilling using appropriate gauges **Performance Criteria** 9: Prepare report of completed work and manage PTC
	Portfolios required at the time of assessment (if any)

Continued on following page

Assessors Judgment Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor: ..... Assessor's code: ..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration							
Knowledge Assessment							
Other Requirement							

Each Assessment Task (with Learning Unit)	
Assessment Task 1	**Description of assessment task 1** Perform wheel grinding of a surgical instrument as per assessor instructions

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Mount grinding wheel on bench grinding machine as per job requirement and perform dressing of grinding wheel using appropriate dresser if required	☐	☐	
3	**Performance Criteria** 3: Grind the instrument to remove excess material as per product requirement	☐	☐	
4	**Performance Criteria** 4: Control size of instrument during and after grinding by using appropriate gauges. Prepare report of completed work and manage PTC	☐	☐	
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of assessment task 2** Perform filling as per technical drawing or sample given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Select appropriate file (size and shape) according to job finish requirement and clamp the instrument using appropriate vice	☐	☐	
3	**Performance Criteria** 3: File the instrument according to required shape and size	☐	☐	
4	**Performance Criteria** 4: Control shape and size of instrument during and after filing using appropriate gauges. Prepare report of completed work and manage PTC	☐	☐	
Competent ☐		Not Yet Competent ☐		

Assessment Task 3	**Description of assessment task 3** Perform drilling as per dimensions given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Prepare pedestal drill machine using drill bits and fixtures according to job requirement and sharpen the drill bit using tool grinder if required	☐	☐	
3	**Performance Criteria** 3: Clamp the work piece and drill on drill machine using fixtures and drill chuck	☐	☐	
4	**Performance Criteria** 4: Drill holes in work piece as per required sizes	☐	☐	
5	**Performance Criteria** 5: Perform countersink on drilled holes where required	☐	☐	
6	**Performance Criteria** 6: Perform reaming in drilled holes	☐	☐	
7	**Performance Criteria** 7: Perform tapping in drilled holes	☐	☐	
8	**Performance Criteria** 8: Control quality of instrument during and after drilling by using appropriate gauges	☐	☐	
9	**Performance Criteria** 9: Prepare report of completed work and manage PTC	☐	☐	
Competent ☐		Not Yet Competent ☐		

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code:	Level: 2	Version: 01
Competency Standard Title: Perform Grinding	**Assessment Date (DD/MM/YY):** **Time Duration:**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name:..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code:	Level: 2	Version: 01
Competency Standard Title: Perform Grinding	**Assessment Date (DD/MM/YY):** **Time Duration:**		

WRITTEN ASSESSMENT

Question	Candidate's answer
1. Write any 2 safety precautions of the grinding process.	• Wear PPE's during grinding process. • Don't remove the safety guard of grinding machine. • Pay full attention during grinding process.
2. Name any 5 PPE used during the grinding process.	• Face mask • Gloves • Safety shoe • Apron • Ear plugs • Goggles • Helmet
3. What is the role of a dresser in grinding?	Grinding dressers are used to return a wheel to its original round shape, to expose fresh grains for renewed cutting action, or to make a different profile on the wheel's edge.
4. Define grinding and filling.	• Grinding is an abrasive machining process that uses a grinding wheel as the cutting tool. This machining process done to remove excess amount of material from the surface of work piece. • Filing is also a material removal process done with the help of file. Different types of files (according to shape and cuts) are used in filing operation. Filing operation done to remove minor material or finishing of surface of work piece.

Question	Candidate's answer
5. What is the importance of grinding wheel guard in the grinding process?	Wheel guards are very important in grinding process. These guards protect operator from sparks and debris, and to shield and protect them from abrasive cutting and grinding wheels, which can cause serious damage if (when) they fail and fly off. Personal protective gear, such as safety glasses and a face shield, and other PPE are often required as well.
6. Name 5 types of files according to shape.	• Round file • Half round file • Square file • Triangular file • Flat file
7. Which grinding wheel grains will give a better result for rough machining?	Coarse grain wheel will give better metal removal rate and space for chip removal as rate of chip flow in rough machining is high.
8. Define countersink, reaming and tapping.	• Bit or drill for making a funnel-shaped enlargement at the outer end of a drilled hole is called **counter sinking.** • Reaming is a task of making accurately sized and good-quality finish holes requires specialty reamer tool and proper technique. • Tapping is the process of cutting a thread inside a hole so that a cap screw or bolt can be threaded into the hole. Also, it is used to make threads on nuts.
9. What are the different types of grinding wheel?	• Straight wheel • Cylinder or wheel ring • Tapered wheel • Straight cup • Dish cup • Saucer wheel • Diamond wheels
10. What are the precautions for mounting and preparation of new grinding wheel?	• The wheel should be first examined for any flaw or crack. • The nut should be tightened only just enough to hold the wheel. • When wheel is mounted for the first time it should be made to run idle for some time. • Safety guard should always be used, so that in case of accident operator is not injured.

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code: 072200881	Level: 2	Version: 01
Competency Standard Title: Assemble Surgical Instruments	**Assessment Date (DD/MM/YY):** **Time Duration:**		

Candidate Details	Name: ..... Registration/Roll Number: .....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** **1. Assessment Task 1:** Perform fastening of surgical instrument as per required job and instructions given by assessor **2. Assessment Task 2:** Perform setting of surgical instrument as per required job and instructions given by assessor **And complete:** **3. Knowledge assessment test (written or oral)** **4. Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:** **Assessment Task 1** **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Gather technical sheets, drawings, samples and drill holes in work pieces at specified areas **Performance Criteria** 3: Use pin grinder at narrow areas **Performance Criteria** 4: Assemble the instrument components by riveting where applicable **Performance Criteria** 5: Tap drilled holes and assemble the surgical instrument components using screws where applicable **Performance Criteria** 6: Arrange required measuring tools and gauges for quality inspection and check functionality, dimension and shape of surgical instruments **Performance Criteria** 7: Prepare report of completed work and manage PTC
	Assessment Task 2 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Gather technical sheets, drawings, samples and adjust alignment of surgical instruments using mallet hammer **Performance Criteria** 3: Grind / file the surgical instruments where required **Performance Criteria** 4: Arrange required measuring tools and gauges for quality inspection and check functionality and specification of surgical instruments **Performance Criteria** 5: Prepare report of completed work and manage PTC
	Portfolios required at the time of assessment (if any) for

Assessors Judgment Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor: ..... Assessor's code: ..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration							
Knowledge Assessment							
Other Requirement							

Each Assessment Task (with Learning Unit)	
Assessment Task 1	**Description of assessment task 1** Perform fastening of surgical instrument as per required job and instructions given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Gather technical sheets, drawings, samples and drill holes in work pieces at specified areas	☐	☐	
3	**Performance Criteria** 3: Use pin grinder at narrow areas	☐	☐	
4	**Performance Criteria** 4: Assemble the instrument components by riveting where applicable	☐	☐	
5	**Performance Criteria** 5: Tap drilled holes and assemble the surgical instrument components using screws where applicable	☐	☐	
6	**Performance Criteria** 6: Arrange required measuring tools and gauges for quality inspection and check functionality, dimension and shape of surgical instruments	☐	☐	
7	**Performance Criteria** 7: Prepare report of completed work and manage PTC	☐	☐	
Competent ☐		Not Yet Competent ☐		

Assessment Task 2	**Description of assessment task 2** Perform setting of surgical instrument as per required job and instructions given by assessor

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Gather technical sheets, drawings, samples and adjust alignment of surgical instruments using mallet hammer	☐	☐	
3	**Performance Criteria** 3: Grind / file the surgical instruments where required	☐	☐	
4	**Performance Criteria** 4: Arrange required measuring tools and gauges for quality inspection and check functionality and specification of surgical instruments	☐	☐	
5	**Performance Criteria** 5: Prepare report of completed work and manage PTC	☐	☐	

Competent ☐	Not Yet Competent ☐

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code:	Level: 2	Version: 01
Competency Standard Title: Assemble Surgical Instrument	**Assessment Date (DD/MM/YY):** **Time Duration:**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name:..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code:	Level: 2	Version: 01
Competency Standard Title: Assemble Surgical Instrument	**Assessment Date (DD/MM/YY):** **Time Duration:**		

WRITTEN ASSESSMENT

Question	**Candidate's answer**
11. Write any 2 safety precautions you must follow during assembling and inspection of surgical process.	• Wear PPE's during assembling and inspection process. • Pay full attention to the workplace. • Proper lightening system must be installed on workplace.
12. Name any 5 PPEs used during assembling and inspection of surgical instruments.	• Face mask • Gloves • Safety shoe • Apron • Ear plugs • Goggles • Helmet
13. Define fastening and name 2 types of fasteners.	A fastener is a hardware device that mechanically joins two or more objects together. In general, fasteners are used to create non-permanent joints; that is, joints that can be removed or dismantled without damaging the joining components. This operation is called fastening. Types of fasteners are: • Screws. • Bolts. • Clamps.
14. Which grinder is used for narrow areas?	Pin grinder is used for grinding narrow areas.

Question	Candidate's answer
15. Which tool is used to adjust the alignment of surgical instruments?	Mallet hammer is used to adjust the alignment of surgical instruments.
16. Enlist the 4 name of tools used in fastening.	• Mallet hammer • Fasteners • Pliers • Drill • Screw drivers • Wrenches • Clamps
17. What is the function of tap drill holes?	Forms a thread on the inside surface of a hole, creating a female surface which functions like a nut. The function of tap drill hole is for assemble with male part.
18. Name 2 defects of the fastening process.	• Defective screw fastening (Misalignment, Oblique fastening, etc.) • Screw positioning error
19. Which data/ equipment are required to inspect the quality of instruments?	• Technical drawing • Sample/ master piece • Measuring tools
20. Name any 4 measuring instruments.	• Vernier caliper • Micrometer • Steel rule • Measuring tape • Height gauge • Thread gauge

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code: 072200879	Level: 2	Version: 01
Competency Standard Title: Perform Polishing	**Assessment Date (DD/MM/YY):** **Time Duration:**		

Candidate Details	Name: ..... Registration/Roll Number: .....
Guidance for Candidate	**To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):** 1. **Assessment Task 1:** Perform surface finishing by polishing lathe on a surgical instrument as per assessor's instructions 2. **Assessment Task 2:** Perform electrochemical polishing on surgical instrument as per assessor's instructions 3. **Assessment Task 3:** Perform sand blasting on surgical instrument as per assessor instructions 4. **Assessment Task 4:** Perform ultrasonic cleaning on surgical instrument 5. **Assessment Task 5:** Perform passivation and boil test as per assessor instructions **And complete:** 6. **Knowledge assessment test (written or oral)** 7. **Portfolios at the time of assessment (if any)**
Minimum Evidence Required	**During a practical assessment, under observation by an assessor, you will complete:**
	Assessment Task 1 **Performance Criteria** 1: Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Arrange material, tools and gauges for the polishing **Performance Criteria** 3: Load leather wheel and polishing belt on polishing lathe **Performance Criteria** 4: Polish surgical instrument as per required surface finish using specified emery grain belts (i.e.80,200,300 & 400) **Performance Criteria** 5: Use dull brush, buffing or water sand finishing for required final finishing **Performance Criteria** 6: Control the quality of polishing using measuring instruments and gauges **Performance Criteria** 7: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC

	Assessment Task 2 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Arrange material for the electrochemical polishing and prepare chemical solution in bath for electrochemical polishing of surgical instrument **Performance Criteria** 3: Dip instruments into container of the electrochemical bath **Performance Criteria** 4: Perform electrochemical polishing using required temperature, time and current **Performance Criteria** 5: Rinse instruments with clean water to remove traces of chemicals **Performance Criteria** 6: Wash the instruments in dilute solution of sulphuric acid according to material sensitivity **Performance Criteria** 7: Wash the instrument in clean water to remove traces of sulphuric acid **Performance Criteria** 8: Wash the instruments in hot water **Performance Criteria** 9: Dry instruments with wooden husk completely **Performance Criteria** 10: Inspect the instrument according to requirements **Performance Criteria** 11: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC
	Assessment Task 3 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Arrange material and equipment for the sand blasting and prepare sand blasting machine for operation as per requirements **Performance Criteria** 3: Place / hold instruments inside sand blasting machine and perform operation as per required surface finish **Performance Criteria** 4: Inspect the instrument according to requirements **Performance Criteria** 5: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC
	Assessment Task 4 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Arrange material and equipment for the cleaning process and fill cleaning chemical solution in the ultrasonic cleaning machine bath up to required level **Performance Criteria** 3: Set temperature of ultrasonic cleaning machine as per product requirements **Performance Criteria** 4: Arrange surgical instruments in a hanger or tray **Performance Criteria** 5: Perform chemical fuming on instruments for specified time duration **Performance Criteria** 6: Dip instruments in chemical for specified time duration **Performance Criteria** 7: Shower instruments with chemical while holding above the machine bath

	Performance Criteria 8: Control and check the quality of instruments as per requirements **Performance Criteria** 9: Handle and store the instruments to avoid any surface damage. Prepare report of completed work and manage PTC
	Assessment Task 5 **Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions **Performance Criteria** 2: Arrange chemicals and equipments for the passivation process and boil water in required quantity as per work instructions **Performance Criteria** 3: Dip instruments in boiling water for specified time to check rusting tendency of surfaces **Performance Criteria** 4: Inspect instruments for rusting **Performance Criteria** 5: Fill bath with passivation chemical at required level **Performance Criteria** 6: Dip the instruments in passivation chemical for specified time **Performance Criteria** 7: Rinse the instruments in water and dry in hanging position above the passivation bath **Performance Criteria** 8: Check the quality of instruments as per requirements. Prepare report of completed work and manage PTC

	Portfolios required at the time of assessment (if any) for

Continued on following page

Assessors Judgment Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:..... .....
Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor: ..... Assessor's code: ..... Signature of the Assessor: ....

Assessment Summary (to be filled by the assessor)							
Activity	**Method**					**Result**	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration							
Knowledge Assessment							
Other Requirement							

Each Assessment Task (with Learning Unit)	
Assessment Task 1	**Description of assessment task 1** Perform surface finishing by polishing lathe on a surgical instrument as per assessor instructions

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1: Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Arrange material, tools and gauges for the polishing	☐	☐	
3	**Performance Criteria** 3: Load leather wheel and polishing belt on polishing lathe	☐	☐	
4	**Performance Criteria** 4: Polish surgical instrument as per required surface finish using specified emery grain belts (i.e.80,200,300 & 400)	☐	☐	
5	**Performance Criteria** 5: Use dull brush, buffing or water sand finishing for required final finishing	☐	☐	
6	**Performance Criteria** 6: Control the quality of polishing using measuring instruments and gauges	☐	☐	
7	**Performance Criteria** 7: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC	☐	☐	

Competent ☐	Not Yet Competent ☐

Assessment Task 2	**Description of assessment task 2** Perform electrochemical polishing on surgical instrument as per assessor instructions

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Arrange material for the electrochemical polishing and prepare chemical solution in bath for electrochemical polishing of surgical instrument	☐	☐	
3	**Performance Criteria** 3: Dip instruments into container of the electrochemical bath	☐	☐	
4	**Performance Criteria** 4: Perform electrochemical polishing using required temperature, time and current	☐	☐	
5	**Performance Criteria** 5: Rinse instruments with clean water to remove traces of chemicals	☐	☐	
6	**Performance Criteria** 6: Wash the instruments in dilute solution of sulphuric acid according to material sensitivity	☐	☐	
7	**Performance Criteria** 7: Wash the instrument in clean water to remove traces of sulphuric acid	☐	☐	
8	**Performance Criteria** 8: Wash the instruments in hot water	☐	☐	
9	**Performance Criteria** 9: Dry instruments with wooden husk completely	☐	☐	
10	**Performance Criteria** 10: Inspect the instrument according to requirements	☐	☐	
11	**Performance Criteria** 11: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC	☐	☐	

Competent ☐	Not Yet Competent ☐

Assessment Task 3	**Description of assessment task 3** Perform Sand Blasting on surgical instrument as per assessor instructions

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Arrange material and equipment for the sand blasting and prepare sand blasting machine for operation as per requirements	☐	☐	
3	**Performance Criteria** 3: Place / hold instruments inside sand blasting machine and perform operation as per required surface finish	☐	☐	
4	**Performance Criteria** 4: Inspect the instrument according to requirements	☐	☐	
5	**Performance Criteria** 5: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC	☐	☐	

Competent ☐	Not Yet Competent ☐

Assessment Task 4	**Description of assessment task 4** Perform Ultrasonic Cleaning on surgical instrument

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Arrange material and equipment for the cleaning process and fill cleaning chemical solution in the ultrasonic cleaning machine bath up to required level	☐	☐	
3	**Performance Criteria** 3: Set temperature of ultrasonic cleaning machine as per product requirements	☐	☐	
4	**Performance Criteria** 4: Arrange surgical instruments in a hanger or tray	☐	☐	
5	**Performance Criteria** 5: Perform chemical fuming on instruments for specified time duration	☐	☐	
6	**Performance Criteria** 6: Dip instruments in chemical for specified time duration	☐	☐	
7	**Performance Criteria** 7: Shower instruments with chemical while holding above the machine bath	☐	☐	
8	**Performance Criteria** 8: Control and check the quality of instruments as per requirements	☐	☐	
9	**Performance Criteria** 9: Handle and store polished instruments to avoid any surface damage. Prepare report of completed work and manage PTC	☐	☐	

Competent ☐	Not Yet Competent ☐

Assessment Task5	**Description of assessment task 5** Perform passivation and boil test as per assessor instructions

During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1	**Performance Criteria** 1**:** Wear PPE and follow workplace environment safety instructions	☐	☐	
2	**Performance Criteria** 2: Arrange chemicals and equipments for the passivation process and boil water in required quantity as per work instructions	☐	☐	
3	**Performance Criteria** 3: Dip instruments in boiling water for specified time to check rusting tendency of surfaces	☐	☐	
4	**Performance Criteria** 4: Inspect instruments for rusting	☐	☐	
5	**Performance Criteria** 5: Fill bath with passivation chemical at required level	☐	☐	
6	**Performance Criteria** 6: Dip the instruments in passivation chemical for specified time	☐	☐	
7	**Performance Criteria** 7: Rinse the instruments in water and dry in hanging position above the passivation bath	☐	☐	
8	**Performance Criteria** 8: Check the quality of instruments as per requirements. Prepare report of completed work and manage PTC	☐	☐	

Competent ☐	Not Yet Competent ☐

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code:	Level: 2	Version: 01
Competency Standard Title: Perform Polishing	**Assessment Date (DD/MM/YY):** **Time Duration:**		

Guidance for Candidate	**To complete your assessment for this Competency Standard, you need to answer the questions on the following pages correctly.**

Assessors Guide (to be completed by the assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name:..... Registration/Roll Number: Candidate Signature: ....
Written Assessment Outcome	COMPETENT☐ NOT YET COMPETENT☐ Name of the Assessor:..... Assessor's code: Signature of the Assessor:..... .....

Title of Qualification: NVQF Level II to IV Surgical Instrument Manufacturing Technician	CS Code:	Level: 2	Version: 01
Competency Standard Title: Perform Polishing	**Assessment Date (DD/MM/YY):** **Time Duration:**		

WRITTEN ASSESSMENT

Question	Candidate's answer
21. Write any 2 safety precautions of the polishing process.	• Wear PPE's during polishing process. • Don't remove the safety guard of polishing lathe. • Pay full attention during polishing process. • Proper ventilation system should be installed at polishing area.
22. What stands for PPE and PTC? Write down the full expressions	• PPE stands for Personal Protective Equipment. • PTC stands for Process Travel Card.
23. Name any 5 PPE used during the polishing process.	• Face mask • Gloves • Safety shoe • Apron • Ear plugs • Goggles • Helmet
24. What is the objective of passivation?	Passivation is the process of treating or coating a metal in order to reduce the chemical reactivity of its surface. In stainless steel, passivation means removing the free iron from the surface of the metal using an acid solution to prevent rust.

Question	Candidate's answer
25. Define polishing.	Polishing is the process of creating a smooth and shiny surface of job by rubbing it or using different sources like chemical, abrasive wheels etc.
26. Which grains belt number is used in initial polishing and final polishing?	For initial polishing : Grain 60 – 120 For final polishing : Grain 180 – 600
27. What is the purpose of sand blasting?	The main purpose of sandblasting is cleaning a surface from rust, dirt, and garbage and clearing the surface again for better use. By the method of forcing high-speed sand against the surface of the object, it can be smoothen a rough surface, roughen a smooth surface and shape a surface by sandblasting.
28. What is the use of polishing lusters?	Luster buff is an excellent high shine material for the softer, high gold containing alloys that are typically difficult to polish.
29. What is the role of buffing in the polishing process?	Buffing removes the lines and creates a bright luster finish.

Question	Candidate's answer
30. Name the chemicals used in electrochemical polishing, passivation and ultrasonic cleaning?	For electrochemical polishing • Sulfuric acid • Phosphoric acid For passivation • Nitric acid • Citric acid For ultrasonic cleaning • Trichloroethylene

National Vocational and Technical Training Commission (NAVTTC)

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
+92 51 9044 322
+92 51 9044 322
info@navttc.org
www.navttc.org