

Qualification Name: NCFE Level 2 Certificate in Engineering Studies Mark Scheme- March 2018

Task 1			
Assessment criteria:	Pass:	Merit:	Distinction:
1.1 Distinguish between the common systems of measurement in engineering drawing	Learners will distinguish between the common systems of measurement in engineering drawing	Learners will clearly distinguish between the common systems of measurement in engineering drawing in detail	Learners will perceptively distinguish between the common systems of measurement in engineering drawing in detail
Range:	Systems: pre- and post-decimalisation		
	<p>Learners will identify both common systems of measurement correctly</p> <p>Metric Imperial</p> <p>Learners will identify 2 common units of measurement for each system of which most will be correct for each system.</p> <p>Any units of measurement accepted</p> <p>Learners will provide a basic explanation of the distinguishers between the 2 systems that is mostly accurate.</p> <p>Explanation may be in bullet form.</p>	<p>Learners will identify both common systems of measurement correctly</p> <p>Metric Imperial</p> <p>Learners will identify 2 common units of measurement for each system of which most will be correct for each system.</p> <p>Any units of measurement accepted</p> <p>Learners will provide a clear explanation of the distinguishers between the 2 systems that is mostly accurate.</p>	<p>Learners will identify both common systems of measurement correctly</p> <p>Metric Imperial</p> <p>Learners will identify 2 common units of measurement for each system of which all will be correct for each system.</p> <p>Any units of measurement accepted</p> <p>Learners will provide a clear perceptive explanation of the distinguishers between the 2 systems that is fully accurate.</p>
Glossary of Terms:	Distinguish: Differentiate, tell apart.	Clearly: A statement that is set out logically and without possibility of misunderstanding	Perceptively: Showing insight and understanding

Task 1			
Assessment criteria:	Pass:	Merit:	Distinction:
1.2 Describe how measuring devices are used in engineering drawing	Learners will describe how measuring devices are used in engineering drawing	Learners will describe in detail how measuring devices are used in engineering drawing	Learners will perceptively describe how measuring devices are used in engineering drawing
Range:	Measuring devices: e.g. manual, semi-automatic and automatic		
NB: Ruler – not accepted if used to draw a straight line	Learners will describe more than one piece of measuring device correctly . Descriptions will be basic with minimal detail, describing the use for planning and/or preparing and/or producing of engineering drawings.	Learners will describe three or more measuring device correctly . Descriptions will be detailed and mostly accurate, describing the use for planning and preparing and producing of engineering drawings. Descriptions for each accurate device identified may not be fully formed to include all planning, preparing and producing for each but learners will explain 2 of the following: planning, preparing and producing.	Learners will describe all pieces of measuring devices correctly . Descriptions will be detailed and perceptively accurate, describing the use for planning and preparing and producing of engineering drawings for all pieces of drawing equipment.
Glossary of Terms:	Describe: Define, explain	Detailed: Thorough and in depth	Perceptively: Showing <i>insight</i> and understanding

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
1.3 Describe the purpose of scale and proportion in engineering drawing	Learners will describe the purpose of scale and proportion in engineering drawing	Learners will coherently describe the purpose of scale and proportion in engineering drawing	Learners will describe the purpose of scale and proportion in engineering drawing showing critical judgement
Range:	No range for this assessment criterion		
	<p>The learner will provide a basic description.</p> <p>The learner will provide a basic description that is partially accurate of the difference in proportion of the two images.</p> <p>And/or</p> <p>The learner will provide a basic description that is partially accurate of the importance of proportion used in the image.</p> <p>The description may be in bullet form.</p>	<p>The learner will provide a coherent description.</p> <p>The learner will provide a coherent description that is fully accurate of the difference in proportion of the two images.</p> <p>And/or</p> <p>The learner will provide a coherent description that is fully accurate of the importance of proportion used in the image.</p>	<p>The learner will provide a coherent description.</p> <p>The learner will provide a coherent description that is fully accurate of the difference in proportion of the two images.</p> <p>And/or</p> <p>The learner will provide a coherent description that is fully accurate of the importance of proportion used in the image.</p> <p>And</p> <p>The learner will evidence critical judgment and understanding of how scale and proportion would inform engineering drawings by providing some analysis and/or evaluation and/or opinion, and or reasons.</p>
Glossary of Terms	Describe: <i>Define, explain</i>	Coherent: <i>Logically connected</i>	Critical judgement: <i>Application of a critical understanding informing decisions</i> Critical understanding: <i>Deconstruct, analyse and evaluate and express opinion</i>

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
2.1 Demonstrate the correct layout of a design sheet for 2D and 3D engineering drawings	Learners will demonstrate the correct layout of a basic design sheet for 2D and 3D engineering drawings	Learners will demonstrate the correct layout of a detailed design sheet for 2D and 3D engineering drawings	Learners will skilfully demonstrate the correct layout of a sophisticated design sheet for 2D and 3D engineering drawings
Range:	2.1 2D and 3D engineering drawings: <ul style="list-style-type: none"> • 2D: e.g. first angle projection, third angle projection, layout drawings, circuit diagrams, schematic diagrams, assembly drawings, plan views, freehand sketch • 3D: e.g. isometric, exploded isometric, oblique, Plano metric, perspective, assembly drawings, freehand sketch (this is not an exhaustive list) 		
	Learners will provide a basic and mostly accurate layout of a design sheet for both their 2D and 3D engineering drawings <ul style="list-style-type: none"> • Correct layout to include: <ul style="list-style-type: none"> ○ a border ○ title block • Layout is basic and title block does not have to be completed in full 	Learners will provide a detailed and mostly correct layout of a design sheet for both their 2D and 3D engineering drawings <ul style="list-style-type: none"> • Correct layout to include: <ul style="list-style-type: none"> ○ a border ○ title block • Layout is mostly accurate and the title block does not have to be completed in full • Layout used has been stated in the title block 	Learners will provide a fully correct layout of a design sheet for both their 2D and 3D engineering drawings <ul style="list-style-type: none"> • Correct layout to include: <ul style="list-style-type: none"> ○ a border ○ title block ○ method of projection • Layout and title block is fully accurate and completed in full
Glossary of Terms		Detailed: <i>Thorough and in depth</i>	Skilfully: <i>A process or task underpinned by technical knowledge and a degree of mastery</i>

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
2.2 Apply appropriate scales to all drawings	Learners will apply appropriate scales to all drawings	Learners will apply appropriate and realistic scales to all drawings	Learners will skilfully apply appropriate and realistic scales to all drawings
Range:	No range for this assessment criteria.		
	<p>Learners will use a scale in the production of their 2D and 3D drawings</p> <p>The learner will have used a simple scale for the production of their drawings and will be mostly accurately applied.</p>	<p>Learners will use an appropriate scale in the production of both their 2D and 3D drawings.</p> <p>The scale used will be realistic which reflects the original size.</p> <p>The learners drawing may not fit correctly on the media used.</p>	<p>Learners will use an appropriate scale in the production of both their 2D and 3D drawings.</p> <p>The scale used will be realistic which reflects the original size.</p> <p>The learner will use a scale that demonstrates the effective use of space on the media that is been used to produce their drawing.</p> <p>The application of scale will be accurate and completed fully for both 2D and 3D drawings evidencing technical skill/knowledge (accepting conversion errors).</p>
Glossary of Terms	<p>Appropriate: <i>Relevant to the purpose/task</i></p>	<p>Appropriate: <i>Relevant to the purpose/task</i> Realistic: <i>Relevant and in context</i></p>	<p>Skilfully: <i>A process or task underpinned by technical knowledge and a degree of mastery</i> Appropriate: <i>Relevant to the purpose/task</i> Realistic: <i>Relevant and in context</i></p>

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
2.3 Demonstrate the accurate use of drawing tools and equipment	<i>Learners will demonstrate the accurate use of drawing tools and equipment</i>	<i>Learners will demonstrate the accurate use of drawing tools and equipment showing experimentation</i>	<i>Learners will skilfully demonstrate the accurate use of drawing tools and equipment showing experimentation</i>
Range:	Reference to only one drawing		
<p>Learners understood the application of drawing equipment, which is implied in the production of assessment criterion 2.4.</p> <p>Experimentation:</p> <ul style="list-style-type: none"> • Shading • Hidden Lines • Screw Holes • Rendering 	<p>The learners will have evidenced the use of some drawing tools and equipment</p> <p>The drawing tools and equipment will be used with minimal technical skill and accuracy.</p>	<p>Learners will have evidenced the accurate use of drawing tools and equipment.</p> <p>The drawing tools and equipment will be used with minimal technical skill and accuracy.</p> <p>The learner's will evidence some experimentation of basic drawing tools and equipment in either their 2D or 3D drawing.</p>	<p>Learners will have evidenced the skillfull use of drawing tools and equipment.</p> <p>The drawing tools and equipment will be used with technical skill and accuracy.</p> <p>The learner's will evidence some experimentation of drawing tools and equipment.</p> <p>The learner's choice of experimentation will elicit technical knowledge of the tools and equipment used.</p> <p>Learners will evidence the application of technical skill and some mastery in use and application of the selected drawing tools and equipment in both the 2D and 3D drawing.</p> <p>The learner will mostly demonstrate accuracy of skills (Skilfully apply) whilst using less basic drawing tools and equipment.</p>
Glossary of Terms		Experimentation: <i>To try different methods and techniques</i>	Skilfully: <i>A process or task underpinned by technical knowledge and a degree of mastery</i> Experimentation: <i>To try different methods and techniques</i>

Task 3			
Assessment criteria	Pass	Merit	Distinction
2.4 Present their final 2D and 3D engineering drawings showing evidence of the process involved in its production	<i>Learners will present their final 2D and 3D engineering drawings showing evidence of the process involved in its production</i>	<i>Learners will present their final 2D and 3D engineering drawings showing evidence of the process involved in its production, justifying their choices</i>	<i>Learners will present their final 2D and 3D engineering drawings showing evidence of the process involved in its production showing critical judgement</i>
Range:	2.1 2D and 3D engineering drawings: <ul style="list-style-type: none"> 2D: e.g. first angle projection, third angle projection, layout drawings, circuit diagrams, schematic diagrams, assembly drawings, plan views, freehand sketch 3D: e.g. isometric, exploded isometric, oblique, Plano metric, perspective, assembly drawings, freehand sketch (this is not an exhaustive list) 		
Title Block <ul style="list-style-type: none"> Name Some additional info Border Material Finish 	<p>Learners will present their final 2D and 3D drawings in either manual or CAD formats.</p> <p>Learners will present basic drawings of both 2D and 3D engineering components, a title block and border will be present but may be incomplete or not fully accurate.</p> <p>The drawings will be set out mostly appropriately and on the correct paper size for at least one of the drawings.</p> <p>At least one drawing should be demonstrate some dimensioning that is partially accurate.</p> <p>The drawing must demonstrate the use of accurate scale and sizing against the sketch provided for at least one drawing.</p>	<p>Learners will present their final 2D and 3D drawings in either manual or CAD formats</p> <p>Learners will present mostly accurate drawings of both 2D and 3D engineering components.</p> <p>Learners will present basic drawings of both 2D and 3D engineering components a title block and border will be present but may be incomplete or not fully accurate.</p> <p>Learner's drawings will contain some dimensions which are mostly accurate.</p> <p>Presentation in a hardcopy with the images set out appropriately on the correct paper size.</p> <p>The drawing must demonstrate the use of accurate scale and sizing against the sketch provided for both drawings</p> <p>Learners will evidence justification of at least one process they used by providing some clear analysis and/or evaluation and/or</p>	<p>Learners will present their final 2D and 3D drawings in either manual or CAD formats</p> <p>Learners will present fully accurate drawings of both 2D and 3D engineering components</p> <p>Learners will complete drawings that are free from double lines, smudges and that are clean and clear. Learners will demonstrate the use of dimensions, scale and projection and correctly sized holes in the drawn product to demonstrate effective and realistic drawing standards</p> <p>Learner's drawings will both be dimensioned. Dimensions will be fully accurate.</p> <p>Presentation in a hardcopy with the images set out appropriately on the correct paper size.</p> <p>The learner will include a fully completed title block and a border that is fully accurate.</p> <p>The drawing must demonstrate the use of accurate scale and sizing against the sketch provided for both drawings</p>

		opinion, and or reasons for their choice of processes/s.	Learners will evidence critical understanding of the production process and provide some clear analysis and/or evaluation and/or opinion, and or reasons for their choices/processes.
Glossary of Terms		Justify: <i>Give reasons or evidence to support an opinion</i>	Critical judgement: <i>Application of a critical understanding informing decisions</i> Critical understanding: <i>Deconstruct, analyse and evaluate and express opinion</i>