**CONTACT DETAILS OF THE AWARDING BODY FOR THE QUALIFICATION**

**Name and address of awarding body:** Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102.

**Name and contact details of individual dealing with the submission**

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**SUMMARY**

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| **Qualification Title:** Machine Operator Tool Room |
| **Nature and Purpose of the qualification:**A CIPET trade certificate for Machine Operator Tool Room and the he individual at work sets up and operates the Conventional & CNC machines to produce good quality products from raw materials. He is responsible for produce Mould, Dies and fixtures from raw material by operating conventional, semi, & fully automatic CNC machines, troubleshooting problems and performing minor maintenance to ensure continued operation of the production line. They are also responsible for completing the output learn good manufacturing practices. |
| **Body/bodies which will award the qualification:**Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102. |
| **Body which will accredit providers to offer courses leading to the qualification:**Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102. |
| **Body/bodies which will be responsible for assessment:**The assessment is being carried out at of Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102. |
| **Occupation(s) to which the qualification gives access:**Machine Operator Tool Room occupation in Mould, Dies and fixtures manufacturing. |
| **Proposed level of the qualification in the NSQF: 4 (CPC/Q 5104)** |
| **Anticipated volume of training/learning required to complete the qualification:**720 Notional hours. |
| **Entry requirements / recommendations:**Minimum qualification – Preferably Min - Class 8th Standard, Minimum age - 18 years completed. |
| **Progression from the qualification:**The Machine Operator Tool Room has a clear pathway.  |
| **Planned arrangements for the Recognition of Prior learning (RPL):**RPL arrangements are being developed and will be informed in due course of time. |
| **International comparability where known:** It will be carried out in next phase as comparability is being verified. |
| **Date of planned review of Qualification:** 20.10.2018 |

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| Format Structure of the Qualification: Machine Operator Tool Room |
| Title and Identification code of component | Mandatory/ Optional | Estimated Size (Notional Hours) | Level |
| 1. Maintain basic health and Safety practices at the workplace
 | M | 40 |  |
| 1. Understanding the basic concepts, design, drawings and planning for machining components, making tools & dies and coordinating with others
 | M | 100 |  |
| 1. Perform fitting operations on machining components using hand tools
 | M | 100 |  |
| 1. Operation on Drilling
 | M | 100 |  |
| 1. Operation on Shaper
 | M | 100 |  |
| 1. Operation on LATHE
 | M | 100 |  |
| 1. Operation on MILLING Machine
 | M | 100 |  |
| 1. Operation on Grinding

Machine | M | 100 |  |
| 1. Basic Programming and Operation on CNC Machines
 | M | 200 |  |
| 1. Working effectively with others
 | M | 20 |  |
|  |  | 960 |  |

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| **Body/Bodies which will carry out assessment:**A Separate department/ body -Training Assessment Wing of Central Institute of PlasticsEngineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. Of India, Hajipur, Vaishali, Bihar 844102.**Will the assessment body be responsible for RPL assessment?**RPL arrangements are being developed and will be informed in due course of time.**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:**With uniformity and setting of learning outcomes for different Jobs Roles the assessment of candidates will be at learning outcome level. Assessment criterion has been defined for each learning outcome and it includes both theoretical and practical skills on which the candidate will be assessed. The question suite which will be used to check the skills of the trainee would include**Theoretical test suite –** Will include multiple choice questions, audio-video question etc.which will test the trainee on his knowledge of the subject**Practical Knowledge suite –** Practical knowledge can be tested through Assessor driven evaluation/test, Situational Judgment Tests etc to test practical core competence. A mix of these would be able to evaluate the trainee on his practical knowledge of theQualification Document.**Assessment strategy:**1. Assessment criteria for Qualification Document have been developed. Each Learning Outcome have separate marks for Theory and Practical Skills.
2. The Training Assessment Wing will have assessors who will not be associated with training activities and will be provided training on the said work. Thus it will ensure that the assessment carried out is fair and consistent.
3. Set of question bank developed to assess the theoretical and practical knowledge. To ensure the quality, each trainees get the unique set of question
4. Student has to score minimum marks separately for theoretical and practical skill and overall percentage should also be 50% for theory and 70% for practical.
5. Empanelment of subject matter expert as assessor to assess trainee specifically on practical skills
6. Assessments are preferably conducted by written examination papers in English/

regional languages according to the requirement.1. It has been ensure that TP/trainer should not be present during assessment
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**Assessment Process Flow:**

**Request for evaluation of batch by**

**Training Partner**



**Allocation of batch to Training Assessment wing**



**Evaluation of batch by Training Assessment wing as per schedule and as per Assessment Process**



**Assessment observation data input sheet from Training Assessment wing including viva, practical and theory marks**



**Result finalization**



**Uploading of result on IT database platform**

**Summative Assessment**:

Based on the Total Marks allotted for the specific subject, formal evaluation shall be conducted. Based on secured marks, candidates shall be declared pass or fail.

Steps undertaken for summative assessment:

1. Based on Completion of Batch, Evaluation Schedule shall be prepared
2. Identified Assessor is nominated for Evaluation
3. Setting up of separate Question Paper for Theory & Practical Examination
4. Conduct of examination as per the schedule
5. Evaluation & Certification

**Evidence Collected during Assessment:** Theoretical Answer Sheets, Practical Exam Sheets,Evaluation Sheets, Jobs produced during practical Exams.

**Protocol for Selection of Assessors:**

* The Assessors should have the minimum qualification: Degree in Engineering.
* The Assessors should have minimum 5 years of Experience in the relevant field.

**ASSESSMENT EVIDENCE**

**Assessment Guidelines:**

1. Criteria for assessment for each Qualification Document will be created by CIPET.
2. Each Assessable outcome (AO) will be assigned marks proportional to its importance in Learning Outcome and few performance criteria may be allotted marks in combine.
3. Each Learning Outcome will be assessed both for theoretical knowledge and practical which is being proportionately demonstrated in the table below.
4. The assessment for the theory part will be based on knowledge bank of questions created by CIPET which will contain multiple choice theory questions and Practical question database with mark allotment criteria.
5. To pass the Qualification Document, every trainee should score a minimum of 50 % in Functional and all Generic Learning Outcome’s.
6. In case of successfully passing only certain number of Learning Outcome’s, the trainee is eligible to take Subsequent assessment on the balance Learning Outcome’s to pass the Qualification Document.

**Title of the Component:** Machine Operator Tool Room

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| **Assessable outcome** | **Assessment criteria for the****outcome** |
| **LO** | **Assessable outcome Description** | **Theory** | **Practical** | **Total** |
| 1. CPC/N5109 Maintain basic health and safety practices at the workplace,5S
 | AO1. use protective clothing/equipment for specific tasks and work conditions AO2. state the name and location of people responsible for health and safety in the workplace AO3. state the names and location of documents that refer to health and safety in the workplace AO4. state location of general health and safety equipment in the workplace AO5. inspect for faults, set up and safely use steps and ladders in general use AO6. work safely in and around confined areasAO7. lift heavy objects safely using correct proceduresAO8. apply good housekeeping practices at all timesAO9. identify common hazard signs displayed in various areas AO10. retrieve and/or point out documents that refer to health and safety in the workplaceAO14. use the various appropriate fire extinguishers on different types of fires correctly AO15. demonstrate rescue techniques applied during fire hazard AO16. demonstrate good housekeeping in order to prevent fire hazards AO17. demonstrate the correct use of a fire extinguisherAO18. demonstrate how to free a person from electrocution AO19. Administer appropriate first aid to victims were required eg. in case of bleeding, burns, choking, electric shock, poisoning etcAO20. demonstrate basic techniques of bandaging AO21. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environmentsAO22. perform and organize loss minimization or rescue activity during an accident in real or simulated environments AO23. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated casesAO24. demonstrate the artificial respiration and the CPR ProcessAO25. participate in emergency proceduresAO26. complete a written accident/incident report or dictate a report to another person, and send report to person responsible AO27. demonstrate correct method to move injured people and others during an emergencyAO28 Follow the sorting process and check that the tools that are lying on workstations are the ones in use and unnecessary items are not disarranging the workbenches or work surfacesAO29 Sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions.AO30 Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standardsAO31. Ensure that the area has floors swept, machinery clean and generally clean. In case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazardsAO32. Check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix upAO33. Ensure workbenches and work surfaces are clean and in good conditionAO34. Follow the cleaning schedule for the lighting system to ensure proper illuminationAO35. Store the cleaning material and equipment in the correct location and in good conditionAO36. Ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene | 12 | 28 | **40** |
|  | Sub total | 12 | 28 | **40** |
| 1. CPC/N5110 Understanding the basic concepts, design, drawings and planning for machining components, making tools & dies and coordinating

with others | AO1. adhere to procedures or systems in place for health and safety, personal  protective equipment (PPE) and other relevant safety regulationsAO2. ensure all the machines used are in a safe and useable conditionAO3. ensure that all the tool room machines are correctly guarded at all timesAO4. obtain sample component/ drawings and other engineering information as per company procedures AO5. identify requirements by analyzing sample component, design and drawingAO6. Plan sequence of operations for machining component keeping in mind various considerations like requirements, timelines, resources available, interdependencies, constraints, compliances, etc.AO7. report and rectify cases of inappropriate information in design documents as per organizational procedures AO8. compute dimensions, sizes, shapes and tolerances of machining component are as per specifications and as per company procedures AO9. determine information such as number of parts to make, engineered components and material to be used, and machines to be used AO10. identify and confirm resources required such as components, machinery, range of materials and processesAO11. identify the operations that will be required for machining components based on design requirements AO12. identify type of equipment required for machining components based on the operations selectedAO13. estimate timelines for each task accuratelyAO14. establish work completion time by determining a schedule of operationsAO15. obtain necessary approvals for the action plan AO16. allocate responsibilities to machine operators as per the operations selected AO17. ensure that the machine operators are clear about the sequence of activities, priorities and considerationsAO18. release drawings and machining specifications to machine operators AO19. identify and select machines for machining components based on design and drawingsAO20. identify and select cutting tools based on design and drawingsAO21. select and procure appropriate metals to be used for machining components as per design requirementAO22. hand over cutting tools and raw material for machining to the machine operatorsAO23. handle all clarifications sought by the operators AO24. collect job from all operators AO25. check the jobs as per drawing/instructionAO26. ensure in-process inspection of the machining component | 30 | 70 | **100** |
|  | Sub total | 30 | 70 | **100** |
| 3.CPC/N5111 Perform fitting operations on machining components using hand tools | AO1. comply with health and safety, environmental and other relevant regulations and guidelines at work AO2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing die fitting operationsAO3. work following laid down procedures and instructionsAO4. ensure work area is clean and safe from hazardsAO5. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable conditionAO6. obtain job specification from a valid and approved source AO7. read and understand job requirements from the job specification document properlyAO8. report and rectify incorrect information in job specification documents as per job requirement AO9. preparation for the fitting operations as per procedureAO10. ensure that all calibrated measuring instruments used.AO11. ensure that the components used are free from foreign objects, dirt and corrosionAO12. obtain correct work pieces and consumables as per job requirementsAO13. obtain appropriate tools and measuring instruments. AO14. Setting of work pieces as per job requirements using appropriate holding devicesAO15. Marking specified features with the help of marking-out methods on the work pieces as per job specification by using appropriate measuring and marking tools. AO16. mark out templates for tracing/transferring the specified features on the work pieces as per drawing AO17. Tracing or transfer the specified features from the templates onto the work pieces as per drawingAO18. perform fitting operations on various forms of metal components using a range of hand tools and manually operated machines AO19. follow the specified machining sequence and procedure as per job specifications AO20. check the machined components to ensure completeness of work AO21. check the quality of the output as per required standards, using visual checks and measurement of dimensional parameters using measuring instruments.AO22. produce components with various features as per standards applicable to the process AO23. Check the finished components as per job requirementAO24. complete documentation during and post operations as per proceduresAO25. return all tools and equipment to the correct location on completion of the fitting activities AO26. leave the work area in a safe and tidy condition on completion of job activities | 30 | 70 | **100** |
|  | Sub total | 30 | 70 | **100** |
| 4. CPC/N5112: Operation on Drilling | AO1. comply with health and safety, environmental and other relevant regulations and guidelines at work AO2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing machining operationsAO3. ensure work area is clean and safe from hazards AO4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable conditionAO5. ensure that machine guards are in place and are correctly fitted.AO6. read and understand safety instructions, warning signs on the machineAO7. ensure that all measuring equipment is within calibration due date AO8. ensure availability of job specification from a valid source/DrawingsAO9. read and establish job requirements from the job specification document **Job** AO10. ensure that the incoming components used are free from foreign objects, dirt or other contaminationAO11. prepare and maintain the work area as per procedure or operation specificationAO12. plan to carry out the required drilling activities and the sequence of operations as per specificationsAO13. apply safe working practices and procedures at all timesAO14. obtain all the appropriate materials, cutting tools and measuring equipments required for the drilling operationsAO15. confirm that the machine is ready for productionAO16. prepare for the Drilling activities by mounting, positioning and correctly setting a range of work holding devices and cutting toolsAO17. seek any necessary instruction/training on the operation of the machine, where required AO18. hold components securely, without distortion AO19. ensure that machine settings are adjusted as and when required to maintain the required accuracyAO20. obtain the component drawings, specifications, job instructions required for the components to be machined AO21. use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate IS or ISO standards in relation to work undertaken)AO22. set and adjust the machine tool speeds and feeds to achieve the component specificationAO23. mount and set the required work holding devices, work piece and cutting toolsAO24. operate the machine tool controls safely and correctly, in line with operational proceduresAO25. control the machine in both hand and power modes for normal operationsAO26. stop the machine in both normal and emergency situations correctly, and follow right procedure for restarting after an emergency AO27. use drilling machine accessories that consists of vices, drill chuck, sleeves, clamps, tool holders.AO28. position and secure work holding devices to the machine spindle AO29. perform drilling operations using various equipments to produce components with various featuresAO30. produce components as per given quality standards AO31. plan and work to achieve given production targetsAO32. overcome the effects of backlash in machine slides and screwsAO33. perform the technique of trial cut for checking dimensional accuracyAO34. apply roughing and finishing cuts, considering the effect on tool life, surface finish and dimensional accuracyAO35. use cutting fluids for different materialsAO36. use range of measuring instruments to check critical parameters AO37. clamp the work piece in a chuck/work holding device AO38. perform the checks to be carried out on the components before removing them from the machine, and the equipment needed for this activityAO39. ensure that the quality control procedures are used while operating the equipment | 30 | 70 | **100** |
|  | Sub total | 30 | 70 | **100** |
| 5. CPC/N5113: Operation on Shaping | AO1. comply with health and safety, environmental and other relevant regulations and guidelines at work AO2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing machining operationsAO3. ensure work area is clean and safe from hazards AO4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable conditionAO5. ensure that machine guards are in place and are correctly fittedAO6. read and understand safety instructions, warning signs on the machine AO7. ensure that all measuring equipment is within calibration due date AO8. ensure availability of job specification from a valid source/DrawingsAO9. read and establish job requirements from the job specification document AO10. ensure that the incoming components used are free from foreign objects, dirt or other contamination AO11. prepare and maintain the work area as per procedure or operation specificationAO12. plan to carry out the required shaping activities and the sequence of operations as per specificationsAO13. apply safe working practices and procedures at all timesAO14. obtain all the appropriate materials, cutting tools and measuring equipments required for the shaping operationsAO15. confirm that the machine is ready for productionAO16. prepare for the shaping activities by mounting, positioning and correctly setting a range of work holding devices and cutting toolsAO17. seek any necessary instruction/training on the operation of the machine, where required AO18. hold components securely, without distortionAO19. ensure that machine settings are adjusted as and when required to maintain the required accuracyAO20. obtain the component drawings, specifications, job instructions required for the components to be machined AO21. use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate IS or ISO standards in relation to work undertaken)AO22. set and adjust the machine tool speeds and feeds to achieve the component specificationAO23. mount and set the required work holding devices, work piece and cutting toolsAO24. operate the machine tool controls safely and correctly, in line with operational proceduresAO25. control the machine in both hand and power modes for normal operationsAO26. stop the machine in both normal and emergency situations correctly, and follow right procedure for restarting after an emergencyAO27. use shaping machine accessories that consists of vices, clamps, tool holders.AO28. position and secure work holding devices to the machine ram AO29. perform shaping operations using various equipments to produce components with various featuresAO30. produce components as per given quality standards AO31. plan and work to achieve given production targetsAO32. overcome the effects of backlash in machine slidesAO33. perform the technique of trial cut for checking dimensional accuracyAO34. apply roughing and finishing cuts, considering the effect on tool life, surface finish and dimensional accuracyAO35. use cutting fluids for different materialsAO36. use range of measuring instruments to check critical parameters AO37. clamp the work piece in a chuck/work holding device AO38. perform the checks to be carried out on the components before removing them from the machine, and the equipment needed for this activity AO39. ensure that the quality control procedures are used while operating the equipment  | 30 | 70 | **100** |
|  | Sub total | 30 | 70 | **100** |
| 6.CPC/N5114: Operation on Lathe machine | AO1. comply with health and safety, environmental and other relevant regulations and guidelines at work AO2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing turning operationsAO3. ensure work area is clean and safe from hazards AO4. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable conditionAO5. ensure that machine guards are in place and are correctly fitted.AO6. read and understand safety instructions, warning signs on the machineAO7. ensure that all measuring equipment is within calibration due date AO8. ensure availability of job specification from a valid source/DrawingsAO9. read and establish job requirements from the job specification document AO10. ensure that the incoming components used are free from foreign objects, dirt or other contamination AO11. prepare and maintain the work area as per procedure or operation specificationAO12. plan to carry out the required turning activities and the sequence of operations as per specificationsAO13. apply safe working practices and procedures at all timesAO14. obtain all the appropriate materials, cutting tools and measuring equipments required for the turning operation AO15. confirm that the machine is ready for productionAO16. prepare for the turning activities by mounting, positioning and correctly setting a range of work holding devices and cutting toolsAO17. seek any necessary instruction/training on the operation of the machine, where required AO18. hold components securely, without distortionAO19. ensure that machine settings are adjusted as and when required to maintain the required accuracyAO20. obtain the component drawings, specifications, job instructions required for the components to be machined AO21. use and extract information from engineering drawings and related specifications (to include symbols and conventions to appropriate IS or ISO standards in relation to work undertaken) AO22. set and adjust the machine tool speeds and feeds to achieve the component specificationAO23. mount and set the required work holding devices, work piece and cutting toolsAO24. operate the machine tool controls safely and correctly, in line with operational proceduresAO24. operate the machine tool controls safely and correctly, in line with operational proceduresAO25. control the machine in both hand and power modes for normal operationsAO26. stop the machine in both normal and emergency situations correctly, and follow right procedure for restarting after an emergencyAO27. use lathes and the accessories that consists of saddle, capstan/turret head, compound slide, tailstock, taper turning attachments, profile attachments, fixed and travelling steadiesAO28. position and secure work holding devices to the machine spindleAO29. perform turning operations using various equipments to produce components with various featuresAO30. produce components as per given quality standards AO31. plan and work to achieve given production targetsAO32. overcome the effects of backlash in machine slides and screwsAO33. perform the technique of trial cut for checking dimensional accuracy AO34. apply roughing and finishing cuts, considering the effect on tool life, surface finish and dimensional accuracyAO35. use cutting fluids for different materialsAO36. use range of measuring instruments to check critical parameters AO37. clamp the work piece in a chuck/work holding device AO38. perform the checks to be carried out on the components before removing them from the machine, and the equipment needed for this activityAO39. ensure that the quality control procedures are used while operating the equipment | 30 | 70 | **100** |
|  | Sub total | 30 | 70 | **100** |
| 7.CPC/N5115: Operation on Milling machine | AO1. comply with health and safety, environmental and other relevant regulations and guidelines at work AO2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing machining operations **Personal protective equipment**: correctly fitting overalls; safety glasses; long hair is tied back or netted; removing any jewelry or other items that can become entangled in the machinery; covered shoes; face maskAO3. work following laid down procedures and instructionsAO4. ensure work area is clean and safe from hazardsAO5. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable conditionAO6. ensure that all measuring instruments are within calibration due date AO7. ensure that the components used are free from foreign objects, dirt or other contaminationAO8. ensure availability of job specification from a valid sourceAO9. read and establish job requirements from the job specification document AO10. prepare and maintain the work area as per procedure or operation specificationAO11. confirm that the machine is ready for productionAO12. seek any necessary instruction/training on the operation of the various milling machines, where appropriate AO13. ensure that machine guards are in place and are correctly adjusted AO14. identify different types of cutters used in horizontal and vertical milling machinesAO15. identify different parts of the vertical and horizontal milling machineAO16. hold components securely, without distortionAO17. ensure that machine settings are adjusted as and when required to maintain the required accuracy and quality standards QualityAO18. obtain the component drawings, specifications and job instructions required for the components to be machined AO19. use and extract information from engineering drawings and related specifications to include symbols and conventions to appropriate ISO standards in relation to work undertakenAO20. operate the machine controls in both hand and power modesAO21. stop the machine in both normal and emergency situations, and use correct procedure for restarting after an emergencyAO22. use imperial and metric systems of measurementAO23. perform various milling operations to produce various features on metal and non-metal componentsAO24. produce components as per given quality standards AO25. achieve given production targets AO26. overcome the effects of backlash in machine slides and screwsAO27. apply roughing and finishing cuts considering the effect on tool life, surface finish and dimensional accuracyAO28. apply cutting fluids with regard to a range of different materialsAO29. clamp the work piece securely and without distortion in a chuck/work holding device such as vice, V-block, clamp, angle plate, etc.AO30. ensure that the quality control procedures are used on the equipmentAO31. use range of equipment to check critical parameters | 30 | 70 | **100** |
|  | Sub total | 30 | 70 | **100** |
| 9.CPC/N5117:Basic programming and operation on CNC Machines | AO1. comply with health and safety, environmental and other relevant regulations and guidelines at work AO2. adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while programming CNC machinesAO3. work following laid down procedures and instructionsAO4. ensure that machine guards are in place and are correctly adjusted AO5. read and understand safety instructions, warning signs on the machineAO6. ensure work area is clean and safe from hazardsAO7. ensure that all the cutting tools, measuring instruments, cables, extension leads are in a safe and usable conditionAO8. obtain job specification from a valid and approved source AO9. read and establish job requirements from the job specification document accurately AO10. follow job instructions, assembly drawings and laid down procedures at all times AO11. report and rectify incorrect and inconsistent information in job specification documents as per organization proceduresAO12. use and extract information from reference charts, tables, graphs and standardsAO13. prepare the work area as per procedure or operational specification AO14. conduct a preliminary check of the readiness of the program so that the CNC machine operates correctlyAO15. determine what operational objectives and targets need to be achieved and how best the machine needs to be programmed to achieveAO16. extract and use information from engineering drawings and related specifications in relation to work undertaken AO17. identify tool requirements from tooling layout and assess their suitabilityAO18. identify suitable work holding or fixturing device as per the job requirementAO19. ensure the correct and latest part-program is uploaded onto the CNC system AO20. Use Electric Discharge Machining to hole out blind spots and also to create hole in the die formation plate/ work piece AO21. Setup the electrodes of the EDM machine and measure the distance between the electrodes as mentioned in the Work InstructionsAO22. Ensure that the correct current and voltage are selected for the EDM processAO23. Ensure that the work piece/ metal piece is carefully loaded on the EDM machine surface tables/ work platform using manual/ automatic tools AO24. Ensure that there is uniform flow of dielectric liquid i.e. flushing of the dielectric liquid to remove any debris which would have collected during the EDM process AO25. Ensure that the machine operations are regularly monitored to detect any malfunctions in machine operations or any out of tolerance machining AO26. Ensure that the electrode properties like surface, dimensions, metallurgical properties are periodically checked as per the checklist providedAO27. Ensure that the electrodes are changed in case there is a deviation from the specificationsAO28. Prepare the CNC program with commands for tool motions, spindle motions, miscellaneous functions and tool change, in syntax corresponding to the machine and control system on which the component will be machined. AO29. various ways to make CNC program are by writing it on paper or in a computer's text editor, or using CAM software or controllers on machineAO30. ensure that the part program is efficient and results in minimal cycle time, with optimal cutting parameters and no unnecessary tool motions AO31. use subprograms and canned cycles, to reduce program size and input time and avoid memory overflow on the machineAO32. transfer the program to the machine by entering it at the console or transmitting it through a wired link or through a data transfer deviceAO33. follow the correct procedures for calling up the program and dealing with any error messages or faultsAO34. handle the typical problems that can occur with the programming, loading and editing activities effectively using approved proceduresAO35. save the proven program in the appropriate storage medium – paper, computer hard disketc. - and locationAO36. complete relevant documentation as per procedureAO37. leave the work area in a safe and tidy condition on completion of the activitiesAO38. obtain appropriate equipment or tools needed as per job requirements AO39. ensure that all measuring equipment is calibrated and approved for usageAO40. ensure that the tools and fixtures are in usable condition(eg. free from breakage, damage, calibration, etc.)AO41. pre-set the tooling appropriately using setting jigs/fixturesAO42. seek any necessary instruction/training on the operation of the machine where requiredAO43. mount tools in the correct positions in the tool turret or magazineAO44. check that the tools have been mounted in positions corresponding to tool numbers in the part programAO45. measure tool and work offset data - X and Z offsets for lathes; work offsets, length offsets and tool radius for machining centers.AO46. ensure that the component is free of burrs, chips or other material adhering to its butting surfacesAO47. mount the part on machine firmly in the specified work holding devices, with the appropriate clamping forces.AO48. enter work offset and tool data on the machine – X and Z offsets, tool orientation and LOe radius for lathes; length offsets and tool radius for machining centers. AO49. ensure that tool data has been entered in offset number corresponding to the tool offset numbers in the part programAO50. deal with error messages and faults on the program or equipment AO51. cut a trial part using single block run, dry run and feed and speed override controls AO52. edit the program and adjust tool and wear offsets to correct any dimensional errors on the partAO53. ensure that the trial part conforms to drawing specifications in terms of dimensions, surface finishes and geometrical parameters like concentricity, parallelism, run out, etc.AO54. hand-over the machine to the machine operator for machining the batch of parts, along with relevant instructions and documentation on periodic inspection of components, change of worn out toolsAO56. correct the tool wear offsets whenever required, based on the results of the period inspectionAO57. change worn out tools and indexable inserts whenever requiredAO58. after every change of a worn out tool or insert, cut a trial part and correct any dimensional inaccuracies by adjusting the tool offsets or wear offsets AO59. return worn out cutting tools, work holding device / fixtures / instruments / drawings to storeAO60. ensure that there is no damage to the tool/fixture while doing the prove-outAO61. shut down the equipment to a safe condition on conclusion of the activitiesAO62. deal promptly and effectively with problems within span of responsibility and control and report those that cannot be solved | 60 | 140 | **200** |
|  | Sub total | 60 | 140 | **200** |
| 10.CPC/N5105 Work effectively with others | AO1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required AO2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receiptAO3. give information to others clearly, at a pace and in a manner that helps them to understandAO4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possibleAO5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasksAO6. display appropriate communication etiquette while workingAO7. display active listening skills while interacting with others at work AO8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalismAO9. demonstrate responsible and disciplined behaviours at the workplace | 06 | 14 | **20** |
|  | Sub total | 06 | 14 | **20** |
|  | Total | **288** | **672** | **960** |
| **Means of assessment 1:**The assessment comprise of -Theory AssessmentViva vocePractical assessment |
| **Means of assessment 2:**Pass/Fail-The Pass mark of theory written assessment is 50% and for viva and practical assessment is 70%.The candidate has to pass separately in Theory and Practical. |

**EVIDENCE OF LEVEL**

**Level of qualification**

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| **Title /Name of Qualification/Component: Machine Operator Tool Room****Level:**  |
| **NSQF Domain** | **Outcomes of the****Qualification/Component** | **How the job role****relates to the NSQF****Level descriptors** | **NSQF****Level** |
| **Process** | The user/ individual on the jobneeds to know and understandhow to:1. Can able to Read the JobDrawing/ Blue Print &Dimensional Tolerances2. Can able to Handle differenttypes of Hand Tools , Jobsetting devices, Can able tomeasure the jobsdimensions using Differentmeasuring instruments likeVenire Callipers,Micrometer, Dial Gauge,Surface Gauge etc3. Assembly of various type ofmould with applicationEx: Hand injection mould, Twoplate Automatic mould - DirectSprue injection - SingleImpression - Multi Impression -Side Gated – Three PlateMoulds4. Type of polishing, differenttype of polish kit and theirapplication5. Can Understand How toOperate NC Lathe, How toProgramme NC LatheMachine Operation,6. Can operate & Programme aCNC Lathe Machine Tools.Can perform Job on CNCLathe Machines. Canprogramme & operate ondifferent types of CNC Lathe Controller like Fanuc, HASSetc7. Can operate & Programme aCNC Milling Machine Tools.Can perform Job on CNCMilling Machines. Canprogramme & operate ondifferent types of CNCMilling Controller likeHeidenhain, Fanuc & HASSetc | He should capable ofmaking the mould in allrespect like manufacturingthe mould parts usingconventional & CNCMachines.He should understanding ofthe mould parts, polishingkit, Assembly Techniques,Operation of Conventional& CNC Machine tools, Basicreading, writing andcommunication skills, Handtools and Safety |  |
| **Professional****knowledge** | The user/ individual on the jobneeds to know and understandhow to:1. Type of Hand Tools and itsuses2. Reading of mould assemblydrawing and details drawing3. Able to understand differenttypes of moulds and theirfunctions4. Able to understand thepolishing techniques andtools5. Able to understandoperation of Conventional &CNC Machines | Machine Operator Tool Room shouldunderstand the differentmaterials used in mouldmanufacturing, tools formachining, variousmachining techniques formould manufacturing. Heshould able to optimize thebest techniques formanufacturing differentmoulds, assembly &polishing techniques fordifferent applications. |  |
| **Professional****skill** | The user/ individual on the jobneeds to know and understandhow to: Plan and organize theactivities/ work allocated bymould maker and supervisor Organize all the polishingkits and assembly tools sothat sorting is easy on a dayto day basis Use practical knowledge formould assemble Matching of core and cavity | Machine Operator Tool Room should recallgeneral principles,machining procedure andprocess knowledge whichmay be repetitive type ofwork in the area allotted,different types of plasticsmaterials, mould materialsto be used for variousapplications. Thus heshould demonstratepractical skill, routine andrepetitive in mouldmanufacturing process.Heshould also understandquality concepts and use inthe area of work allotted. |  |
| **Core skill** | The user/ individual on the job needs to know and understandhow to: Write basic level notes andobservations Draw basic level drawingsand charts Read documents and notes Interpret the informationgiven in the documents andnotes Read and interpret symbolsgiven on equipment andwork area. Discuss task lists and jobrequirements with co-workers Effectively communicateinformation to teammembers | Machine Operator Tool Room should ableto communicate with theirteam to clarify or schedulethe work plan/process to becarried out with properclarity in all aspects andshould have arithmetic skillto work out the requiredmaterials, cost and time tocomplete the assignment. |  |
| **Responsibility** | The responsible for makingmoulds in all respect,manufacturing the mould partsusing conventional & CNCMachines, Organize all thepolishing kits and Assembly ofvarious type of mould | Machine Operator Tool Room is responsiblefor the entire work in themould manufacturingprocess. |  |

**EVIDENCE OF RECOGNITION AND PROGRESSION**

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| **What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?**Relevant information was collected from Industries and allied sector working in this area.The Plastics industries are recruiting people based on the qualification acquired. Maximum of the industries accept this as qualification for selection/short listing of the individual approved by members.**Vertical Pathway:**The Occupational Map has been created & attached.The Mould Making Technicians- Machinist has a clear pathway **Horizontal Pathway:**The individual can migrate within the Plastics mould related industries. |