

# **INDUSTRIAL DRAFTING**

**5725**

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## **Determining Dimensional Tolerances**

Module 13

872 414

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### **THEORY EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
DETERMINING DIMENSIONAL TOLERANCES  
(Module 13)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to determine dimensional tolerances.

No course notes or other documents are allowed.

The suggested duration of the examination is three hours.

The examination should consist of a total of twenty problems, as follows:

Component 1.1

For questions 1 and 2:

- Produce a complete list of relevant functional conditions.  
(Use two different drawings, each one with three to five functional conditions to be listed.)

Component 1.2

For questions 3 and 4:

- Assign suitable values (CLEARANCE FIT MAX./min.) for the functional conditions listed.  
(Example: For a 20 H8/f7 adjustment,  $J = 0.074$  and  $j = 0.020$ .)

Component 2.1

For questions 5 to 8:

- Establish dimension chains with a minimum number of vectors based on the conditions established (JA, JB, JC and JD).

Component 3.1

For questions 9 to 16:

- Calculate the minimum and maximum linear values on the basis of the functional conditions.  
Note: - The dimensions chains should be entered.  
- The minimum and maximum values of one dimension constitute one answer.

Component 4.1

For questions 17 to 20:

- Properly represent the geometric tolerances in the appropriate spots.  
Note: - The reference surfaces must be identified.  
- Candidates must transfer the functional conditions onto a sketch.  
Example: Surface A perpendicular to cylinder B, where  $IT = 0.08$ .

**Minimum performance standard: 15 correct answers out of 20**

# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Determine dimensional tolerances

<b>5725 – Determining Dimensional Tolerances (Module 13; 872 414)</b>				<b>Duration: 60 hours</b>		
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Knowledge Components	W <sub>C</sub>	No. of Q.
1. Gather information.	5	Interpretation of initial data	-	In-depth examination of an assembly drawing and detail drawings Detailed list of required dimensions	-	
2. Analyze the functional conditions of the object.	15	1. Determination of conditions	20	1.1 Complete list of relevant functional conditions	10	2
				Accurate determination of parameters relating to material thickness	-	
3. Establish dimension chains.	30	2. Entry of dimension chains	20	1.2 Assignment of suitable values for the functional conditions	10	2
				Methodical entry of dimension chains in vectorial form	-	
				Observance of functional conditions when entering dimension chains	-	
				2.1 Dimension chains with minimum number of vectors	20	4
				Careful entry of dimension chains on tolerance study drawings	-	

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria  
 2000-10-03

**5725 – Determining Dimensional Tolerances (Module 13; 872 414)**
**Duration: 60 hours**

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Knowledge Components	W <sub>C</sub>	No. of Q.
4. Establish tolerance values.	35	Accurate information recorded	-	Complete list of tolerances required by manufacturers	-	8
		3. Establishment of tolerance values	40	Precise determination of tolerance values based on required tolerances and established dimension chains Strict placement of linear tolerances	-	
5. Enter tolerances on drawings.	15	4. Observance of functional dimensioning and tolerancing conventions and standards	20	3.1 Precise calculation of minimum and maximum linear values on the basis of functional conditions	40	
				Accurate calculation of transfers of linear values	-	
				Careful entry of values and tolerances in the tolerance study drawing file	-	
				Accurate entry of tolerance values on drawings	-	
				Careful verification of concordance between tolerance values	-	
				4.1 Appropriate representation of geometric tolerances	20	

 W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria

2000-10-03

# **INDUSTRIAL DRAFTING**

**5725**

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## **Correcting a Drawing**

Module 14

872 421

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## **PRACTICAL EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
CORRECTING A DRAWING  
(Module 14)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to correct a drawing. Candidates are expected to identify a total of 20 mistakes shown in the detail drawings of a simple object made up of approximately five components, and to make the necessary corrections.

*Listed below are examples of possible errors:*

- |  |   |
|--|---|
| - incorrect length of broken lines                 | - spelling mistakes                     |
| - representation of materials (hatching lines)     | - incorrect minimum or maximum values   |
| - title block with incomplete or erroneous data    | - linear or angular dimensions          |
| - numbering of components, quantities or materials | - annotations or additional information |

The suggested duration of the examination is two hours.

**2 Examination Procedure**

2.1 Each candidate should be provided with:

- instructions on the work to be done
- the assembly drawing
- the detail drawings (with errors)
- all necessary tables or documents

2.2 Step in the examination procedure:

Step 1: Candidates are expected to neatly and cleanly:

- identify and indicate all the errors (twenty in total)
- enter all necessary annotations
- enter all necessary corrections

## EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**14 – Correcting a Drawing**

Module code: **872 421**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: **PASS**  **FAIL**

Signature of examiner: \_\_\_\_\_

STEP	OBSERVATION	RESULT
<b>1</b>	<p><b>CHECKING OF DRAWING</b></p> <p>1. ACCURATE REPORTING OF ERRORS</p> <p>1.1 Accurate and complete reporting of errors: YES NO</p> <p style="padding-left: 20px;">- complete and neat reporting of errors <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: two omissions</i></p> <p>2. TIDINESS OF ANNOTATIONS</p> <p>2.1 Tidiness of annotations YES NO</p> <p style="padding-left: 20px;">- neatness of annotations for the errors identified <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: one missing or incorrect annotation</i></p> <p>3. ACCURACY OF CORRECTIONS</p> <p>3.1 Accurate corrections made: YES NO</p> <p style="padding-left: 20px;">- neatness of corrections for the errors identified <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: three errors or omissions</i></p>	<p><b>0 or 35</b></p> <p><b>0 or 30</b></p> <p><b>0 or 35</b></p>
<b>Total:</b>		<b>/ 100</b>
<b>Minimum performance standard: 70 points</b>		

Comments:

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# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Correct a drawing

<b>5725 – Correcting a Drawing (Module 14; 872 421)</b>					<b>Duration: 15 hours</b>	
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
1. Analyze drawings and the initial data on which they are based.	15	Analysis and interpretation of drawing	-	Accurate identification of the components represented in the drawing and their role	-	
				Accurate description of the operation of the mechanism	-	
				Accurate representation of the component in a perspective sketch	-	
2. Gather reference documents for the project.	5	Appropriate choice of documents	-	Selection of all appropriate reference documents	-	
				Selection of relevant reference documents	-	
3. Check the drawing.	65	Choice of verifications	-	Accurate assessment of the items to be verified	-	
		Ordering of verifications	-	Logical ordering of the stages in the checking process	-	
				Complete checking in the order determined previously	-	
		1. Accurate reporting of errors	35	1.1 Accurate and complete reporting of errors	35	PT
		2. Tidiness of annotations	30	2.1 Tidiness of annotations	30	PT
		3. Accuracy of corrections	35	3.1 Accurate corrections made	35	PT
				Recognition of the consequences of an unjustified correction	-	

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

2000-10-03

**5725 – Correcting a Drawing (Module 14; 872 421)**
**Duration: 15 hours**

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
4. Check the validity of the corrections made.	10	Cross checking	-	Matching of the corrections made with drawing standards and initial data	-	
5. Give and receive criticism on corrections to be made.	5	Verbal communication	-	Consideration of the consequences of a faulty check Accuracy of the information communicated Accuracy of the technical terms used Tact Positive attitude to criticism	-	
6. Alter a drawing.	5	Alteration of drawing	-	Observance of correct procedure for altering a drawing Accuracy of alterations Clear, accurate entry of alterations	-	

 W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

2000-10-03

# **INDUSTRIAL DRAFTING**

**5725**

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## **Illustrating Power Train Systems**

Module 15

872 436

- 
- THEORY EXAMINATION**
  - and**
  - PRACTICAL EXAMINATION**
-

INDUSTRIAL DRAFTING  
5725  
ILLUSTRATING POWER TRAIN SYSTEMS  
(Module 15)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to illustrate power train systems. No course notes or other documents are allowed.

The examination is divided into two parts to allow candidates to work on several drawings. Candidates are expected to:

- Part 1:
- name the various power train systems, using drawings
  - describe the features of different power train systems
  - perform calculations relating to belts, chains and gear assemblies
- Note: For the calculations, candidates could be given a choice of answers.  
However, an answer without calculations cannot be accepted.

- Part 2:
- produce a detail drawing of a spur gear wheel in orthographic projections, using a computerized workstation and drawing software, such as AutoCAD.
- Note: Candidates are expected to calculate the dimensions related to gear cutting and enter the information in a table.  
All other dimensions should be provided.

The suggested duration of the examination is six hours: - two hours and thirty minutes for Part 1  
- three hours and thirty minutes for Part 2

**2 Additional Information on the Theory Examination (Part 1)**

The examination should consist of a total of twenty problems, as follows:

Component 1.1

For questions 1, 2, 3 and 4:

- Name the power train system, according to the illustration given.

Component 2.1

For questions 5 and 6:

- Using tables, indicate two features for each power train system.

Component 3.1

For questions 7 and 8:

- Perform calculations to determine the ratios, the speed and the centre-to-centre distance or the dimensions of the components of a belt and pulley transmission system.

For questions 9 and 10:

- Perform calculations to determine the ratios, the speed and the centre-to-centre distance or the dimensions of the components of a chain and sprocket transmission system.

### Component 3.1 (cont.)

For questions 11, 12, 13, 14 and 15:

- Perform calculations to determine the ratios, the speed and the centre-to-centre distance or the dimensions of the components of a spur gear transmission system.

For questions 16, 17 and 18:

- Perform calculations to determine the ratios, the speed and the centre-to-centre distance or the dimensions of the components of a straight bevel gear transmission system.

For questions 19 and 20:

- Perform calculations to determine the ratios, the speed and the centre-to-centre distance or the dimensions of the components of a worm gear transmission system.

**Minimum performance standard: 15 correct answers out of 20**

### **3 Examination Procedure: Practical Examination (Part 2)**

3.1 Each candidate should be provided with:

- instructions on the work to be done
- the sheet(s) with initial data, as well as the data needed to draw the spur gear wheel
- all necessary reference documents and tables

3.2 Steps in the examination procedure:

- Step 1:
- Perform the necessary calculations to determine the missing values related to the gear cutting of a spur gear wheel.
  - Produce the detail drawing of the spur gear wheel in front view and in sectional side view.

- Step 2:
- Completely dimension the spur gear wheel.
  - In a table, enter the dimensions for gear cutting.
  - Enter the annotations and additional information.

Print the drawing.



STEP	OBSERVATION	RESULT
<b>PART 2: PRACTICAL EXAMINATION</b>		
1	<p><b>DRAWING OF POWER TRAIN SYSTEMS</b></p> <p>4. ILLUSTRATION OF POWER TRAIN SYSTEMS</p> <p>4.1 Accuracy of drawings, related to:</p> <p>- shape and dimensions of the power train system shown</p> <p><i>Error tolerance: two errors or inaccuracies</i></p> <p>- sectional view</p> <p><i>Error tolerance: two errors or inaccuracies</i></p> <p>- thickness and choice of standardized lines</p> <p><i>Error tolerance: one error</i></p>	<p>YES NO</p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><b>0 or 30</b></p>
2	<p><b>ENTRY OF DIMENSIONS AND ADDITIONAL INFORMATION</b></p> <p>5. DIMENSIONS AND ADDITIONAL INFORMATION</p> <p>5.1 Accurate dimension in compliance with standards:</p> <p>- complete dimensioning of the wheel</p> <p><i>Error tolerance: three errors or omissions</i></p> <p>- accurate values in the table for gear cutting</p> <p><i>Error tolerance: two errors or omissions</i></p>	<p>YES NO</p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><b>0 or 20</b></p>
<b>Total:</b>		<b>/ 50</b>
<b>Minimum performance standard: 35 points</b>		

Comments:

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# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Illustrate power train systems

<b>5725 – Illustrating Power Train Systems (Module 15; 872 436)</b>					<b>Duration: 90 hours</b>	
<b>Specifications of the Expected Behaviour</b>	<b>Duration (%)</b>	<b>Performance Indicators</b>	<b>W<sub>I</sub></b>	<b>Knowledge Components</b>	<b>W<sub>C</sub></b>	<b>No. of Q.</b>
1. Identify power train systems on a drawing or in an existing mechanism.		1. Naming of power train systems	10	1.1 Naming of power train systems using appropriate French and English terminology	10	4
		Classification of power train systems				
2. Search for power train features in technical documentation.		2. Search in technical documents	5	Efficient location of information	-	
3. Perform calculations.		3. Calculations related to belts, chains and gear assemblies	35	Accurate recording of terminology, abbreviations and codes used to describe power train systems	-	
				3.1 Accuracy of calculations to determine gear and torque ratios, centre-to-centre distances and dimensions		
				Use of appropriate formulas	-	

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

2000-10-03

**5725 – Illustrating Power Train Systems (Module 15; 872 436)**
**Duration: 90 hours**

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
4. Draw power train systems.		4. Illustration of power train systems	30	Concordance between drawings and calculations	-	
				4.1 Accuracy of drawings	30	PT
				Observance of drawing standards and conventions	-	
5. Import power train systems from electronic libraries.		Use of electronic libraries	-	Optimum use of software commands	-	
				Optimum use of software commands	-	
				Appropriate adaptation of imported power train system to scale of drawing	-	
6. Enter dimensions and additional information.		5. Dimensions and additional information	20	5.1 Accurate dimension in compliance with standards	20	PT
				Conformity of notation with technical documentation	-	
				Observance of conventions for naming power train systems	-	
				Uniformity of notations in metric or imperial systems, in French or English	-	

 W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

2000-10-03

# **INDUSTRIAL DRAFTING**

**5725**

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## **Producing Development Drawings**

Module 16

872 446

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## **PRACTICAL EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
PRODUCING DEVELOPMENT DRAWINGS  
(Module 16)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

The examination is divided into two parts and consists in evaluating the candidates' ability to produce development drawings.

Part 1: Evaluates the candidates' ability to draw the intersection and shape of the development on an object, given a drawing in orthographic projection and technical data.

Part 2: Evaluates the candidates' ability to sketch the development of the linework (template) of a component, given a drawing in orthographic projection or in isometric view of the bent part, as well as technical data.

Note: The examiner should choose a gauge that is thick enough so that candidates must take into account the neutral axis.

No course notes or other relevant documents are allowed.

The suggested duration of the examination is six hours, three hours for each part.

Candidates who fail must redo the failed part(s) in a different version.

**2 Examination Procedure**

- 2.1 Each candidate should be provided with:
- the necessary materials and documents
  - instructions on the work to be done
  - a diskette

- 2.2 Candidates are expected to produce development drawings, using a computerized workstation and drawing software, such as AutoCAD.

### 2.3 Steps in the examination procedure:

#### **PART 1**

- Step 1: - Draw the object in orthographic projection.  
- Draw the intersection of the parts that make up the object.  
- Draw the development of the part required.
- Step 2: Enter the notes on the drawing and complete the title block.
- Step 3: Save the drawing on the diskette provided by the examiner.

#### **PART 2**

- Step 1: Draw the development of the linework (template) of the part keeping in mind the extra allowance required for bending thick materials.
- Step 2: Enter complete dimensions and additional information.

## EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**16 – Producing Development Drawings**

Module code: **872 446**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_

Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_

RESULT:      PASS                  FAIL  
                                 

Signature of examiner: \_\_\_\_\_

STEP	OBSERVATION	RESULT	STEP	OBSERVATION	RESULT
	<b>PART 1</b> DEVELOPMENT OF INTERSECTIONS			<b>PART 2</b> DEVELOPMENT OF BENT PARTS	
<b>1</b>	<b>DRAWING OF OBJECT IN ORTHOGRAPHIC PROJECTION</b> 1. DRAWING OF OBJECT 1.1 Correct arrangement of views   <b>DRAWING OF INTERSECTION OF PARTS</b> 2. ACCURACY OF DRAWING 2.1 Observance of construction methods in determining line intersections 2.2 Exact designation of lines <i>Error tolerance: three errors or omissions</i>	          0 or 5          0 or 5  0 or 5	<b>1</b>	<b>DRAWING OF OBJECT IN ORTHOGRAPHIC PROJECTION</b> 1. DRAWING OF OBJECT          1.2 Conformity of drawing with initial data  1.3 Observance of dimensions <i>Error tolerance: one error</i>	          0 or 10          0 or 15

STEP	OBSERVATION	RESULT	STEP	OBSERVATION	RESULT
	<p>2.3 Accurate completion of all construction lines <i>Error tolerance: three omissions</i></p> <p><b>DRAWING OF SHAPES OF THE DEVELOPMENT</b></p> <p>4. SKETCHING OF POINTS BORDERING LINEWORK</p> <p>4.1 Exact designation of points bordering the linework <i>Error tolerance: one error</i></p> <p>4.2 Accurate representation of fasteners: YES NO - optimum use of drawing software commands <input type="checkbox"/> <input type="checkbox"/></p>	<p>0 or 10</p> <p>0 or 5</p> <p>0 or 15</p>		<p><b>CONSTRUCTION LINES</b></p> <p>3. ACCURACY AND DESIGNATION OF LINES</p> <p>3.1 Precise determination of extra allowance required for bending thick materials</p>	<p>0 or 5</p>
2	<p><b>ENTRY OF DIMENSIONS AND ADDITIONAL INFORMATION</b></p> <p>5. DIMENSIONS AND ADDITIONAL INFORMATION</p> <p>5.2 Accuracy of notes and information in title block <i>Error tolerance: one error</i></p>	<p>0 or 5</p>	2	<p><b>ENTRY OF DIMENSIONS AND ADDITIONAL INFORMATION</b></p> <p>5. DIMENSIONS AND ADDITIONAL INFORMATION</p> <p>5.1 Accurate dimensions, in compliance with standards <i>Error tolerance: two errors</i></p> <p>5.2 Accuracy of notes and information in title block <i>Error tolerance: one error</i></p>	<p>0 or 10</p> <p>0 or 5</p>
3	<p><b>FILING OF DOCUMENTS</b></p> <p>6. FILING PROCEDURE</p> <p>6.1 Use of appropriate commands for filing a drawing on a diskette</p>	<p>0 or 5</p>			

<p style="text-align: right;"><b>Total: / 55</b></p> <p><b>Minimum performance standard (PART 1):</b> 40 points</p>	<p><b>Minimum performance standard (PART 2):</b> 35 points</p>	<p style="text-align: right;"><b>Total:</b></p>	<p style="text-align: right;"><b>/ 45</b></p>
<p style="text-align: center;"><b>PART 1</b></p> <p style="text-align: center;">           PASS      FAIL  <input type="checkbox"/>      <input type="checkbox"/> </p>	<p style="text-align: center;"><b>PART 2</b></p> <p style="text-align: center;">           PASS      FAIL  <input type="checkbox"/>      <input type="checkbox"/> </p>		

Comments:

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# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Produce development drawings

<b>5725 – Producing Development Drawings (Module 16; 872 446)</b>					<b>Duration: 90 hours</b>	
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
1. Organize the work.	3	Preparation for work to be done	-	Accurate interpretation of the preliminary drawing and corresponding data Accurate sketch of the component Appropriate preparation of material and workstation	- - -	
2. Draw the object in orthographic projection.	5	1. Drawing of object	30	1.1 Correct arrangement of views 1.2 Conformity of drawing with initial data 1.3 Observance of dimensions Accuracy of drawing	5 10 15 -	PT PT PT
3. Draw the intersection of parts.	35	2. Accuracy of drawing	20	2.1 Observance of construction methods in determining line intersections 2.2 Exact designation of lines 2.3 Accurate completion of all construction lines Conformity of lines with construction lines	5 5 10 -	PT PT PT
4. Project construction lines.	5	3. Accuracy and designation of lines	5	Observance of construction methods in determining the shapes of the development Accuracy of calculations 3.1 Precise determination of extra allowance required for bending thick materials Exact designation of lines for various constructions Accuracy of construction lines	- - 5 - -	PT

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
5. Draw the shapes of the development.	35	4. Sketching of points bordering linework	20	Correspondence of linework with construction lines 4.1 Exact designation of points bordering the linework 4.2 Accurate representation of fasteners Careful work	- 5 15 -	 PT PT 
6. Enter dimensions and additional information.	5	5. Dimensions and additional information	20	5.1 Accurate dimensions, in compliance with standards 5.2 Accuracy of notes and information in title block	10 10	PT PT
7. Produce a development drawing using development software.	5	Maximum use of materials	-	Accurate determination of arrangement of parts on raw material to optimize material use during cutting Accuracy of data entered in program Appropriate use of basic software functions Accuracy of dimensions and information entered on drawing Determination of appropriate parameters for printing with plotter	- - - - -	
8. Check the drawing.	5	Checking procedure	-	Observance of correct procedure for checking and approving a drawing Conformity of drawing with initial data Correct completion of check model Correspondence between model and initial data	- - - -	
9. File documents.	2	6. Filing procedure	5	6.1 Use of appropriate commands for filing a drawing on a diskette Appropriate choice of filing method	5 -	PT

## **INDUSTRIAL DRAFTING**

**5725**

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### **Making a Three-Dimensional Model of an Object**

Module 17

872 456

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## **PRACTICAL EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
MAKING A THREE-DIMENSIONAL MODEL OF AN OBJECT  
(Module 17)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to make a three-dimensional model of an object.

The object should consist of five to ten parts, according to their complexity, and allow the candidates to create a sectional view of at least one part.

The suggested duration of the examination is six hours.

**2 Examination Procedure**

2.1 Each candidate should be provided with:

- instructions on the work to be done
- detail drawings in orthographic projection of the parts of the object
- a diskette

2.2 Candidates are expected to produce an exploded view of an object made up of five to ten parts, using a computerized workstation and 3D software.

2.3 Steps in the examination procedure:

Step 1: Produce three-dimensional drawings of the parts of the object:

- use different colours for the various parts
- save each drawing under a different name (for Step 2)
- take care to join or separate basic shapes

Note: *At least one of the parts should be presented in a sectional view.*

Step 2: Assemble the parts of the object using external references.

Note: *The object should be shown in exploded view.*

Step 3: Lay out the page and correctly monitor the visibility and density of the mesh.

Step 4: Insert background light (*point light, distant, spot, ambient*) to ensure displaying a quality rendering.

Save the display of the rendering in a picture file.

Print the object in 3D:

- without hidden lines
- using the appropriate line thickness
- using the appropriate scale

## EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**17 – Making a 3D Model of an Object**

Module code: **872 456**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: PASS  FAIL

Signature of examiner: \_\_\_\_\_

STEP	OBSERVATION	RESULT
<b>1</b>	<p><b>CONSTRUCTION OF PARTS OF THE OBJECT</b></p> <p><b>1. DRAWING OF PARTS OF THE OBJECT</b></p> <p>1.1 Correct creation of the basic solids making up the drawing:</p> <p style="padding-left: 20px;">- conformity between parts drawn and detail drawings of the project</p> <p><i>Error tolerance: one part fails to conform</i></p> <p style="padding-left: 20px;">- observance of dimensions and scale</p> <p>1.2 Optimum use of commands to join and separate</p> <p><i>Error tolerance: one part fails to conform</i></p>	<p>YES NO</p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><b>0 or 15</b></p> <p><b>0 or 15</b></p>
<b>2</b>	<p><b>ASSEMBLY OF PARTS OF THE OBJECT</b></p> <p><b>2. METHOD FOR ASSEMBLING THE PARTS OF THE OBJECT</b></p> <p>2.1 Appropriate insertion of reference files to form an exploded view</p> <p><i>Error tolerance: one error</i></p>	<p><b>0 or 15</b></p>
<b>3</b>	<p><b>PAGE LAYOUT</b></p> <p><b>3. PRESENTATION OF THE OBJECT IN 3D</b></p> <p>3.1 Appropriate positioning and arrangement of drawings on the sheet</p> <p><i>Error tolerance: one error</i></p> <p>3.2 Appropriate choice of views and sections:</p> <p style="padding-left: 20px;">- appropriate choice of exterior views</p> <p style="padding-left: 20px;">- appropriate choice of section(s)</p> <p>3.3 Appropriate monitoring of the visibility and density of the mesh</p>	<p><b>0 or 15</b></p> <p>YES NO</p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><input type="checkbox"/> <input type="checkbox"/></p> <p><b>0 or 10</b></p> <p><b>0 or 5</b></p>

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
4. Lay out the page.	5	3. Presentation of the object in 3D	30	3.1 Appropriate positioning and arrangement of drawings on the sheet	15	PT
				3.2 Appropriate choice of views and sections	10	PT
				Appropriate monitoring of layer visibility in the viewports	-	
				Correct positioning of dimensions in the drawing	-	
5. Display and print a rendering.	10	4. Display of a rendering of an object in 3D	10	3.3 Appropriate monitoring of the visibility and density of the mesh	5	PT
				Appropriate arrangement of viewpoints	-	
				4.1 Appropriate assignment of materials and colour	5	PT
				4.2 Appropriate choice of background light ( <i>point light, distant, spot, ambian</i> )	5	PT
				Accurate definition of parameters to add precision to rendering	-	
				5. Procedure for filing a drawing	5	PT
6. Animate objects on-screen, with a script file.	10	6. Procedure for printing a drawing	10	6.1 Observance of correct printing procedure	10	PT
				Animated presentation of an object in 3D	-	
				Appropriate choice of commands to create and view slides	-	
				Correct script file to allow automatic presentation of slides	-	

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

# **INDUSTRIAL DRAFTING**

**5725**

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**Producing Detail Drawings  
of a Mechanism**

Module 18

872 466

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**PRACTICAL EXAMINATION**

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## EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**18 – Producing Detail Drawings of a Mechanism**

Module code: **872 466**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: PASS  FAIL

Signature of examiner: \_\_\_\_\_

STEP	OBSERVATION	RESULT									
<b>1</b>	<p><b>DRAWING OF EXTERIOR VIEWS AND SECTIONAL VIEWS</b></p> <p>1. DRAWING OF EXTERIOR VIEWS</p> <p>1.1 Appropriate arrangement of exterior views</p> <p>1.2 Concordance of exterior views</p> <p>1.3 Conformity of exterior views with initial data</p> <p>2. DRAWING OF SECTIONAL VIEWS</p> <p>2.1 Correspondence between sectional views and exterior views</p> <p>2.2 Appropriate use of specialized CAD program commands:</p> <p style="padding-left: 20px;">- use of appropriate hatching lines to represent materials</p> <p style="padding-left: 20px;">- observance of standards for drawing hatching lines</p>	<p style="text-align: right;">0 or 5</p> <p style="text-align: right;">0 or 10</p> <p style="text-align: right;">0 or 10</p> <p style="text-align: right;">0 or 20</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"></td> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> <tr> <td style="padding-left: 20px;">- use of appropriate hatching lines to represent materials</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="padding-left: 20px;">- observance of standards for drawing hatching lines</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table> <p style="text-align: right;">0 or 10</p>		YES	NO	- use of appropriate hatching lines to represent materials	<input type="checkbox"/>	<input type="checkbox"/>	- observance of standards for drawing hatching lines	<input type="checkbox"/>	<input type="checkbox"/>
	YES	NO									
- use of appropriate hatching lines to represent materials	<input type="checkbox"/>	<input type="checkbox"/>									
- observance of standards for drawing hatching lines	<input type="checkbox"/>	<input type="checkbox"/>									
<b>2</b>	<p><b>ENTRY OF DIMENSIONS AND ADDITIONAL INFORMATION</b></p> <p>3. ACCURACY OF DIMENSIONS AND ADDITIONAL INFORMATION</p> <p>3.1 Accuracy of dimensions, functional dimensions and information entered:</p> <p style="padding-left: 20px;">- observance of dimensioning standards when entering dimensions and dimension lines</p> <p><i>Error tolerance: two placement errors</i></p> <p style="padding-left: 20px;">- accurate calculation and placing of functional dimensions</p> <p><i>Error tolerance: two errors in accuracy of calculation or placement</i></p>	<table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"></td> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> <tr> <td style="padding-left: 20px;">- observance of dimensioning standards when entering dimensions and dimension lines</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="padding-left: 20px;">- accurate calculation and placing of functional dimensions</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>		YES	NO	- observance of dimensioning standards when entering dimensions and dimension lines	<input type="checkbox"/>	<input type="checkbox"/>	- accurate calculation and placing of functional dimensions	<input type="checkbox"/>	<input type="checkbox"/>
	YES	NO									
- observance of dimensioning standards when entering dimensions and dimension lines	<input type="checkbox"/>	<input type="checkbox"/>									
- accurate calculation and placing of functional dimensions	<input type="checkbox"/>	<input type="checkbox"/>									

STEP	OBSERVATION	RESULT												
	- entry of additional information in the appropriate places (title block, annotation and machining symbols) <input type="checkbox"/> <input type="checkbox"/> <i>Error tolerance: three placement errors or omissions</i> 3.2 Entry of information using standardized language and free of spelling mistakes	0 or 25  0 or 5												
<b>3</b>	<b>PROCEDURE FOR FILING DRAWINGS</b> 4. PRINTING OF DRAWINGS 4.1 Observance of printing procedure: <table style="margin-left: 20px;"> <tr> <td></td> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> <tr> <td>- scale</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>- thickness of lines</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>- two or fewer printouts per drawing</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table> 5. PRESENTATION OF DRAWINGS 5.1 Observance of folding standards for printed drawings		YES	NO	- scale	<input type="checkbox"/>	<input type="checkbox"/>	- thickness of lines	<input type="checkbox"/>	<input type="checkbox"/>	- two or fewer printouts per drawing	<input type="checkbox"/>	<input type="checkbox"/>	          0 or 10  0 or 5
	YES	NO												
- scale	<input type="checkbox"/>	<input type="checkbox"/>												
- thickness of lines	<input type="checkbox"/>	<input type="checkbox"/>												
- two or fewer printouts per drawing	<input type="checkbox"/>	<input type="checkbox"/>												
<b>Total:</b>		<b>/ 100</b>												
<b>Minimum performance standard: 80 points</b>														

Comments:

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# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Produce detail drawings of a mechanism

<b>5725 – Producing Detail Drawings of a Mechanism (Module 18; 872 466)</b>				<b>Duration: 90 hours</b>		
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
1. Interpret design drawings for a mechanism.	5	Interpretation of drawings	-	Differentiation between the types of drawings provided: diagrams, sketches, detail drawings, assembly drawings, layout drawings, catalogue illustrations Accurate description of the function of the mechanism represented Accurate listing and description of the various components of the mechanism Accurate description of the kinematic sequence of the mechanism Appropriate description of the operating conditions of the mechanism Exact location of functional dimensions Appropriate interpretation of English technical terms from the drawings	- - - - - - -	
2. Organize the work.	5	Choice of documents Tidiness of workstation	-	Selection of relevant reference documents Functional and ergonomic organization of the workstation	- -	
3. Produce sketches.	5	Representation of sketches  Method used for calculations	-	Appropriate choice of views Appropriate choice and arrangement of sections Correspondence between sketches and design drawings as regards part dimensions and shape Accuracy of basic dimensions and annotations Accurate calculation of functional dimensions	- - - - -	

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
4. Draw exterior views of components of mechanism.	35	Entry of tolerances on drawing Identification of materials and surface finishes 1. Drawing of exterior views	25	Accurate entry of functional dimensions on sketch	-	
				Exact designation and symbolization of materials and surface finishes	-	
				Correspondence between components and sketch	-	
				1.1 Appropriate arrangement of exterior views	5	PT
5. Draw sectional views.	25	2. Drawing of sectional views	30	Insertion of relevant elements from databases	-	
				1.2 Concordance of exterior views	10	PT
				1.3 Conformity of exterior views with initial data	10	PT
				Arrangement of details in conformity with dimensions indicated	-	
6. Enter dimensions and additional information.	15	3. Accuracy of dimensions and additional information	30	Appropriate use of specialized CAD program commands	-	
				Concordance of the various sectional views	-	
				2.1 Correspondence between sectional views and exterior views	20	PT
				Arrangement of details in conformity with dimensions	-	
7. Check the drawing.	5	Verification and correction of drawings		2.2 Appropriate use of specialized CAD program commands	10	PT
				3.1 Accuracy of dimensions, functional dimensions and information entered	25	PT
				3.2 Entry of information using standardized language and free of spelling mistakes	5	PT
				Observance of procedure for checking and approving a drawing	-	
				Conformity of drawing with initial data	-	

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
8. File the drawings.	5	Procedure for filing drawings 4. Printing of drawings 5. Presentation of drawings	15	Appropriate document management Appropriate choice of filing method 4.1 Observance of printing procedure 5.1 Observance of folding standards for printed drawings	- - 10 5	  PT PT

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)  
2000-10-03

## **INDUSTRIAL DRAFTING**

**5725**

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### **Making Piping and Circuit Diagrams**

Module 19

872 476

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### **PRACTICAL EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
MAKING PIPING AND CIRCUIT DIAGRAMS  
(Module 19)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to make industrial piping and circuit diagrams.

Candidates are expected to produce diagrams of an electrical, hydraulic and piping system, in orthographic projections, given drawings in isometric views and technical data, and using a computerized workstation with drawing software, such as AutoCAD.

The suggested duration of the examination is six hours.

Candidates who fail must redo the failed part(s) in a different version.

**2 Examination Procedure**

2.1 Each candidate should be provided with:

- instructions on the work to be done
- drawings in isometric and orthographic projections
- a technical data sheet (accompanying the drawings)

2.2 Steps in the examination procedure:

Step 1: Make diagrams of the electrical, hydraulic and piping circuits.

Step 2: Enter the appropriate notes on the electrical, hydraulic and piping circuit diagrams.

Step 3: Establish the parts list.

Step 4: Check the completed drawings.



**PART ONE: ELECTRICAL SYSTEM**

<b>STEP</b>	<b>OBSERVATION</b>	<b>RESULT</b>
<b>1</b>	<b>SKETCHING OF SYSTEM CIRCUIT</b>  1. CHOICE OF DIAGRAMS AND PROJECTIONS 1.1 Appropriate choice of type of diagram and projection  2. ARRANGEMENT OF ELEMENTS IN SYSTEM 2.1 Arrangement and orientation of the elements of each circuit in the electrical system <i>Error tolerance: one error or omission affecting the logical functioning of the system</i>  3. OBSERVANCE OF DRAWING STANDARDS 3.1 Use of appropriate types of lines for drawing electrical systems  3.2 Observance of proportions and drawing standards <i>Error tolerance: one error</i>  3.3 Correct use of symbols for the elements of an electrical system <i>Error tolerance: one error</i>	  <b>0 or 5</b>  <b>0 or 30</b>  <b>0 or 5</b>  <b>0 or 5</b>  <b>0 or 10</b>
<b>2</b>	<b>ENTERING OF DIMENSIONS AND NOTES ON DIAGRAM</b>  4. ACCURATE NOTES 4.1 Appropriate location of notes and part numbers on the electrical diagram <i>Error tolerance: one error</i>	  <b>0 or 10</b>
<b>3</b>	<b>ESTABLISHMENT OF THE PARTS LIST</b>  5. ACCURATE INFORMATION 5.1 Accuracy and exhaustiveness of data entered in list <i>Error tolerance: one error or omission</i>	  <b>0 or 30</b>
<b>4</b>	<b>CHECKING OF THE QUALITY OF THE COMPLETED WORK</b>  6. CHECKING AND CORRECTING OF DRAWINGS 6.1 Conformity of electrical diagram with initial data	  <b>0 or 5</b>
<b>Total:</b>		<b>/ 100</b>
<b>Minimum performance standard: 75 points</b>		

**PART TWO: HYDRAULIC SYSTEM**

<b>STEP</b>	<b>OBSERVATION</b>	<b>RESULT</b>
<b>1</b>	<b>SKETCHING OF SYSTEM CIRCUIT</b> 1. CHOICE OF DIAGRAMS AND PROJECTIONS 1.1 Appropriate choice of type of diagram and projection 2. ARRANGEMENT OF ELEMENTS IN SYSTEM 2.1 Arrangement and orientation of the elements of each circuit in the hydraulic system <i>Error tolerance: one error or omission affecting the logical functioning of the system</i> 3. OBSERVANCE OF DRAWING STANDARDS 3.1 Use of appropriate types of lines for drawing hydraulic systems 3.2 Observance of proportions and drawing standards <i>Error tolerance: one error</i> 3.3 Correct use of symbols for the elements of a hydraulic system <i>Error tolerance: one error</i>	 <b>0 or 5</b>  <b>0 or 30</b>  <b>0 or 5</b>  <b>0 or 5</b>  <b>0 or 10</b>
<b>2</b>	<b>ENTERING OF DIMENSIONS AND NOTES ON DIAGRAM</b> 4. ACCURATE NOTES 4.1 Appropriate location of notes and part numbers on the hydraulic diagram <i>Error tolerance: one error</i>	   <b>0 or 10</b>
<b>3</b>	<b>ESTABLISHMENT OF THE PARTS LIST</b> 5. ACCURATE INFORMATION 5.1 Accuracy and exhaustiveness of data entered in list <i>Error tolerance: one error or omission</i>	   <b>0 or 30</b>
<b>4</b>	<b>CHECKING OF THE QUALITY OF THE COMPLETED WORK</b> 6. CHECKING AND CORRECTING OF DRAWINGS 6.1 Conformity of hydraulic diagram with initial data	   <b>0 or 5</b>
<b>Total:</b>		<b>/ 100</b>
<b>Minimum performance standard: 75 points</b>		

### **PART THREE: PIPING SYSTEM**

<b>STEP</b>	<b>OBSERVATION</b>	<b>RESULT</b>
<b>1</b>	<b>SKETCHING OF SYSTEM CIRCUIT</b>  1. CHOICE OF DIAGRAMS AND PROJECTIONS 1.1 Appropriate choice of type of diagram and projection  2. ARRANGEMENT OF ELEMENTS IN SYSTEM 2.1 Arrangement and orientation of the elements of each circuit in the piping system <i>Error tolerance: one error or omission affecting the logical functioning of the system</i>  3. OBSERVANCE OF DRAWING STANDARDS 3.1 Use of appropriate types of lines for drawing piping systems  3.2 Observance of proportions and drawing standards. <i>Error tolerance: one error</i>  3.3 Correct use of symbols for the elements of a piping system <i>Error tolerance: one error</i>	  0 or 5    0 or 30     0 or 5  0 or 5  0 or 10
<b>2</b>	<b>ENTERING OF DIMENSIONS AND NOTES ON DIAGRAM</b>  4. ACCURATE NOTES 4.1 Appropriate location of notes and part numbers on the piping diagram <i>Error tolerance: one error</i>	    0 or 10
<b>3</b>	<b>ESTABLISHMENT OF THE PARTS LIST</b>  5. ACCURATE INFORMATION 5.1 Accuracy and exhaustiveness of data entered in list <i>Error tolerance: one error or omission</i>	    0 or 30
<b>4</b>	<b>CHECKING OF THE QUALITY OF THE COMPLETED WORK</b>  6. CHECKING AND CORRECTING OF DRAWINGS 6.1 Conformity of piping diagram with initial data	    0 or 5
<b>Total:</b>		<b>/ 100</b>
<b>Minimum performance standard: 75 points</b>		

## **INDUSTRIAL DRAFTING**

**5725**

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**Using Job Search  
or  
Entrepreneurial Techniques**

Module 20

872 482

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**PARTICIPATION EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
USING JOB SEARCH OR ENTREPRENEURIAL TECHNIQUES  
(Module 20)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

The examination consists of two parts.

**PART ONE: JOB SEARCH**

Evaluation of the candidates' participation will be based on information gathered at certain times during the learning activities, according to the criterion components involved.

However, a criterion component should be evaluated only at the end of the corresponding phase in the learning situation.

A final evaluation of the candidates' participation in the module's learning activities should be done only once the module has been completed.

Candidates should be provided with the relevant documentation such as sample résumés and letters of introduction.

**2 Examination Procedure**

The following paragraphs provide details concerning the application of the criterion components and their interpretation.

During this activity, it is important to clearly indicate the type of information that candidates are required to gather and present in a group discussion. Regardless of the medium and conventions used to record the information, the evaluation should not focus on the accuracy, quality or presentation of the information, but rather on the candidates' efforts to compile sufficient, pertinent information on the topics to be covered and to organize it so that it can be used during a group discussion. At the end of the module, the teacher should provide feedback to any students who have incorrect perceptions.

## **PHASE 1 – Information**

### Component 1.1

Gather information on at least five organizations or sources of information to be consulted when preparing a job search.

Note: Working individually, candidates are expected to gather information, listing at least five organizations or sources to be consulted when preparing a job search.

### Component 1.2

Gather information on at least three potential employers, specifying the type of company and hiring criteria.

Note: Candidates are expected to gather basic relevant information on at least three potential employers, without necessarily giving a complete and rigorously accurate description of the situation.

### Component 1.3

Describe the attitudes and behaviours to adopt when carrying out a job search.

Note: Candidates are expected to describe the attitudes and behaviours to adopt during the job search process and selection interviews. The evaluation should not be based on the accuracy of their perceptions, but rather on the fact that the candidates have openly expressed their opinions and have given relevant examples to highlight the pertinent information gathered.

## **PHASE 2 – Preparation of the Job Search**

### Component 2.1

Describe the steps involved in the job search, in chronological order.

Note: Candidates are expected to provide a minimum amount of information on the steps involved in their job search, placing them in chronological order.

### Component 3.1

Produce a letter of introduction and a résumé listing previous training and work experience.

Note: The examiner should ensure that candidates include the required information, that the documents are error-free and neat enough to be submitted to a potential employer.

### Component 4.1

Observe instructions relating to preparations for and participation in simulated selection interviews.

Note: Candidates are expected to observe the instructions given relating to the suggested activities.

### Component 4.2

Provide at least one element relating to ways to ensure follow-up when carrying out a job search.

Note: The evaluation should not be based on the accuracy of the candidates' perceptions, but rather on the fact that they stated and justified their points of view.

### **PHASE 3 – Evaluation of Their Ability**

#### **Component 5.1**

Describe personal strengths or weaknesses observed during the simulated selection interviews.

Note: This component is to be evaluated during a group meeting. The evaluation is not to be based on the accuracy of the appraisal given, but rather on the fact that the candidates have openly given their opinions on the topics discussed.

#### **Component 5.2**

Describe at least two strengths and two weaknesses connected with one of the methods used.

Note: Each candidate is to present comments in the form of an oral report.

**To successfully complete this module, candidates must succeed in six criteria out of nine, including the following: 1.1, 1.2, 3.1, 4.1 and 5.2.**

### **EXAMINATION: PART TWO: ENTREPRENEURSHIP**

Candidates must complete a questionnaire based on:

- the characteristics required for starting a business
- their entrepreneurial profile
- the advantages and constraints involved in starting a business
- the type of business desired
- the legal status
- the choice of company name
- a market study
- the organizational structure of the business
- an assessment of their entrepreneurial potential and interest in starting a business
- the personality traits to emphasize in starting a business

**To successfully complete this module, candidates must succeed in eight criteria out of ten, including the following: 1.1, 2.1, 3.2, 3.5 and 3.6.**







# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – SITUATIONAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED OUTCOME:** Use job search or entrepreneurial techniques

<b>5725 – Using Job Search or Entrepreneurial Techniques (Module 20; 872 482)</b>					<b>Duration: 30 hours</b>
Learning Context	Duration (%)	Participation Indicators	Wgt. (%)	Participation Criteria	Wgt. (%)
<b>PART ONE: JOB SEARCH TECHNIQUES</b>					
<b>PHASE 1: Information</b>  <ul style="list-style-type: none"> <li>• Discovering sources of useful information for preparing a job search.</li> </ul>	30	1. Consult the sources of information provided.	30	1.1 Gather information on at least five organizations or sources of information to be consulted when preparing a job search.  1.2 Gather information on at least three potential employers, specifying the type of company and hiring criteria.  1.3 Describe the attitudes and behaviours to adopt when carrying out a job search.	10  10  10
<b>PHASE 2: Preparation of the Job Search</b>  <ul style="list-style-type: none"> <li>• Planning the job search process.</li> <li>• Writing a résumé and a letter of introduction.</li> <li>• Establishing an employment portfolio.</li> <li>• Determining the attitudes and behaviours to adopt or avoid in a selection interview.</li> </ul>	50	2. Establish a timetable for the steps involved in a job search.  3. Produce the required documents.  4. Participate in the suggested activities.	5  25  15	2.1 Describe the steps involved in a job search, in chronological order.  3.1 Produce a letter of introduction and a résumé listing previous training and work experience.  4.1 Observe instructions related to preparations for and participation in simulated selection interviews.  4.2 Provide at least one element relating to ways to ensure follow-up when carrying out a job search.	5  25  10  5

**5725 – Using Job Search or Entrepreneurial Techniques (Module 20; 872 482)**
**Duration: 30 hours**

Learning Context	Duration (%)	Participation Indicators	Wgt. (%)	Participation Criteria	Wgt. (%)
<b>PHASE 3: Evaluation of Their Ability</b>  <ul style="list-style-type: none"> <li>• Understanding personal strengths and weaknesses connected to the job search.</li> </ul>	20	5. Assess personal strengths and weaknesses.	25	5.1 Describe personal strengths and weaknesses observed during the simulated selection interviews.  5.2 Describe at least two strengths and two weaknesses connected with one of the methods used.	10  15
<b>PART TWO: ENTREPRENEURSHIP</b>					
<b>PHASE 1: Information</b>  <ul style="list-style-type: none"> <li>• Learning about the role of entrepreneurship in Québec's economic development.</li> <li>• Learning about the available sources of information on starting a business.</li> <li>• Learning about the personal characteristics of entrepreneurs.</li> </ul>	20	1. Carry out research and produce a report on the personal characteristics required to start a business.	20	1.1 Determine the personal characteristics required to start a business.	20

Learning Context	Duration (%)	Participation Indicators	Wgt. (%)	Participation Criteria	Wgt. (%)
<p><b>PHASE 2: Preparation of the Job Creation Process</b></p> <ul style="list-style-type: none"> <li>Analyzing the advantages and disadvantages of starting a manufacturing business.</li> <li>Determining the steps involved in a business plan.</li> <li>Drawing up a list of resources useful when starting a business.</li> <li>Participating in various activities.</li> </ul>	65	<p>2. Establish their entrepreneurial profile.</p> <p>3. Sum up the steps involved in creating a business plan.</p>	10  60	<p>2.1 Establish their entrepreneurial profile.</p> <p>3.1 Determine the advantages and constraints involved in starting a business.</p> <p>3.2 Choose the type of business.</p> <p>3.3 Choose the type of legal status.</p> <p>3.4 Choose a company name.</p> <p>3.5 Do a market study.</p> <p>3.6 Establish the organizational structure of the business.</p>	10  10 10 10 10 10
<p><b>PHASE 3: Evaluation of Their Ability</b></p> <ul style="list-style-type: none"> <li>Assessing their potential for starting a business.</li> </ul>	15	<p>4. Assess their personal potential and interest for starting a business.</p> <p>5. Recognize personality traits or personal qualities to emphasize or improve when drawing up a business plan.</p>	5  5	<p>4.1 Assess their personal potential and interest for starting a business.</p> <p>5.1 Determine personality traits to emphasize when starting a business.</p>	5  5

## **INDUSTRIAL DRAFTING**

**5725**

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### **Producing Drawings for a Mechanical System**

Module 21

872 495

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## **PRACTICAL EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
PRODUCING DRAWINGS FOR A MECHANICAL SYSTEM  
(Module 21)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to produce drawings for a mechanical system, made up of parts to be manufactured—standard parts, fasteners and power train components (for a minimum of fifteen components).

Candidates are allowed to use a calculator, class notes or other relevant documents, except the drawings produced during the training process.

The suggested duration of the examination is twelve hours.

**2 Examination Procedure**

2.1 Each candidate should be provided with:

- instructions on the work to be done
- plans of shop drawings and standard parts
- the sheet containing the technical data (accompanying the plans)
- a diskette

2.2 Candidates are expected to produce drawings for a mechanical system made up of manufactured and standard parts, fasteners and power train components, using a computerized workstation and drawing software, such as AutoCAD.

2.3 Steps in the examination procedure:

Step 1: Determine the orientation of the drawing of the mechanical system on an A2 or C sheet, as well as the views required to represent the mechanism.

Step 2: Draw the parts to be manufactured and the standard parts.

Step 3: Enter dimensions and additional information:

- designation of parts (stock number)
- reference dimensions (where necessary)
- adjustment dimensions
- annotations, parts list and title block

Step 4: With the examiner present, save the drawing on the diskette in .DWG and .DWF formats.

Print the drawing (maximum of two printouts).

\* Candidates printing more than two copies will fail this component.

## EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**21 – Producing Drawings for a Mechanical System**

Module code: **872 495**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: PASS  FAIL

Signature of examiner: \_\_\_\_\_

STEP	OBSERVATION	RESULT
<b>1</b>	<p><b>ORGANIZING THE WORK</b></p> <p>1. OBSERVANCE OF ASSEMBLY DRAWING STANDARDS AND CONVENTIONS</p> <p>1.1 Determination of the appropriate orientation of the drawing of the mechanical system on the sheet. <span style="float: right;">0 or 5</span></p> <p>1.2 Determination of the views required to represent the mechanism: <span style="float: right;">YES NO</span></p> <p style="padding-left: 20px;">- appropriate choice of views <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p style="padding-left: 20px;">- arrangement of views in conformity with drawing conventions <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p style="text-align: right;">0 or 10</p>	
<b>2</b>	<p><b>DRAWING OF PARTS TO BE MANUFACTURED AND REPRESENTATION OF STANDARD PARTS</b></p> <p>2. DRAWING PARTS TO BE MANUFACTURED</p> <p>2.1 Concordance of drawing of parts to be manufactured with detail drawings of the project. <span style="float: right;">0 or 10</span></p> <p><i>Error tolerance:</i> one part fails to conform to shop drawings</p> <p>2.2 Observance of dimensions and scale. <span style="float: right;">0 or 5</span></p> <p>2.3 Accurate arrangement of parts. <span style="float: right;">0 or 10</span></p> <p><i>Error tolerance:</i> one error in placement or orientation</p> <p>3. DRAWING STANDARD PARTS</p> <p>3.1 Correspondence between drawings and data given in reference documents. <span style="float: right;">0 or 10</span></p> <p><i>Error tolerance:</i> two parts fail to correspond to the drawings or to initial data</p> <p>3.2 Observance of dimensions and scale. <span style="float: right;">0 or 5</span></p> <p>3.3 Accurate arrangement of parts, fasteners and power train components. <span style="float: right;">0 or 5</span></p> <p><i>Error tolerance:</i> two errors in placement or orientation</p>	



# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Produce drawings for a mechanical system

<b>5725 – Producing Drawings for a Mechanical System (Module 21; 872 495)</b>					<b>Duration: 75 hours</b>	
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
1. Interpret detail drawings for the project and technical documentation.	5	Interpretation of detail drawings of the mechanism	-	Accurate description of the function of each part in the system  Correct understanding of parts arrangement Accurate description of the function of the mechanisms making up the system Appropriate interpretation of English technical terms used in drawings and documentation	-	
2. Organize the work.	5	Selection of required reference documents  Cleanliness of workstation  1. Observance of assembly drawing standards and conventions	-  -  15	Selection of appropriate reference documents  Appropriate preparation of the computerized workstation  1.1 Determination of the appropriate orientation of the drawing of the mechanical system on the sheet Appropriate arrangement of sketched views 1.2 Determination of the views required to represent the mechanism	-  -  5  -	      PT   PT
3. Draw the parts to be manufactured in three dimensions.	30	2. Drawing of parts to be manufactured	25	2.1 Concordance of drawing of parts to be manufactured with detail drawings for the project  2.2 Observance of dimensions and scale 2.3 Accurate arrangement of parts Appropriate use of specialized 3D commands	10  5 10 -	PT  PT PT

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)  
 2000-10-03

**5725 – Producing Drawings for a Mechanical System (Module 21; 872 495)**
**Duration: 75 hours**

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
4. Represent standard parts, fasteners and power train components.	30	3. Drawing of standard parts	20	3.1 Correspondence between drawings and data given in reference documents	10	PT
				3.2 Observance of dimensions and scale	5	PT
				3.3 Accurate arrangement of parts, fasteners and power train components	5	PT
5. Represent adjustable parts in the system.	5	Choice of types of adjustment	-	Appropriate use of specialized CAD software commands	-	
				Appropriate choice of types of adjustment, depending on the mechanism	-	
6. Enter dimensions and additional information.	15	4. Dimensions and additional information	25	Appropriate choice of location of adjustable parts	-	
				Accurate fit of parts	-	
				Accuracy of dimensions for part movement	-	
				4.1 Accuracy of method used to designate parts on drawing	5	PT
				4.2 Accuracy of dimensions according to standards	10	PT
				4.3 Accuracy and clarity of annotations and information contained in parts list and title block	5	PT
Correct ordering of annotations	-					
4.4 Entry of information using standardized language (French/English) and free of spelling mistakes	5	PT				

 W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
7. Check the quality of the completed drawing.	5	Checking and correcting of drawing	-	Observance of correct procedure for checking and approving a drawing Conformity of drawings with initial data Clear and tactful communication of comments to other team members Positive attitude concerning comments made	- - - -	
8. File and print the documents.	5	5. Procedure for filing a drawing	10	5.1 Use of appropriate commands for saving drawings in various formats	10	PS
		6. Setting of parameters for printing a drawing	5	6.1 Observance of procedure for printing a drawing	5	PS

# **INDUSTRIAL DRAFTING**

**5725**

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**Drawing the Housing of a Machine**

Module 22

872 507

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**PRACTICAL EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
DRAWING THE HOUSING OF A MACHINE  
(Module 22)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to draw the housing of a machine. The drawing should be relatively simple.

Candidates may use a calculator, class notes and other relevant documents, except drawings produced during the training process.

The suggested duration of the examination is twelve hours.

**2 Examination Procedure**

2.1 Each candidate should be provided with:

- instructions on the work to be done
- design plans or sketches of a machine
- data relating to the machine

2.2 Candidates are expected to draw the housing of a machine in orthographic projection and in three dimensions, using a computerized workstation and drawing software, such as AutoCAD.

2.3 Steps in the examination procedure:

- Step 1:
- Determine the views required to represent the housing.
  - Draw the housing in orthographic projection.
  - Draw the housing in three dimensions.

Step 2: Represent the joints in the housing drawing in orthographic projection.

- Step 3: Enter dimensions and required information:
- designation of parts (stock number)
  - dimensions, annotations, parts list and title block

Step 4: Calculate the total mass of the housing and enter the information in the drawing.

## EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**22 – Drawing the Housing of a Machine**

Module code: **872 507**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: PASS  FAIL

Signature of examiner: \_\_\_\_\_

STEP	OBSERVATION	RESULT
<b>1</b>	<p><b>DRAWING OF STRUCTURAL ELEMENTS</b></p> <p>1. CHOICE OF ELEMENTS AND VIEWS</p> <p>1.1 Appropriate choice of views</p> <p>2. ACCURACY OF DRAWING</p> <p>2.1 Conformity of elements in drawing with characteristics of catalogue</p> <p>2.2 Clear, meaningful representation of housing in three dimensions</p>	<p>0 or 15</p> <p>0 or 10</p> <p>0 or 10</p>
<b>2</b>	<p><b>REPRESENTATION OF FASTENERS AND ANCHOR POINTS</b></p> <p>3. REPRESENTATION OF JOINTS AND FASTENERS</p> <p>3.1 Correct determination of location of joints, fasteners and anchor points</p> <p><b>REPRESENTATION OF WELDED JOINTS</b></p> <p>4. REPRESENTATION OF WELDING SYMBOLS</p> <p>4.1 Correct positioning and use of welding symbols <i>Error tolerance: one error</i></p>	<p>0 or 10</p> <p>0 or 10</p>

STEP	OBSERVATION	RESULT
3	<p><b>ENTRY OF DIMENSIONS AND ADDITIONAL INFORMATION</b></p> <p>5. ACCURACY OF DIMENSIONS</p> <p>5.1 Accuracy of dimensions: YES NO</p> <p>- accurate values of dimensions <input type="checkbox"/> <input type="checkbox"/></p> <p>- accurate placement of dimensions <input type="checkbox"/> <input type="checkbox"/></p> <p>6. ACCURACY AND PLACEMENT OF INFORMATION</p> <p>6.1 Accurate and exhaustive information in parts list and annotations: YES NO</p> <p>- accurate entry of all necessary information in parts list <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: one error or omission</i></p> <p>- accurate identification (stock number) of all the elements <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: one error or omission</i></p> <p>- accurate entry of all necessary annotations <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: one error or omission</i></p> <p>7. CORRECT SPELLING</p> <p>7.1 Correctly spelled information and dimensions</p> <p><i>Error tolerance: two spelling mistakes</i></p>	<p>0 or 15</p> <p>0 or 15</p> <p>0 or 5</p>
4	<p><b>CALCULATION AND ENTRY OF THE WEIGHT OF THE HOUSING IN THE DRAWING</b></p> <p>8. ACCURACY AND PLACEMENT OF VALUES CALCULATED</p> <p>8.1 Accuracy of information and correct placement in the drawing: YES NO</p> <p>- accurate calculation of the total mass of the housing <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Error tolerance: ± 5 percent of total mass of the housing</i></p> <p>- correct placement of information <input type="checkbox"/> <input type="checkbox"/></p>	<p>0 or 10</p>
<p style="text-align: right;"><b>Total:</b></p> <p><b>Minimum performance standard: 75 points</b></p>		<p style="text-align: right;">/ 100</p>

Comments:

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# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED BEHAVIOUR:** Draw the housing of a machine

<b>5725 – Drawing the Housing of a Machine (Module 22; 872 507)</b>					<b>Duration: 105 hours</b>	
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
1. Organize the work.	3	Interpretation of preliminary drawings	-	Correct interpretation of sketches and design drawings	-	
				Accurate assessment of the machine to be provided with a housing: construction features, assembly of parts, operation	-	
2. Draw structural elements.	40	Preparation of workstation	-	Appropriate preparation of workstation	-	
		1. Choice of elements and views	15	Appropriate choice of structural sections in catalogues to meet the needs of the project and the manufacturer	-	
				1.1 Appropriate choice of views	15	PT
		Use of elements imported from an electronic library	-	Appropriate changes to elements imported from an electronic library	-	
		Observance of drawing conventions	-	Correct arrangements of structural elements	-	
				Correct use of symbols	-	
3. Represent fasteners and anchor points.	5	2. Accuracy of drawing	20	Observance of scale	-	
				2.1 Conformity of elements in drawing with characteristics of catalogue	10	PT
				2.2 Clear, meaningful representation of housing in three dimensions	10	PT
		3. Representation of joints and fasteners	10	3.1 Correct determination of location of joints, fasteners and anchor points	10	PT
				Appropriate choice of symbols from a drawing file library	-	
		Observance of standards of representation	-			

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)  
 2000-10-03

**5725 – Drawing the Housing of a Machine (Module 22; 872 507)**
**Duration: 105 hours**

Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Criteria	W <sub>C</sub>	STR
4. Represent welded joints.	20	4. Representation of welding symbols	10	4.1 Correct positioning and use of welding symbols Observance of standards of representation	10 -	PT
5. Enter dimensions and additional information.	20	5. Accuracy of dimensions	15	Accuracy of calculations, including calculations concerning welding	-	
		6. Accuracy and placement of information	15	5.1 Accuracy of dimensions	15	PT
				Correct placement of parts list on the drawing Parts list correctly drafted using spreadsheet software and imported into the drawing	-	
		6.1 Accurate and exhaustive information in parts list and annotations Observance of drawing standards and conventions	15	PT		
6. Calculate and enter the weight of the housing in the drawing.	5	8. Accuracy and placement of values calculated	10	7.1 Correctly spelled information and dimensions	5	PT
				Use of appropriate method of calculation	-	
7. Check the drawing.	5	Checking and correcting of drawing	-	8.1 Accuracy of information and correct placement in the drawing	10	PT
				Observance of procedure for checking and approving completed drawing Conformity of drawing with initial data and standards defined by machine manufacturer	-	
8. File the drawing.	2	Procedure for filing documents.	-	Appropriate document management	-	
				Appropriate choice of filing method	-	

 W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategies (T: theory, PT: product, PS: process)

## **INDUSTRIAL DRAFTING**

**5725**

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### **Adapting to the New Types of Work Organization**

Module 23

872 153

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- THEORY EXAMINATION**
  - and**
  - PRACTICAL EXAMINATION**
-

# INFORMATION ON THE EVALUATION

## 1 GENERAL INFORMATION

This examination consists in evaluating the candidates' ability to adapt to the special features that characterize the new types of work organization.

The evaluation is to be done in class simultaneously for the entire group of candidates. The examination is divided into two parts. Part One requires candidates to answer questions on the new types of work organization. Part Two consists of a practical examination, during which candidates are expected to solve problems related to work organization, given a case study, similar to the one set out in the CEMEQ guide or other source.

Candidates are allowed to use the CEMEQ guide or any other relevant documentation of a similar nature.

## 2 EXAMINATION PROCEDURE

### A) DETAILS ON THE KNOWLEDGE COMPONENTS

#### Component 1.1

Candidates are expected to define briefly the various production management approaches of companies, such as Taylorism and added value, or to associate the definitions with their names. (See CEMEQ guide, p. 1.58, 2.5 and following pages.)

#### Component 1.2

Candidates are expected to define briefly or differentiate among the preferred types of work organization of a company, such as hierarchical organizations and autonomous structures. (See CEMEQ guide, p. 1.70 and following pages.)

#### Component 1.3

Candidates are expected to associate the company's different production processes, such as unit production, interrupted production, continuous production and cellular production, with standards or made-to-order products. Candidates are also expected to give a summary description of the above. (See CEMEQ guide, p. 1.39 and following pages.)

**Component 1.4**

Candidates are expected to compare or describe in their own words the various types of production management, as well as the evolution of tasks that are thus created in the company. (See CEMEQ guide, p. 1.35 and following pages.)

**Component 2.1**

Candidates are expected to associate and briefly describe and name the means or techniques used by a company to promote the continual improvement of productivity. This refers to the 5S method, Kanban process, Kaizen cycle, quality control and equipment maintenance. (See CEMEQ guide, p. 2.15 and following pages.)

**Component 2.2**

Candidates are expected to define or describe in their own words the various means used to meet the requirements of the new economy, such as response-time improvement, reduction of set-up time of production lines, elimination of waste, as well as economies of scale. (See CEMEQ guide, p. 2.63, 2.7 and following pages.)

**Component 2.3**

Given a typical problem, candidates are expected to list the various ways in which personnel can contribute to the improvement of productivity. (See CEMEQ guide p. 2.11.)

## **B) DETAILS ON THE CRITERION COMPONENTS**

### **Components 3.1 to 3.4**

Given a case study, candidates are expected to

- answer such questions as:
  - *Who is affected by the problem?*
  - *What does the problem consist of?*
  - *Where does the problem arise?*
  - *For how long has the problem been going on?*
  - *How has the problem become apparent?*
  - *Why must the problem be solved?*
- give a clear definition of the problem
- brainstorm to pinpoint possible causes
- brainstorm to find possible solutions
- retain a solution
- suggest a plan of action

## **3 PASS MARK**

The minimum performance standard for Part One is 25 points out of a total of 35.

The minimum performance standard for Part Two is 50 points out of a total of 65.

## **4 DURATION OF EXAMINATION**

The duration of the examination is three hours and thirty minutes: one hour for Part One, and two hours and thirty minutes for Part Two.

**PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE**

<b>5725 – Adapting to the New Types of Work Organization (Module 23; 872 153)</b>						<b>Duration: 45 hours</b>
<b>Specifications of the Expected Behaviour</b>	<b>Duration (%)</b>	<b>Performance Indicators</b>	<b>W<sub>1</sub></b>	<b>Knowledge Components</b>	<b>W<sub>C</sub></b>	<b>No. of Q.</b>
1. Recognize the production management approaches of the company and their effects on the type of work organization.	20	Types of production management	20	1.1 Association or definition of the various types of production management approaches of companies	5	1
				1.2 Differentiation or identification of preferred types of structural organization of a company	5	1
				1.3 Association or identification of the company's production processes	5	1
				1.4 Comparison or description of the various types of production management and the evolution of tasks	5	1
2. Recognize the means used to promote the continual improvement of productivity.	10	Continual improvement of productivity	15	2.1 Association or identification of the means or techniques used by a company to promote the continual improvement of productivity	5	1
				2.2 Identification of the various means used to meet the requirements of the new economy	5	1
				2.3 Listing of the various ways in which employees contribute to improving productivity	5	1
3. Communicate verbally with colleagues.		Communication process among the members of the work team		Relevant and persuasive expression of their point of view as team members		

W<sub>1</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategy

# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – BEHAVIOURAL OBJECTIVE

<b>5725 – Adapting to the New Types of Work Organization (Module 23; 872 153)</b>				<b>Duration: 45 hours</b>		
<b>Specifications of the Expected Behaviour</b>	<b>Duration (%)</b>	<b>Performance Indicators</b>	<b>W<sub>i</sub></b>	<b>Criterion Components</b>	<b>W<sub>c</sub></b>	<b>STR</b>
4. Solve problems related to work organization.	70	Use of simple problem-solving processes	65	3.1 Clear description of the problem 3.2 Determination of the causes and consequences of the problem 3.3 Choice of best solution in accordance with established criteria 3.4 Realistic plan of action	15 15 15 20	P P P P

W<sub>i</sub>: relative weighting of indicators; W<sub>c</sub>: relative weighting of criteria; STR: evaluation strategy

PROGRAM ANALYSIS AND TABLE OF SPECIFICATION – BEHAVIOURAL OBJECTIVE

5/25 Adapting to the New Types of Work Organization (Module 23; 872-153)						
Specifications of the Expected Behaviour	Duration (%)	Performance Indicators	W <sub>I</sub>	Knowledge Components	W <sub>K</sub>	No. of Q.
5. Work in a multidisciplinary team.		<ul style="list-style-type: none"> <li>- Basis of an effective work team</li> <li>- Roles within the team</li> <li>- Planning stages</li> <li>- Decision-making process by consensus</li> </ul>		<ul style="list-style-type: none"> <li>- Determination of the goals of the team and the results to be attained</li> <li>- Consensus on team rules</li> <li>- Determination of the responsibilities of each team member</li> <li>- Proper planning of work</li> <li>- Decision making by consensus</li> </ul>		

W<sub>I</sub>: relative weighting of indicators; W<sub>C</sub>: relative weighting of criteria; STR: evaluation strategy

## **INDUSTRIAL DRAFTING**

**5725**

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### **Designing a Simple Technical Object**

Module 24

872 517

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**PARTICIPATION EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
DESIGNING A SIMPLE TECHNICAL OBJECT  
(Module 24)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

This examination consists in evaluating the candidates' ability to design a simple technical object. Evaluation of the candidates' participation will be based on information gathered at certain times during the learning activities, according to the criterion component involved.

**2 Examination Procedure**

- 2.1 Candidates should be provided with instructions on the work to be done.
- 2.2 Candidates should be informed of the deadline for handing in the work sheets.
- 2.3 The examination is divided into three consecutive phases:
  - Phase 1: Gathering information on the design process
  - Phase 2: Applying the design process
  - Phase 3: Assessing the implementation of the design process

## PARTICIPATION EVALUATION FORM

**INDUSTRIAL DRAFTING**

Program code: **5725**

**24 – Designing a Simple Technical Object**

Module code: **872 517**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: **PASS**  **FAIL**

Signature of examiner: \_\_\_\_\_

PHASE	OBSERVATION	YES	NO
<b>1</b>	<p><b>GATHER INFORMATION ON THE DESIGN PROCESS</b></p> <p>1.1 Gather and organize data:</p> <ul style="list-style-type: none"> <li>- methodically listing enough relevant information on the type and sequence of the stages involved in the design process of the object presented</li> </ul> <p>1.2 Make a list of personal knowledge, skills and attitudes and explain how they will help to complete the stages of the design process.</p> <p>1.3 Explain how the learning acquired in this module is useful for an industrial draftsman.</p>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<p><b>APPLY THE DESIGN PROCESS</b></p> <p>2.1 Work independently and methodically, making maximum use of available resources:</p> <ul style="list-style-type: none"> <li>- individually, searching for information and original solutions</li> <li>- methodically using most of the available resources</li> </ul> <p>2.2 Remain available to help others.</p> <p>2.3 Perform all required work:</p> <ul style="list-style-type: none"> <li>- research enough information to give a complete description of the need to be met, specifying the sources of the information used</li> <li>- using notes and sketches, describe an adequate number of possible solutions to meet the required need</li> <li>- choose the most feasible solution, justifying the reason for the choice with relevant evaluation criteria</li> </ul> <p>2.4 Pay attention to the material presentation of documents:</p> <ul style="list-style-type: none"> <li>- produce quality technical drawings that fully represent the special features of the object</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>



# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – SITUATIONAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED OUTCOME:** Design a simple technical object

<b>5725 – Designing a Simple Technical Object (Module 24; 872 517)</b>					<b>Duration: 105 hours</b>
Learning Context	Duration (%)	Participation Indicators	Wgt. (%)	Participation Criteria	Wgt. (%)
1. Gathering information on the design process.	20	1. Gather information on the design process.	30	Consult available sources of information.  1.1 Gather and organize data. 10 1.2 Make a list of personal knowledge, skills and attitudes and explain how they will help to complete the stages of the design process. 10  Formulate fears clearly. -  1.3 Explain how the learning acquired in this module is useful for an industrial draftsman. 10	
2. Applying the design process.	60	2. Apply the design process.	55	2.1 Work independently and methodically, making maximum use of available resources. 10  2.2 Remain available to help others. 5 2.3 Perform all required work. 30 2.4 Pay attention to the material presentation of documents. 10	
3. Assessing the implementation of the design process.	20	3. Assess the implementation of the design process.	15	Present the project, explaining clearly the rational process behind the design. -  3.1 Produce a clear, concise report containing information on: - the difficulties encountered and the solutions applied - the knowledge, skills and attitudes acquired - the aspects most appreciated during the implementation of the process 15	

## **INDUSTRIAL DRAFTING**

**5725**

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### **Entering the Work Force**

Module 25

872 526

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## **PARTICIPATION EXAMINATION**

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INDUSTRIAL DRAFTING  
5725  
ENTERING THE WORK FORCE  
(Module 25)

**INFORMATION ON THE EVALUATION**

**1 Information and Instructions**

Candidates are expected to complete the questionnaire on the practicum and express their choice of activities.

During the practicum, they are to keep track of their daily tasks and comment on the feedback received from the host company regarding their performance and behaviour.

At the end of the practicum, candidates must produce a report on their activities.

Finally, in a group meeting, they are to describe their experiences in the workplace.

**2 Suggestions**

To carry out the evaluation, it would be advisable to prepare:

- a document related to the search for a practicum position, which the candidates can use to provide such information as their address and telephone number, their choice of activities and their preferred practicum location
- an outline of the practicum report to be prepared by the candidates at the end of the practicum
- an evaluation form for the candidates containing, among other details, the evaluation of their performance of tasks, behaviours and qualities

**3 Specific Instructions**

Component 5.1 is to be evaluated based on the appraisal provided by the company involved.

**In order to complete this module successfully, candidates must succeed in nine criteria out of thirteen, including 2.1, 5.1, 6.1, 7.1 and 9.1.**

## PARTICIPATION EVALUATION FORM

**INDUSTRIAL DRAFTING**  
**25 – Entering the Work Force**

Program code: **5725**  
 Module code: **872 526**

Name of candidate: \_\_\_\_\_

School/centre: \_\_\_\_\_ Permanent code: \_\_\_\_\_

Date of examination: \_\_\_\_\_ RESULT: PASS  FAIL

Signature of examiner: \_\_\_\_\_

PHASE	OBSERVATION	YES	NO
<b>1</b>	<p><b>SEARCH FOR A PRACTICUM POSITION</b></p> <p>1. MAKE AN EFFORT TO LEARN ABOUT THE PRACTICAL ORGANIZATION OF THE PRACTICUM AND THEIR RESPONSIBILITIES</p> <p>1.1 Discuss the organization of the practicum using reference documents. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p>2. PARTICIPATE IN A SEARCH FOR A PRACTICUM POSITION</p> <p>2.1 Prepare a job search plan. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p>3. MAKE AN EFFORT TO DEFINE THE CHARACTERISTICS OF THE PHYSICAL ORGANIZATION OF THE PRACTICUM SITE</p> <p>3.1 Contact employers and visit the practicum site. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p>		
<b>2</b>	<p><b>PERFORMANCE OF ACTIVITIES IN THE WORKPLACE</b></p> <p>4. PAY ATTENTION TO THE CONTEXT AND ORGANIZATION OF THE WORK</p> <p>4.1 Adopt professional behaviours. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p>5. PARTICIPATE ACTIVELY IN PERFORMING VARIOUS TRADE-RELATED TASKS</p> <p>5.1 Observe established methods, techniques and standards when performing tasks. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p>6. OBSERVE COMPANY SCHEDULES, RULES AND REGULATIONS RELATED TO TASKS THAT THEY ARE AUTHORIZED TO PERFORM</p> <p>6.1 Make an effort to observe company rules and regulations, schedules and tasks. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p> <p>7. OBSERVE HEALTH AND SAFETY RULES IN FORCE IN THE WORKPLACE</p> <p>7.1 Make an effort to observe health and safety rules in force in the workplace. <span style="float: right;"><input type="checkbox"/> <input type="checkbox"/></span></p>		



# PROGRAM ANALYSIS AND TABLE OF SPECIFICATIONS – SITUATIONAL OBJECTIVE

**PROGRAM:** Industrial Drafting  
**EXPECTED OUTCOME:** Enter the work force

<b>5725 – Entering the Work Force (Module 25; 872 526)</b>				<b>Duration: 90 hours</b>		
Learning Context	Duration (%)	Participation Indicators	Wgt. (%)		Participation Criteria	Wgt. (%)
<p><b>PHASE 1: Search for a Practicum Position</b></p> <ul style="list-style-type: none"> <li>• Learning about the practicum and the related procedures.</li> <li>• Defining their expectations and needs with respect to the practicum.</li> <li>• Finding companies likely to meet their expectations and needs.</li> </ul>	20	<ol style="list-style-type: none"> <li>1. Make an effort to learn about the practical organization of the practicum and their responsibilities.</li> <li>2. Participate in a search for a practicum position.</li> <li>3. Make an effort to define the characteristics of the physical organization of the practicum site.</li> </ol>	5  10  5	<ol style="list-style-type: none"> <li>1.1 Discuss the organization of the practicum using reference documents.</li> <li>2.1 Prepare a job search plan.</li> <li>3.1 Contact employers and visit the practicum site.</li> </ol>	5  10  5	
<p><b>PHASE 2: Performance of Activities in the Workplace</b></p> <ul style="list-style-type: none"> <li>• Observing the work context, such as types of products manufactured and techniques used, internal structure and working conditions, health and safety in the workplace, interpersonal relations.</li> <li>• Becoming part of the work team.</li> <li>• Observing or performing various trade-related tasks, or participating in their performance.</li> <li>• Producing a brief report on work-related observations and the tasks performed in the workplace.</li> </ul>	60	<ol style="list-style-type: none"> <li>4. Pay attention to the context and organization of the work.</li> <li>5. Participate actively in performing various trade-related tasks.</li> <li>6. Observe company schedules, rules and regulations, related to tasks that they are authorized to perform.</li> <li>7. Observe health and safety rules in force in the workplace.</li> </ol>	5  25  5  5	<ol style="list-style-type: none"> <li>4.1 Adopt professional behaviours.</li> <li>5.1 Observe established methods, techniques and standards, when performing tasks.</li> <li>6.1 Make an effort to observe company rules and regulations, schedules and tasks.</li> <li>7.1 Make an effort to observe health and safety rules in force in the workplace.</li> </ol>	5  25  5  5	

Learning Context	Duration (%)	Participation Indicators	Wgt. (%)	Participation Criteria	Wgt. (%)
		8. Regularly learn about the characteristics of the methods and techniques applied, as well as the tools used.	10	8.1 Learn about the techniques used to repair and maintain the equipment.	10
		9. Make an effort to produce daily reports on observations related to the tasks performed.	10	9.1 In their journal, comment on various points pertaining to the feedback received.	10
<b>PHASE 3: Evaluation of the Practicum and of the Training Received</b> <ul style="list-style-type: none"> <li>Establishing links between their activities in the workplace and the knowledge acquired during the training process.</li> <li>Discussing and comparing their perception of the trade before and after the practicum, such as workplace and occupational practices.</li> <li>Discussing the consequences of the practicum on their career choices (skills, preferences and interests).</li> </ul>	20	10. Using their report, share their practicum experience with the other students.	20	10.1 List the main tasks and operations performed and describe the nature of their participation in them, whether individually or as part of a team. 10.2 Evaluate their career choice by comparing the aspects and requirements of the trade with their preferences, skills and interests. 10.3 Using examples, compare the reality of the workplace with the training received. 10.4 Discuss their perception of the practicum milieu.	5 5 5 5

