

**EC  
ITB\***

**ECITB Knowledge  
& Technical Tests**

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## Introduction

In the constantly developing world of engineering construction, Technical Tests from the ECITB are the easiest way to ensure the critical skills of the industry's Craftspeople and Technicians match the demands of today. The flexibility of Technical Tests makes them a useful and adaptable tool, in both commercial and practical terms. They could be carried out in response to a very specific industry need – such as at the pilot phase, with the need to focus on Mechanical Joint Integrity in the offshore sector.

## Technical Test

Technical Tests are the most flexible, economical and 'instant' way to assess and validate the ability of individual employees or prospective recruits to perform the skill-based tasks that the industry needs. A Technical Test ensures a Craftsperson or Technician has the skill, ability and job knowledge relevant to the work they are required to carry out. Each Technical Test examines a very specific aspect of an engineering construction discipline. The technical tests are comprised of two elements: knowledge testing and practical skills testing, the format is explained in Section 1 and 2 below.

### 1. Knowledge Test

The candidate will take an online test, consisting of 10 multiple-choice questions per technical test to assess theoretical knowledge of the technical area. The candidate will answer the 10 randomly generated questions from a large pool of knowledge questions. The candidate has to achieve an 80% pass mark to move onto the practical test. Achieving less than 80% in this knowledge test will result in a test referral and the candidate will have to retake the knowledge test questions again.

### 2. Practical Test

The candidate will undertake a highly specified practical assessment with candidate instructions in various prescribed stages under continuous observation by the examiner. All parts of the practical test must be completed to the required standard, the candidate will be briefed on the practical test and understand exactly what is expected of them. All test criteria must be met to achieve a pass mark in the test. Any test criteria not achieved to the specified standard will result in a test referral.

## Knowledge Only Test

The candidate will take an online test, consisting of 35 multiple-choice questions per discipline to assess their theoretical knowledge of the technical discipline. The candidate will answer the 35 randomly generated questions from a large pool of knowledge questions. The candidate has to achieve an 80% pass mark/28 questions answered correctly to achieve a pass in the knowledge only test. Achieving less than 80% in this knowledge test will result in a test referral. ECITB have knowledge only tests in the following disciplines below:

<u>Knowledge Test</u>	<u>Code</u>
❖ Appointed Person Moving Loads	KT APML
❖ Electrical Installation	KT EI
❖ Electrical Maintenance	KT EM
❖ Instruments and Controls	KT IC
❖ Mechanical Maintenance	KT MM
❖ Rigging	KT RIG
❖ Pipefitting	KT PF
❖ Plating	KT PL
❖ Thermal Insulation	KT TI
❖ Sprayer Blaster Painter	KT SBP

The following pages indicate the technical tests' codes and brief description of the test.

*The **Connected Competence Initiative** technical tests have **CC** and the cycle year indicated as Y1 – Year 1, Y2 -Year 2 and Y3 – Year at the end of the relevant test title.*

## Supporting Engineering Construction

<b>TSE01 Move Engineering Loads by Manual Operation</b>
The candidate has to successfully prepare the work area, equipment and material for a safe movement of the engineering load from a storage area to its final location. Select and use the appropriate resources and equipment to complete the safe movement of the engineering load, through the work area, securing the load for work execution at the final location on completion.
<b>TSE02 Marking Out to Required Specification</b>
The candidate has to successfully mark out metal plate for fabrication and production of components to a required specification, using the correct measuring and marking equipment, methods and techniques.
<b>TSE03 Read and Extract Information from Engineering Drawings and Specifications</b>
The candidate has to successfully read and extract information from engineering drawings and specifications to enable correct preparation of work area and selection of engineering construction equipment and materials to support fabrication and production of components using the correct methods and techniques.
<b>TSE04 Shape Engineering Components by Material Removal Using Hand Tools</b>
The candidate has to successfully mark out and shape engineering components by material removal using hand tools to a required specification, using the correct equipment, methods and techniques
<b>TSE05 Join Materials by Manually Controlled Welding Process</b>
The candidate has to successfully prepare for welding four "test pieces". Preparation will include the positioning of the test pieces in line with the Welding Specification. The Candidate will be required to "tack weld" the two sections of the joint securely in preparation for welding. The test must also cover all the following welding methods: MIG/MAG, MMA, TIG, FCAW

## Appointed Person Moving Loads

<b>TAP01 Plan a Rigging Operation</b>
The candidate has to generate a lift plan, risk assessment and toolbox talk necessary to support a complex rigging operation in accordance with recognised industry regulations and procedures.

## Moving Loads

<b>TML01 Slinging</b>
The candidate has to successfully select equipment/lifting appliance and lifting accessories to sling and lift an unevenly loaded item to an identified location in accordance with appropriate industry regulations/procedures.
<b>TML02 Rigging and Working with Lifting Equipment</b>
The candidate has to successfully select the appropriate resources and complete the safe rigging and lifting/moving of the identified item using tirsors and rollers/skates in accordance with appropriate industry regulations/procedures.
<b>TML03 – Moving Loads</b>
The candidate has to successfully select equipment/lifting appliance and lifting accessories to sling, lift and move an unequally weighted load through a restricted access to an identified location in accordance with appropriate industry regulations/procedures.

## Steel Erecting

<b>TER01 Slinging</b>
The candidate has to successfully select equipment/lifting appliance and lifting accessories to sling and lift an unevenly loaded item to an identified location in accordance with appropriate industry regulations/procedures.
<b>TER02 Rigging and Working with Lifting Equipment</b>
The candidate has to successfully select the appropriate resources and complete the safe rigging and lifting/moving of the identified item using tirsors and rollers/skates in accordance with appropriate industry regulations/procedures.
<b>TER03 Erecting Steelwork Structure</b>
The candidate has to successfully erect the steelwork structure, selecting the appropriate equipment and resources to safely rig, lift, position, assemble and align structural steelwork components in accordance with appropriate industry and site specific regulations/procedures.
<b>TER04 Erecting Pre-formed Plate</b>
The candidate has to successfully erect a stair assembly and the pre-formed plate flooring components to the steelwork structure, selecting the appropriate equipment and resources to safely rig, lift, position, assemble and align pre-formed plate structural steelwork components in accordance with appropriate industry and site specific regulations/procedures.

## Non Destructive Testing (NDT)

<b>TNDTS01 Magnetic Particle</b>
The candidate has to successfully examine and report on 3 Welds using the Magnetic Particle method of examination. The Candidate will be provided with a Magnetic Particle Inspection Procedure in accordance with BS EN 9934-1.
<b>TNDTS02 Liquid Penetrant</b>
The candidate has to successfully examine and report on 3 Welds using the Liquid Penetrant method of examination. The Candidate will be provided with a Liquid Penetrant Inspection Procedure in accordance with BS EN 571.
<b>TNDTS03 Eddy Current</b>
The candidate has to successfully inspect and report on 3 Welds using the Eddy Current method of inspection. The Candidate will be provided with an Eddy Current Inspection Procedure in accordance with BS EN 12718 or equivalent.
<b>TNDTS04 Ultrasonic (Welds)</b>
The candidate has to successfully examine and report on 2 Welds using the Ultrasonic method of examination. The Candidate will be provided with an Ultrasonic Inspection Procedure in accordance with BS EN 1714 and BS EN 1330 or equivalent
<b>TNDTS07 Visual Inspection</b>
The candidate has to successfully examine and report on 3 Welds using a Visual Inspection method of examination. The Candidate will be provided with a Visual Inspection Procedure in accordance with BS EN 970: 1997 Non-Destructive Examination of Fusion Welds or equivalent.
<b>TNDTS08 Determine NDT Requirements</b>
The candidate has to successfully report most appropriate method of inspection to be applied to the 4 completed Welded Joints to establish compliance in line with Inspection Procedures and Specification.

*N.B. It is expected that the NDT Technician will have previously held or is working towards the accreditation of a Level 2 Certificate prior to undertaking the technical test.*

## Plating

<b>TPL01 Marking Out Plate and Structural Steelwork</b>	<b>CCY2</b>
The candidate has to successfully measure and mark out carbon steel plate, rolled steel angle plate and structural steelwork using appropriate equipment and metric measuring instruments.	
<b>TPL02 Developing Patterns for Platework</b>	
The candidate has to successfully develop an accurate template pattern for a pipework configuration using marking out and measuring equipment as per the specified drawing and within set tolerances.	
<b>TPL03 Setting Out Platework and Structural Steelwork</b>	<b>CCY1</b>
The candidate has to successfully set out and mark out platework and structural steelwork configurations (tubular bracing) using marking out equipment and metric measuring equipment within set tolerances.	
<b>TPL04 Making Templates for Structural Steelwork</b>	
The candidate has to successfully develop and produce accurate wooden (plywood) and sheet metal templates for structural steelwork configurations using marking out and measuring equipment as per the specified drawing and within set tolerances.	
<b>TPL05 Forming Plate by Rolling</b>	
The test requires the candidate to form plate by rolling, safely using the correctly selected resources and equipment in accordance with appropriate industry and site specific regulations and procedures.	
<b>TPL06 Preparing Plate Edges Using Portable Edge Preparation Machines</b>	<b>CCY1</b>
The candidate has to successfully use edge preparation machines to prepare the edges of plate for welding, measuring, marking out and producing a double bevelled edge to within set dimensions.	
<b>TPL07 Assembling Platework</b>	
The candidate has to successfully assemble platework including assemblies of square/rectangular form using appropriately selected tools and equipment and metric measuring conventions and within set tolerances.	
<b>TPL08 Interpret Drawing Information, Fabricate and Install Platework</b>	<b>CCY2</b>
The candidate has to be able to read and extract information from engineering drawings and specifications to support fabrication and of components using the correct methods and techniques. The candidate has also to assemble and install a plating assembly to specifications in the engineering drawing using the correct methods and techniques.	
<b>TPL09 Interpret Drawing Information, Mark out and Burn Marine Platework</b>	
The candidate must be able to read and extract information from engineering drawings and specifications to support fabrication of components using the correct methods and techniques. The candidate must also mark out and burn platework to specifications in the engineering drawing using the correct methods and techniques.	

## Pipefitting

<b>TPF01 Setting Out Pipework and Marking Out</b>	
The candidate has to successfully set out and mark pipework configurations using marking out and measuring equipment for the fabrication of a mitre bend, produce a template for marking out a lateral branch and mark out branch and header pipes as per the drawing.	
<b>TPF02 Developing Patterns for Pipework</b>	
The candidate has to successfully develop an accurate template pattern for a pipework configuration using marking out and measuring equipment as per the specified drawing and within set tolerances.	
<b>TPF03 Preparing Pipe Ends Using Portable Edge Preparation Machines</b>	
The candidate has to successfully use portable preparation machines to prepare pipe ends for welding, chamfering the pipe end to a specified angle and within set dimensions.	
<b>TPF04 Pipe Bending</b>	
The candidate has to successfully use hand operated bending machines to bend ferrous and non-ferrous pipe, producing a rolled offset in low carbon steel pipe as per the specified drawing and within set tolerances.	
<b>TPF05 Preparing and Assembling Welded Pipework</b>	<b>CCY1</b>
The candidate has to successfully use the appropriate tools and equipment to fabricate, assemble, align and tack up pipework as per the specified drawing and within set tolerances.	
<b>TPF06 Preparing and Assembling Non-Metallic Pipework</b>	
The candidate has to successfully use the appropriate tools and equipment to prepare, fabricate and assemble non-metallic pipework components using compression or cemented joints and socket welded fittings to specified drawings and within set tolerances.	
<b>TPF07 Preparing and Bonding GRP Pipework</b>	
The candidate has to successfully use the appropriate tools and equipment to prepare, fabricate, assemble and bond Glass Reinforced Plastic Pipework as per the specified drawing and within set tolerances.	
<b>TPF08 Fabricating and Installing Pipework Supports</b>	<b>CCY3</b>
The candidate has to successfully use the appropriate tools and equipment to prepare, mark out, shape, fabricate and install pipework supports as per the specified drawing and within set tolerances.	
<b>TPF09 Installing Pipework Systems</b>	
The candidate has to successfully use the appropriate tools and equipment to prepare, assemble and install pipework systems and components to the specified drawing and within set tolerances.	
<b>TPF10 Preparing and Testing Pipework Systems</b>	<b>CCY3</b>
The candidate has to successfully use the appropriate tools and equipment to prepare, assemble and hydrostatic test a pipework system and components in line with the correct procedures.	
<b>TPF11 Preparing and Assembling Screwed Pipework</b>	<b>CCY2</b>
The candidate has to successfully use the appropriate tools and equipment to fabricate and assemble a steel pipe section with screwed fittings and flanges to a specified drawing and within set tolerances.	
<b>TPF12 Preparing and Assembling Small Bore Non-Ferrous Pipework</b>	
The candidate has to successfully use the appropriate tools and equipment to fabricate and assemble copper and plastic pipe sections to specified drawings and within set tolerances.	
<b>TPF13 Interpret Drawing Information, Fabricate and Install Pipework</b>	<b>CCY1</b>
The candidate has to be able to read and extract information from engineering drawings and specifications, to support fabrication of components using the correct methods and techniques. The candidate has to assemble and install a short pipework run using spools and valves to specifications in the engineering drawing using the correct methods and techniques.	
<b>TPF14 Interpret Drawing Information, Dismantle and Install Pipework</b>	
The candidate has to dismantle, assemble and install short pipework runs using prefabricated spools, valves and the correct consumables to specifications in the engineering drawing using the correct methods and techniques.	

## Mechanical Fitting

<b>TMF01 Advanced Measurement for Mechanical Fitters</b>	<b>CCY1</b>
The candidate has to successfully measure complex mechanical components with micrometers, vernier callipers and dial test indicator as per the specified drawings and within set tolerances.	
<b>TMF02 Marking Out for Mechanical Fitters</b>	
The candidate has to successfully set out and mark low carbon steel plate using marking out and measuring equipment for the fabrication of a pipe saddle as per the specified drawings and within set tolerances.	
<b>TMF03 Making and Fitting Mechanical Components</b>	
The candidate has to successfully make a mechanical component using a lathe, appropriate tools and equipment as per the specified drawing and within set tolerances.	
<b>TMF04 Assembling Mechanical Components</b>	
The candidate has to successfully assemble and fit a mechanical valve to pipework using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMF05 Preparing for Installation</b>	
The candidate has to successfully prepare for the installation of a centrifugal pump (including marking out for the positioning of the pump and the necessary fixings/bolts) as per the specified drawings and within set tolerances.	
<b>TMF06 Positioning Plant and Equipment</b>	
The candidate has to successfully move and position safely a motor and pump using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMF07 Aligning, Levelling and Setting Plant and Equipment</b>	<b>CCY1</b>
The candidate has to successfully align, level and set a motor and pump arrangement using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMF08 Installing Drive Systems</b>	
The candidate has to successfully fit bearings, keys, pulleys, gear wheels and couplings to shafts to install drive systems using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMF09 Repairing Faults and Adjusting Mechanical Plant and Equipment</b>	<b>CCY1</b>
The candidate has to successfully remove and dismantle, repair and re-installation of an identified defective coupling using appropriate tools and equipment in accordance with set tolerances.	
<b>TMF10 Diagnosing Faults and Adjusting Live Mechanical Plant and Equipment</b>	
The candidate has to successfully produce a safe and logical fault diagnosis procedure which could be followed to locate a fault on an identified item of engineering construction equipment/machinery using appropriate tools and equipment in accordance with set tolerances.	
<b>TMF11 Preparing and Assembling Small Bore Pipework</b>	
The candidate has to successfully use the appropriate tools and equipment to prepare, fabricate and assemble metallic and non-metallic pipework components using compression fittings and cemented joints to specified drawings and within set tolerances.	

## Small Bore Tubing (SBT)

<b>TSBT01 Assemble and Install Small Bore Tubing Assemblies (Twin Ferrule)</b>	
The candidate has to successfully use the appropriate tools, equipment and materials to plan, prepare, fabricate, assemble and install a small bore tubing assembly as per the specified drawing and within set tolerances.	
<b>TSBT02 Disassemble and reinstall SBT Assemblies</b>	<b>CCY2</b>
The candidate has to successfully identify, dismantle, faults and defects on small bore tubing assemblies. Then reinstall small bore tubing assemblies using the appropriate tools, equipment and materials as per the specified drawing and specification sheet within set tolerances.	
<b>TSBT03 Assemble and Install Small Bore Tubing Assemblies (Cone &amp; Threaded)</b>	
The candidate has to successfully use the appropriate tools, equipment and materials to plan, prepare, fabricate, assemble and install a small bore tubing assembly as per the specified drawing and within set tolerances.	
<b>TSBT04 Prepare and Test SBT Assemblies</b>	
The candidate has to carry out Hydrostatic Pressure Testing of SBT (using appropriately selected resources) safely and in accordance with the appropriate industry and site specific regulations and procedures.	

*ECITB/STEP CHANGE IN SAFETY SBT MODEL*

*Unsuccessful TSBT candidates must wait a minimum period of 4 weeks between the unsuccessful test session and next test session to allow for a period of training to address any skills or knowledge gaps.*

## Electrical Installation

<b>TIE01 Install Emergency Lighting</b>	<b>CCY1</b>
The candidate has to successfully install a lighting circuit to include Maintained and Non-maintained Emergency light fittings. On completion the candidate is to test and function check. All work to comply with the relevant specification.	
<b>TIE02 Transformer &amp; Chokes</b>	
The candidate has to successfully install and gland a 25mm PVC SWA Cable to a Step Up Transformer in line with details on the Electrical Hook Up Drawing and to wiring Regulations. The test will include the insulation and resistance test of the installed cable	
<b>TIE03 Alarm Systems</b>	
The candidate has to successfully install a fire alarm circuit to include a sounder, break glass units and two zones of detection, On completion the candidate is to test and function check the fire alarm circuit. All test activity to comply with the wiring regulations.	
<b>TIE04 Electrical Distribution Systems</b>	<b>CCY3</b>
The candidate has to successfully install a 3 phase and Neutral distribution board ensuring that the outgoing circuit loads are balanced across the Phases. The circuits are to include both single and 3 phase supplies.	
<b>TIE05 Battery and UPS Systems</b>	
The candidate has to successfully install to specification the UPS system to provide battery back up in the event of power failure on a nominated 16amp Radial Circuit or 32amp ring main circuit, the candidate will test and function check the installation in accordance with the wiring regulations.	
<b>TE06 Circuit Protective Devices</b>	
The candidate has to successfully install circuit protective devices to a three Phase distribution board, each circuit protective device is to be appropriate for the circuit it is protecting. The distribution board shall contain various circuits for differing loads including three phase and single phase circuits. The Candidate is to ensure all the test activity to comply with the wiring regulations.	
<b>TIE 07 Generators</b>	
The candidate has to successfully install and terminate a manual Double Pole Break - Before - Make changeover switch between a standby generator and the mains supply it is to feed. The switch is to be installed as per the manufacturer's specifications, the candidate is to configure the generator supply to a Neutral - Earth configuration	
<b>TIE08 Installing AC Electrical Motors</b>	<b>CCY3</b>
The candidate has to successfully cable terminate and test a flexible cable with threaded entry to Ex Rating including appropriate earthing (candidate must determine earth cable size) to a 3 Phase AC Induction motor and to change direction in line with the details on the electrical wiring diagram, all work is to comply with the relevant specification.	
<b>TIE09 DC Electrical Motors</b>	
The candidate has to successfully cable terminate and test a Dc shunt motor in line with the details on the electrical wiring diagram, all test activity is to comply with the wiring regulations.	
<b>TIE10 Lighting Equipment</b>	<b>CCY1</b>
The candidate has to successfully install a two way and intermediate lighting circuit, test and function check the lighting circuit. All test activity to comply with the wiring regulations.	
<b>TIE11 HV and Air Conditioning Systems</b>	
The candidate has to successfully install a thermostatic controller to a heating and ventilation air conditioning system. On completion the candidate is to test and function check. All test activity to comply with the wiring regulations.	
<b>TIE12 HV Equipment</b>	
The candidate has to successfully gland and terminate a 3.3kv cable into an appropriate enclosure, the cable must be correctly phased and a cold shrink cable termination kit is to be used. All test activity is to comply with the wiring regulations.	
<b>TIE013 Earthing Equipment</b>	<b>CCY1</b>
The candidate has to successfully install an earthing arrangement to a GRP or similar non-metallic Distribution board to which the Incoming supply and 2 outgoing circuits are supplied with SWA PVC cables and glands. Once the earthing is completed the candidate will carry out Earth loop impedance tests on the cables.	
<b>TIE14 Install, Gland and Terminate Power Cables</b>	<b>CCY 1</b>
The candidate has to successfully install and gland a 4 core 16mm 3 phase braided cable to a component and associated cable tray in line with details on the appropriate specification. The test will include the insulation and resistance test of the installed cable.	

## Electrical Installation (Cont.)

<b>TIE15 Installing Support Systems</b>	<b>CCY2</b>
The candidate has to successfully construct and install a cable support consisting of tray, and Unistrut components to specification	
<b>TIE16 Installing Screened Instrument Cable</b>	<b>CCY2</b>
The candidate has to successfully select and install a 3 pair x1.5mm individually screened braided cable between two junction boxes. The candidate will terminate both ends into the junction boxes using stuffing glands. All installation work will comply with the relevant specification	

## Electrical Maintenance

<b>TEM01 Protection Methods</b>	
The Candidate is required to carry out a visual check, continuity and polarity check on a test circuit with pre-set faults. All work to comply with the local regulations All test activity to comply with the wiring regulations.	
<b>TEM02 Maintaining Transformers</b>	<b>CCY1</b>
The candidate has to successfully carry out the inspection and maintenance of a power transformer, the inspection is to include visual inspection and testing of associated relays and temperature trip switches. All work to comply with the Electricity at Work regulations	
<b>TEM03 Electrical Hand Tools</b>	<b>CCY1</b>
The candidate has to successfully carry inspection and testing of Class1 and Class 2 portable electric tools. All testing is to be carried out strictly in accordance with the selected Portable appliance tester instructions and codes. All work to comply with the wiring regulations.	
<b>TEM04 Electrical Distribution Circuits</b>	
The candidate has to successfully carry inspection and testing of a three phase distribution board, insulation resistance tests on the feeder cable and all sub circuits are to be carried out and the results recorded. All testing is to be carried out strictly in accordance with wiring regulations and all work to comply with the Electricity at Work regulations 1989.	
<b>TEM05 Battery and UPS Systems</b>	<b>CCY2</b>
The candidate has to successfully carry out a Specific Gravity (SG) check on a sample of battery cells and compare to manufacturers recommendations on values and corrective actions, the candidate will take voltage readings of each cell and compare to manufacturers recommendations check the changeover switch and the bypass function. All work to comply with the relevant specification.	
<b>TEM06 Circuit Protection Devices</b>	<b>CCY2</b>
The candidate has to successfully carry out the inspection and maintenance of an Air Circuit Breaker following the manufacturer's instruction operation and maintenance manual, all work to comply with the relevant specification.	
<b>TEM07 Generators</b>	<b>CCY3</b>
The candidate has to successfully carry inspection and maintenance of a brushless emergency generator, the candidate is to carry out testing of the insulation resistance of the main machine windings and the excitation windings and the resistance of the exciter diodes. All testing is to be carried out strictly in accordance with wiring regulations and all work to comply with the Electricity at Work regulations 1989.	
<b>TEM08 AC Electric Motors</b>	<b>CCY3</b>
The candidate has to successfully carry inspection and maintenance of a three phase 415 volt Ac electric motor carrying out insulation resistance tests and continuity of the motor windings, the candidate is also to report on the condition of the motor bearings. All testing is to be carried out strictly in accordance with the relevant specification.	
<b>TEM09 DC Electric Motors</b>	
The candidate has to successfully carry inspection and maintenance of a DC electric motor carrying out inspection of the brushes and brush holders and condition and lubrication of the drive end and commutator end bearings, the candidate is also to report on the condition of the motor bearings and test the insulation resistance of the windings. All testing is to be carried out strictly in accordance with wiring regulations and all work to comply with the Electricity at Work regulations 1989.	
<b>TEM10 Lighting Equipment</b>	<b>CCY2</b>
The candidate has to successfully carry out the inspection and testing of lighting circuits in hazardous areas checking condition of fittings, seals, and components, the candidate shall take earth loop impedance readings for the circuit. All work to comply with the relevant specification and carry out associated tests including the confirmation of circuit protection via the MCB.	
<b>TEM11 HVAC Equipment</b>	
The candidate has to successfully carry out the inspection and testing of an air conditioning fan carrying out insulation resistance tests on the fan motor and continuity and earth leakage tests on the heating elements and heater bank. All test activity to comply with the Electricity at Work regulations 1989 and the wiring regulations.	

## Electrical Maintenance (Cont.)

<b>TEM12 HV Equipment</b>	
The candidate has to successfully carry out the inspection and maintenance of 3.3KV Vacuum breaker fan carrying out insulation resistance tests on the control wiring and inspecting all parts of the isolator to ensure they function smoothly operated manually. All test activity to comply with the Electricity at Work regulations 1989 and the wiring regulations.	
<b>TEM 13 Maintaining Motor Starters</b>	<b>CCY 3</b>
The candidate has to successfully carry out a fault diagnosis on an AC motor starter that is preventing the motor from starting, the candidate must diagnose the fault, take corrective action and start the motor. The candidate will then be required to remove, install and function check an overload device and add an additional start stop device and function check. All work is to comply with the relevant specification.	

## Instrument and Controls

<b>TMI01 Pressure Measurement and Systems</b>	<b>CCY2</b>
The candidate has to successfully re-range and assign a new "Tag No" to an electronic pressure transmitter using an appropriate hand held communicator in line with the equipment specification. Calibrate a pressure gauge and pressure switch using test equipment. The test will include a full function check of the transmitter to the new specification using a suitable test medium with the results recorded on the supplied Instrument Test Record.	
<b>TMI02 Re-ranging Level Measurement Systems</b>	<b>CCY3</b>
The candidate has to successfully reconfigure, calibrate and function check a displacement type level transmitter. The candidate will have to demonstrate they can work safely throughout the work scope and complete the appropriate documentation to the required standard.	
<b>TMI03 Flow Measurement Systems</b>	
The candidate has to successfully install and commission an Ultra-Sonic Flow Meter to an operational condition. The test will include the installation, alignment and function check of transducers and hook up to a flow transmitter. The Examiner will check for compliance at the conclusion on the commissioning.	
<b>TMI04 Temperature Measurement Systems</b>	<b>CCY1</b>
The candidate has to successfully reconfigure, calibrate and function check an electronic temperature transmitter. The candidate will have to demonstrate they can work safely throughout the work scope and complete the appropriate documentation to the required standard.	
<b>TMI05 Fire &amp; Gas Detection Systems</b>	
The candidate has to successfully commission an Open Path Gas Detector and carry out a function check on completion. The Gas Detector will be installed but not aligned or operational. At the completion of the test the candidate must have commissioned the gas detector to a state of full operation	
<b>TMI06 Dismantle and Assemble Process System Control Valve Assemblies</b>	<b>CCY2</b>
The candidate has to successfully overhaul a typical process control valve and set up for operational conditions. The candidate will have to demonstrate they can work safely whilst overhauling the valve using appropriate methods and techniques.	
<b>TMI07 Pneumatic Process Controllers</b>	
The candidate has to successfully inspect and overhaul a Spring Return Actuator. The candidate must fit a new set of seals to the actuator and complete the activity with a function check of the refurbished actuator.	
<b>TMI08 Programme Logic Control Systems</b>	
The candidate has to successfully apply a new value to a selected "alarm point" in a live PLC, uploading the new configuration to the online programme and backing up the new programme configuration in line with vendor procedures. The Examiner will provide the candidate with the tag number of the "alarm point" and value of the new alarm setting.	
<b>TMI09 Distributed Control Systems</b>	
The candidate has to successfully identify and change out an Input/Output Control Card (I/O Card) within an operational Distributed Control System. This requires the temporary flip to the "Back Up" I/O Card and re-commissioning to "Primary Control" on completion.	
<b>TMI10 Fiscal Metering Systems</b>	
The candidate has to successfully calibrate a Turbine Flow Meter to a known specification using a suitable test medium. Calibration must be to fiscal standards. The Examiner will check for compliance at the conclusion on the calibration.	
<b>TMI11 Protection Methods for Instruments in Hazardous Areas</b>	
The candidate has to successfully carry out a "Detailed" Ex Inspection of Ex equipment items and provide feedback to the Examiner on their suitability to be used in Zone 1 and 2 Hazardous Areas.	

## Instrument and Controls (Cont.)

<b>TMI12 Analysers</b>	
The candidate has to successfully fit a new Oxygen Measuring Probe into a Nitrogen Generation System and calibrate to the required specification. On completion the Candidate must check the operation of the nitrogen generation system to ensure it functions correctly in line with the Operational Procedures.	
<b>TMI13 Fluid Powered Systems</b>	<b>CCY2</b>
The candidate has to successfully isolate and check the pre charge pressure of an accumulator bank. Part of the test will be to re-pressurise any accumulator that does not meet the required specification using the appropriate equipment, materials and tools to recharge any non-compliant accumulator.	
<b>TMI14 Orifice Plate Flow Transmitter Commissioning</b>	<b>CCY2</b>
The candidate has to successfully re-commission a Differential Pressure Flow Transmission into a fully operation condition and calibrate the transmitter.	
<b>TMI15 Range Calculation and Commissioning of Level Measurement Systems</b>	<b>CCY2</b>
The candidate has to successfully reconfigure, calibrate and function check a differential pressure type level transmitter. The candidate will have to demonstrate they can work safely throughout the work scope and complete the appropriate documentation to the required standard.	
<b>TMI16 Maintain Process System Control Valve Assemblies</b>	<b>CCY3</b>
The candidate has to successfully overhaul a typical process control valve and set up for operational conditions. The candidate will have to demonstrate they can work safely whilst overhauling the valve using appropriate methods and techniques.	
<b>TMI17 Calibrate and Commission Process System Control Valve Assemblies</b>	<b>CCY3</b>
The candidate has to successfully change a pneumatic valve positioner and replace it with a 'Smart' valve positioner, carry out a full configuration and calibration commissioning procedure in line with the manufacturer's manuals.	

## Mechanical Maintenance

<b>TMM01 Maintaining Hydraulic Systems</b>	<b>CCY1</b>
The candidate has to successfully remove a hydraulic pump from a hydraulic system, replace the gears and seals, reinstall and test operation as per the specified drawings and within set tolerances.	
<b>TMM02 Maintaining Pneumatic Systems</b>	<b>CCY3</b>
The candidate has to successfully remove a pneumatic cylinder from a pneumatic system, replace the seals, reinstall and test operation as per the specified drawings and within set tolerances.	
<b>TMM03 Maintaining Compressed Air Systems</b>	
The candidate has to successfully diagnose a fault on a compressed air system, identify and remove the defective component, repair, replace and test operation as per the specified drawings and within set tolerances.	
<b>TMM04 Maintaining Bearings and Seals</b>	
The candidate has to successfully remove the rotating assembly from the test pump to dismantle all shaft components and complete shaft maintenance checks and record data on record sheet provided, prior to replacing all bearing and seal components and replacing the rotating assembly in the test pump.	
<b>TMM05 Maintaining Pumps</b>	<b>CCY3</b>
The candidate has to successfully disassemble the test pump, complete a full dimension check (recording and commenting on all dimensions on record sheets provided), replace the bearings, mechanical seal, shaft seals and gaskets and reassemble the test pump on completion using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMM06 Maintaining Geared Mechanisms</b>	
The candidate has to successfully disassemble the gear mechanism from a gearbox, replace the worm wheel and all relevant gaskets, measure / set gear tooth contact alignment on completion.	
<b>TMM07 Maintaining Mechanical Actuating Mechanisms</b>	
The candidate has to successfully disassemble the ratchet and pawl mechanism, inspect all parts, replace the ratchet, reassemble all components, and adjust to operational requirements on completion. Then successfully disassemble a valve actuator, replace the spring, reassemble and test on completion.	
<b>TMM08 Maintaining Belt and Chain Drives</b>	<b>CCY1</b>
The candidate has to successfully remove a belt and pulley from the belt drive test rig, replace the belt and pulley, align and tension drive system. Then successfully remove a chain and sprocket from the chain drive test rig, replace the chain and pulley, align and tension drive system.	
<b>TMM09 Maintaining Shafts and Couplings</b>	
The candidate has to successfully remove a coupling from the test rig assembly, inspect the coupling, and shaft, replace the coupling and align the pump and motor test rig assembly on completion using appropriate tools and equipment as per the specified drawings and within set tolerances.	

## Mechanical Maintenance (Cont.)

<b>TMM10 Maintaining Clutches</b>	
The candidate has to successfully disassemble a clutch, inspect all components, replace all wear parts and reassemble on completion using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMM11 Maintaining Brake Systems</b>	
The candidate has to successfully disassemble a brake system, inspect all components, replace all wear parts and reassemble on completion using appropriate tools and equipment as per the specified drawings and within set tolerances.	
<b>TMM12 Maintaining Valves</b>	<b>CCY3</b>
The candidate has to successfully disassemble a mechanical isolation valve, inspect, re-assemble, repack and carry out a leak test.	
<b>TMM13 Maintaining Diesel Engines</b>	
The candidate has to successfully - remove/replace cylinder head assembly, torque and set tappets. Remove 1 piston assembly, replace piston rings and reassemble into cylinder block, torque big end bearings on completion. Remove the engine timing belt, replace and set timing on completion.	
<b>TMM14 Maintaining HVAC Systems</b>	
The candidate has to successfully complete a maintenance routine of the 'Air Handling Unit and Air Conditioning Unit' within the test Heating, Ventilation and Air Conditioning system, removing, inspecting, cleaning and replacing components and testing operation of the system on completion.	
<b>TMM15 Diagnosing Mechanical Faults in Explosive Atmospheres</b>	
The candidate is required to carry out a "Detailed" Inspection of mechanical equipment and provide written feedback on their suitability in a Zone 1 Hazardous Area.	
<b>TMM16 Remove and Install Valves</b>	
The candidate has to successfully remove and reinstall mechanical valves. The candidate must demonstrate they can work safely whilst completing the removal and installation of mechanical valves.	
<b>TMI17 Charge Accumulator Systems</b>	<b>CCY2</b>
The candidate has to successfully isolate and check the pre charge pressure of an accumulator bank. Part of the test will be to re-pressurise any accumulator that does not meet the required specification using the appropriate equipment, materials and tools to recharge any non-compliant accumulator.	

## Mechanical Joint Integrity (MJI)

<b>TMJI10 Dismantle, Assemble and Hand Torque Flanged Joints</b>	<b>CCY2</b>
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and secure a flanged pipework joint as per the specified drawing and within set tolerances.	
<b>TMJI11 Dismantle, Assemble and Hand Torque Clamp Connector</b>	
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect clamp connector components and report faults, prepare, assemble and secure a clamp connector joint as per the specified drawing and within set tolerances.	
<b>TMJI18 Dismantle, Assemble and Tensioning Bolted Connections (Hydraulic Tensioning)</b>	
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tension a bolted connection using hydraulic tensioning equipment as per the specified drawing and within set tolerances.	
<b>TMJI19 Dismantle, Assemble and Hydraulically Torque Flanged Joints</b>	
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tighten a bolted connection using hydraulic torque equipment as per the specified drawing and within set tolerances.	
<b>TMJI20 Dismantle, Assemble and Hydraulically Torque Clamp Connector Joints</b>	
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect clamp connector components and report faults, prepare, assemble and tighten clamp connector joint using hydraulic torque equipment to a specified drawing and within set tolerances.	
<b>TMJI21D Dismantle, Assemble and Hydraulically Torque Flanged Joints Sub Sea</b>	
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tighten a bolted connection using subsea hydraulic torque equipment as per the specified drawing and within set tolerances.	
<b>TMJI21W Dismantle, Assemble and Hydraulically Torque Flanged Joints Sub Sea</b>	
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tighten a bolted connection using subsea hydraulic torque equipment as per the specified drawing and within set tolerances in a controlled submerged environment.	

## Mechanical Joint Integrity (MJ) (Cont.)

<b>TMJI22D Dismantle, Assemble and Tensioning Bolted Connections (Hydraulic Tensioning) Sub Sea Connections</b>
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tension a bolted connection using subsea hydraulic tensioning equipment as per the specified drawing and within set tolerances.
<b>TMJI22W Dismantle, Assemble and Tensioning Bolted Connections (Hydraulic Tensioning) Sub Sea Connections</b>
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tension a bolted connection using subsea hydraulic tensioning equipment as per the specified drawing and within set tolerances in a controlled submerged environment .
<b>TMJI31 Assemble and Tensioning Bolted Connections (Hydraulic Tensioning) - Wind Turbine Connections</b>
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tension a wind turbine bolted connection using hydraulic tensioning equipment as per the specified drawing and within set tolerances.
<b>TMJI32 Assemble and Hydraulically Torque Flanged Joints - Wind Turbine</b>
The candidate has to successfully use the appropriate tools and equipment to dismantle, inspect flanges and report faults, prepare, assemble and tighten a wind turbine bolted connection using hydraulic torque equipment as per the specified drawing and within set tolerances.

### ECITB/STEP CHANGE IN SAFETY MJ MODEL

Unsuccessful TMJI candidates (TMJI10,11,18,19,20,21&22) must wait a minimum period of 4 weeks between the unsuccessful test session and next test session to allow for a period of training to address any skills or knowledge gaps.

## Deck Crew

<b>TDCR 01 Prepare to Carry Out Lifting Operations</b>
The candidate has to carry out the appropriate actions and procedures in preparation to facilitate a lifting operation in the offshore environment.
<b>TDCR 02 Conduct Simple Lift of Pre-Slung Load, Clear Line of Sight(Banksman &amp; Load Handler)</b>
The candidate has to lift a pre-slung load (using appropriately selected resources) safely, in accordance with appropriate industry and site-specific regulations/procedures
<b>TDCR 03 Conduct Simple Loose Lift, Clear Line of Sight (Load Handler)</b>
The candidate has to conduct a simple loose lift of construction materials safely, in accordance with appropriate industry and site-specific regulations/procedures.
<b>TDCR 04 Conduct Simple Lifting Operation Use of Hand Signals (Banksman)</b>
The candidate has to conduct a simple lift of construction materials using hand signals safely, in accordance with appropriate industry and site-specific regulations/procedures.
<b>TDCR 05 Conduct Blind Lifting Operation, Use of Radio Communications (Banksman)</b>
The candidate has to conduct "blind" lifting operation by use of radio communication of construction materials safely, in accordance with appropriate industry and site-specific regulations/procedures.
<b>TDCR 06 Conduct Complicated Lifting Operation (Load Handler)</b>
The candidate has to conduct a complicated lifting operation of construction materials safely, in accordance with appropriate industry and site-specific regulations/procedures.

## Welding Preparation

<b>Welding Pipe Preparation</b>
The candidate has to successfully prepare and set up backed and un-backed butt joints in different pipe materials (below) in the inclined position (pipe axis inclined 45° and fixed) ready for the selected welding process to the welder approval standards specified in BS EN 287. Then store the equipment safely after use.
<b>TTIG 01 Prepare &amp; Setup Butt Welds in Carbon Steel Pipe</b>
<b>TTIG 02 Prepare &amp; Setup Butt Welds in Stainless Steel Pipe</b>
<b>TTIG 03 Prepare &amp; Setup Butt Welds in Aluminium Alloy Pipe</b>
<b>TTIG 06 Prepare &amp; Setup Butt Welds in Nickel and Nickel Alloy Pipe</b>
<b>TMIG 02 Prepare &amp; Setup Butt Welds in Carbon and low Alloy Steel Pipe</b>
<b>TFCAW 03 Prepare &amp; Setup Butt Welds in Carbon and Low Alloy Steel Pipe</b>
<b>TMMA 01 Prepare &amp; Setup Butt Welds in Carbon and Low Alloy Steel Pipe</b>
<b>TMMA 02 Prepare &amp; Setup Butt Welds in Stainless Steel Pipe</b>
<b>TMMA 03 Prepare &amp; Setup Butt Welds with TIG Root in Carbon Low Alloy Steel Pipe</b>
<b>TMMA 05 Prepare &amp; Setup Butt Welds with TIG Root in Stainless Steel Pipe</b>

## Welding Preparation (Cont.)

<b>Welding Plate Preparation</b>
The candidate has to successfully prepare and set up backed and un-backed butt joints in different plate materials (below) ready for the selected welding process to the welder approval standards specified in BS EN 287. Then store the equipment safely after use.
<b>TTIG 03 Prepare &amp; Setup Butt Welds in Aluminium Alloy Plate</b>
<b>TTIG 04 Prepare &amp; Setup Butt Welds in Carbon and Low Alloy Steel Plate</b>
<b>TTIG 05 Prepare &amp; Setup Butt Welds in Nickel and Nickel Alloy Plate</b>
<b>TTIG 08 Prepare &amp; Setup Butt Welds in Stainless Steel Plate</b>
<b>TMIG 01 Prepare &amp; Setup Butt Welds in Stainless Steel Plate</b>
<b>TMIG 03 Prepare &amp; Setup Butt Welds in Nickel and Nickel Alloy Plate</b>
<b>TMIG 04 Prepare &amp; Setup Butt Welds in Carbon and low Alloy Steel Plate</b>
<b>TMIG 05 Prepare &amp; Setup Butt Welds in Aluminium and Aluminium Alloy Plate</b>
<b>TFCAW 01 Prepare &amp; Setup Butt Welds in Carbon and Low Alloy Steel Plate</b>
<b>TFCAW 03 Prepare &amp; Setup Butt Welds in Stainless Steel Plate</b>
<b>TMAA 04 Prepare &amp; Setup Butt Welds in Carbon and Low Alloy Steel Plate</b>
<b>TMAA 06 Prepare &amp; Setup Butt Welds in Nickel and Nickel Alloy Plate</b>
<b>TMAA 07 Prepare &amp; Setup Butt Welds with TIG Root in Carbon and Low Alloy Steel Plate</b>
<b>TMAA 08 Prepare &amp; Setup Butt Welds in Stainless Steel Plate</b>
<b>TMAA 09 Prepare &amp; Setup Butt Welds with TIG Root in Nickel and Nickel Alloy Plate</b>

## Non-Critical Welding

<b>Non-Critical Pipe Welding</b>
The candidate must prepare, set up and weld the pipe joint in line with the correct Weld Procedure Specification (WPS) provided. The completed welded joint must then pass visual examination as defined on the Examiner Result Sheet. The material is low carbon steel and the processes and positions are shown below.
<b>TNCMIG07 Non-Critical MIG Pipe Welding-1G Single V Butt Weld</b>
<b>TNCMMA07 Non-Critical MMA Pipe Welding-G Single V Butt Weld</b>
<b>TNCTIG 07 Non-Critical TIG Welding-1G Single V Butt Weld (Pipe)</b>
<b>Non-Critical Plate Welding</b>
The candidate must prepare, set up and weld the plate joint in line with the correct Weld Procedure Specification (WPS) provided. The completed welded joint must then pass visual examination as defined on the Examiner Result Sheet. The material is low carbon steel and the processes and positions are shown below.
<b>TNCMIG01 Non-Critical MIG Plate Welding-1G Butt (Square Edge)</b>
<b>TNCMIG02 Non-Critical MIG Plate Welding-1G Single V Butt Weld</b>
<b>TNCMIG03 Non-Critical MIG Plate Welding-1F Single-Sided Fillet Weld</b>
<b>TNCMIG04 Non-Critical MIG Plate Welding-2G Butt (Square Edge)</b>
<b>TNCMIG05 Non-Critical MIG Plate Welding-2G Single V Butt Weld</b>
<b>TNCMIG06 Non-Critical MIG Plate Welding-2F Single-Sided Fillet Weld</b>
<b>TNCMMA01 Non-Critical MMA Plate Welding-1G Butt (Square Edge)</b>
<b>TNCMMA02 Non-Critical MMA Plate Welding-1G Single V Butt Weld T</b>
<b>TNCMMA03 Non-Critical MMA Plate Welding-1F Single-Sided Fillet Weld</b>
<b>TNCMMA04 Non-Critical MMA Plate Welding-2G Butt (Square Edge)</b>
<b>TNCMMA05 Non-Critical MMA Plate Welding-2G Single V Butt Weld</b>
<b>TNCMMA06 Non-Critical MMA Plate Welding-2F Single-Sided Fillet Weld</b>
<b>TNCTIG 01 Non-Critical TIG Plate Welding-1G Butt (Square Edge)</b>
<b>TNCTIG 02 Non-Critical TIG Plate Welding-1G Single V Butt Weld</b>
<b>TNCTIG 03 Non-Critical TIG Plate Welding-1F Single-Sided Fillet Weld</b>
<b>TNCTIG 04 Non-Critical TIG Plate Welding-2G Butt (Square Edge)</b>
<b>TNCTIG 05 Non-Critical TIG Plate Welding-2G Single V Butt Weld</b>
<b>TNCTIG 06 Non-Critical TIG Plate Welding-2F Single-Sided Fillet Weld</b>
<b>TNCTFCAW 01 Non-Critical FCAW Thick Plate Welding-3G Single V Butt Weld</b>

## Onsite Machining

<b>TOSM 01 On-site Pipe Cutting and Pipe End Weld Preparation</b>
The candidate has to cut a pipe and implement a weld preparation utilising a clamshell design machine, using the correct resources and equipment safely, in accordance with appropriate industry and site specific regulations / procedures.

## Onsite Machining (Cont.)

<b>TOSM 02 On-site Simple Flange Facing</b>
The candidate has to inspect, prepare and reinstate the surface finish on a raised face flange using the correct resources and equipment safely, in accordance with appropriate industry and site specific regulations / procedures.
<b>TOSM 03 On-site Drilling and Thread Tapping</b>
The candidate has to inspect, prepare and drilling and thread tapping operations in accordance with specified drawing and a supplied sample workpiece using the correct resources and equipment safely, in accordance with appropriate industry and site specific regulations / procedures.
<b>TOSM 04 On-site Milling</b>
The candidate has to inspect, prepare and carry out milling operations on a sample workpiece, using the correct resources and equipment safely, in accordance with appropriate industry and site specific regulations / procedures.
<b>TOSM 05 On-site joint Face –Advanced- Ring Type Joint</b>
The candidate has to inspect, prepare and reinstate the surface finish on a ring type joint using the correct resources and equipment safely, in accordance with appropriate industry and site specific regulations / procedures

## Machining

<b>TMMC01 Preparing and Using Lathes for Turning Operations</b>
The candidate has to select and apply correct methods of work holding, set up a selection of cutting tools and required speeds and feeds and work from given drawings to turn components to the required diameters and lengths within stated tolerances to include the components having parallel, stepped and tapered profiles, drilling and reaming operations and cutting threads using machine taps and split button dies.
<b>TMMC02 Preparing and Using Universal Milling Machines</b>
The candidate has to select and apply correct methods of work holding, set up a selection of cutting tools and required speeds and feeds and work from given drawings to mill components to the required size within stated tolerances to include horizontal, vertical and angular faces and slots.
<b>TMMC04 Preparing and Using Surface Grinders</b>
The candidate has to select and apply correct methods of work holding, set up a selection of grinding wheels and required speeds and feeds and work from given drawings to set, operate and produce components to the required size within stated tolerances.
<b>TMMC05 Preparing and Using Surface Grinders</b>
The candidate has to select and apply correct methods of work holding, set up a selection of drills / tools, set required speeds and feeds and work from given drawings to set, operate and produce components to the required size within stated tolerances.
<b>TMMC06 Preparing and Using Lathes for Advanced Turning Operations</b>
The candidate has to select and apply correct methods of work holding, set up a selection of cutting tools and required speeds and feeds and work from given drawings to turn components to the required diameters and lengths within stated tolerances to include having internal grooving & boring, parting, eccentric diameters and producing threads by single point & multi-start.
<b>TMMC07 Preparing and Using Universal Milling Machines for Advanced Milling Operations</b>
The candidate has to select and apply correct methods of work holding, set up a selection of cutting tools and required speeds and feeds and work from given drawings to mill components to the required size within stated tolerances to include shoulder, face, profile, slot, holes & cavities and gear milling.
<b>TIMMC 08 Preparing and Using Horizontal Boring Machines</b>
The candidate has to select and apply appropriate methods of workholding, tooling, speeds and feeds to set up and produce component features to given drawings and stated tolerances.
<b>TIMMC 09 Preparing and Using Surface and Cylindrical Grinding Machines</b>
The candidate has to select and apply appropriate methods of workholding and tooling, to set up and produce ground component features to given drawings and stated tolerances.
<b>TMMC10 Producing Components using CNC Turning Machines</b>
The candidate has to select and apply correct methods of work holding, set up a selection of cutting tools and required speeds and feeds and work from given drawings to produce CNC turn components to the required diameters and lengths within stated tolerances to include the components having parallel, stepped and tapered profiles, drilling and reaming operations and cutting threads.
<b>TMMC11 Producing Components using CNC Milling Machines</b>
The candidate has to select and apply correct methods of work holding, set up a selection of cutting tools and required speeds and feeds and work from drawings to CNC mill components to the required size within stated tolerances to include horizontal, vertical and angular faces and slots.

## Production Operations

<b>TPOT01 Simple Isolation</b>
The candidate has to plan, design and apply a "Simple Process Isolation" to the isolation specification and in line with the HSG253 Standards.
<b>TPOT02 Complex Isolation</b>
The candidate has to plan, design and apply a "Complex Process Isolation" to the isolation specification and in line with the HSG253 Standards.
<b>TPOT03 Vessel Entry Isolation</b>
The candidate has to plan, design and apply a "Vessel Entry Isolation" to the isolation specification and in line with the HSG253 Standards.
<b>TPOT04 Simple De-Isolation</b>
The candidate has to plan and facilitate a "Simple Process De-Isolation" in line with the HSG253
<b>TPOT05 Complex De-Isolation</b>
The candidate has to plan, design and apply a "Complex Process De-Isolation" in line with the HSG253 Standards.
<b>TPOT06 Vessel Entry De-Isolation</b>
The candidate has to plan, design and apply a "Vessel Entry De-Isolation" in line with the HSG253 Standards.

## Thermal Insulation

<b>TI01 Thermal Insulation</b>
The candidate has to apply insulation and cladding to a pipework test rig at four specific points using the correct materials and techniques to the specified tolerances.

## Sprayer Blaster Painter

<b>TICA-P 01 Abrasive Blast Cleaning (Direct Pressure)</b>
The candidate has to successfully pre-clean, abrasive blast and hand clean a mild steel plate to a specific standard in readiness for application of a protective coating. During the test, the candidate will undertake the 2 roles of Blaster and Pot man.
<b>TICA-A02 Industrial Coatings Brush Application</b>
The candidate has to successfully select a coating, mix and brush apply an industrial coating to an abrasive blast cleaned mild steel test plate, in a safe manner, effective and efficient manner to the specification/manufacturer's recommendations.
<b>TICA-A01 Industrial Coatings Airless Spray Application</b>
The candidate has to successfully select a coating, mix and apply an industrial (two-part) coating to an abrasive blast cleaned mild steel test plate, in a safe manner, effective and efficient manner to the specification/manufacturer's recommendations. During the test, the candidate will undertake the 2 roles of Spray gun operator and Pump man.

## Industrial Drone Operations

<b>IDO01 Industrial Drone Operations (Multi Rotor Sub 20 Kgs)</b>
The candidate has to successfully complete the pre-flight actions for a hypothetical scenario based industrial drone operation (using appropriately selected resources) followed by preparing for and undertaking a series of platform specific flight manoeuvres in a designated flight test area, safely and in accordance with the appropriate industry and site specific regulations and procedures.
<b>IDO02 Industrial Drone Operations (Fixed Wing Sub 20 Kgs)</b>
The candidate has to successfully complete the pre-flight actions for a hypothetical scenario based industrial drone operation (using appropriately selected resources) followed by preparing for and undertaking a series of platform specific flight manoeuvres in a designated flight test area, safely and in accordance with the appropriate industry and site specific regulations and procedures.