**BTEC Assignment Brief**

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| **Qualification** | Pearson BTEC Level 3 National Diploma in EngineeringPearson BTEC Level 3 National Extended Diploma in Engineering  |
| **Unit number and title** | **Unit 13: Welding Technology** |
| **Learning aim(s)** (For NQF only) | **C:** Carry out practical welding skills safely to join metallic materials together |
| **Assignment title** | Practical welding |
| **Assessor** |  |
| **Issue date** |  |
| **Hand in deadline**  |  |
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| **Vocational Scenario or Context** | You are a final year apprentice within an engineering organisation which specialises in fabrication activities. Your supervisor has been observing your progress and is impressed by your knowledge and understanding of the theory which underpins the welding techniques, your ability to select appropriate welding processes for given applications and your understanding of how welding affects metallic materials. He has asked you to produce a weld procedure specification for two different welds and to create these welds safely. |
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| **Task 1** | You are going to use suitable welding processes to complete two welded joints accurately. You must use two different processes and plan and produce welds using two different materials. **To do this:** Your tutor will provide you with information about two welded joints that need to be produced, including information about materials and the required accuracy of the welded joints. You need to:• Research sources of information sources that are relevant to the welding processes, including safety instructions, job instructions, engineering drawings, quality control documentation, existing weld procedure specification (WPS), and record and reporting sheets.You will also need to:* Research tools and equipment that are used for welding processes, including the function of component parts, the working environment and methods of assembling welding equipment.
* Research manual and mechanised processes that are used to produce welded joints. You should consider factors related to weld bead and morphology in relation to the settings and parameters used and the consumables that can be used to carry out the process.

**You then need to:**Produce a weld procedure specification plan (WPS) for each of the two welds. The WPS should include information about: a) welding parameters and settings; b) tools and equipment; and c) health and safety considerations when carrying out the welds. Your plan should include:* a weld procedure specification plan for two different types of weld. The two welds should use two different welding positions (e.g. flat (PA), horizontal vertical (PB), horizontal (PC), vertical upwards (PF), vertical downwards (PG), overhead (PE)) and use an appropriate welding technique.
* The WPS should include your selected welding settings and parameters for the two joints. This should include reference to electric current and voltage, wire speed and/or gas flow rates, filler diameter, gas shielding system. You should also include information about consumables that you plan to use, including electrodes, filler wires and gases.
* Information about safe working practices, including using risk assessments, the use of PPE and other control measures. You should identify the hazards that are likely to be encountered such as fumes, Electro Magnetism (EM) and Ultra Violet (UV) radiation. You should also consider electrical safety, accident prevention, fire prevention, equipment maintenance and checking the condition of equipment.

You should then create your two welded joints safely, efficiently and effectively, in accordance with your WPS. You should complete each weld to a length of at least 50mm.On completion of both of the welds, you should carry out visual inspections, and record the outcomes of your visual inspection checks of the finished welded joints**General note for assessors**Where possible the assessor should give different learners different specifications to work with. |
| **Checklist of evidence required**  | A report containing a welding procedure specification plan, along with inspection reports to confirm the conformity of the welded joints to a given specification. This should be supported by annotated photographs, observation reports,  |
| **Criteria covered by this task:** |
| Unit/Criteria reference | To achieve the criteria you must show that you are able to: |
| 13/C.D3 | Refine, during the process, the planning and production of welded joints using two different materials, processes and welding positions safely accurately, efficiently and effectively |
| 13/C.M3 | Produce a detailed and accurate plan to create two welded joints using two different welding process safely |
| 13/C.M4 | Produce welded joints, using two different materials, processes and welding positions, safely and accurately |
| 13/C.P5 | Produce a plan to create two welded joints using two different welding process safely |
| 13/C.P6 | Produce welded joints, using two different materials, processes and welding positions safely |
| **Sources of information to support you with this Assignment** | BooksDavies A; Science and Practice of Welding, Volume 1;Cambridge University Press, 1993; ISBN 9780521435659Davies A; Science and Practice of Welding, Volume 2; Cambridge university Press, 1993; ISBN 9780521435659Raj B, Shankar V and Bhaduri; A Welding Technology for Engineers; Alpha Science International Ltd, 2005; ISBN 9781842651940Smith B; Welding Practice; Routledge, 2014; ISBN 9781317761365Timings R; Fabrication and Welding Engineering; Newnes, 2008; ISBN 9780750666916Weman K; Welding Processes Handbook; Woodhead Publishing, 2012; ISBN 9780857095107Websites<http://me-mechanicalengineering.com/guidelines-for-welding-process-selection/><http://www.mechengg.net/2015/03/selection-of-welding-processes-and.html>http://www.gowelding.com/wp/wps.htm**resources may be found at** [http://qualifications.pearson.com/en/support/published-resources.html#step1](http://qualifications.pearson.com/en/support/published-resources.html) |
| **Other assessment materials attached to this Assignment Brief** |  |