DOCUMENT RESUME

ED 339 854 CE 059 776

AUTHOR	Gibb, Jennifer; And Others
TITLE	Printing Machining. Sheet-Fed Offset Lithography Volume (1)-Single Unit. Guide for Trainers.
INSTITUTION	TAFE National Centre for Research and Development, Ltd., Leabrook (Australia).
REPORT NO	ISBN-0-86397-057-5
PUB DATE	91
NOTE	239p.
AVAILABLE FROM	TAFE National Centre for Research and Development, Attn: Sales, 252 Kensington Road, Leabrook, South Australia 5068, Australia.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Apprenticeships; Behavioral Objectives; Check Lists; *Equipment Maintenance; Foreign Countries; Instructional Materials; Job Skills; Learning Activities; *Machinists; Mechanics (Process); *On the Job Training; Postsecondary Education; *Printing; Retraining; Safety; Student Evaluation; Teaching Guides; Technical Education
IDENTIFIERS	Australia; *Lithography

ABSTRACT

This two-part guide is for printing machinists in Australia who are responsible for providing on-the-job training to apprentices and retraining to adult workers. The aim of the package is to provide training in the use of sheet-fed offset lithographic presses. Part A provides introductory materials for the on-the-job trainers, including the following: (1) a general note to trainers about their responsibilities (planning and delivering a training session, performance assessment, and training records); (2) introduction to the training material; (3) overview of the responsibilities of the printing machinist--a diagram; (4) competencies involved in producing printing products; (5) a note on workplace safety; (6) assessment guidelines; (7) assessment records; and (8) sample job assessment sheet and assessment profiles. Part B contains on-the-job training units on the following topics: workplace safety, make-ready, operate, end-of-run completion, and maintenance. Each unit consists of notes for trainers, checklists for all performance criteria, and short answer questions. The notes for trainers include unit of competence, element of competence, performance criteria, boundary statements that specify the conditions/limiting factors under which performance is to be demonstrated, and content. Additional information, explanations, and practical suggestions are also included in the notes. (YLB)

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NPITC

GUIDE FOR TRAINERS

Printing Machining

SHEET-FED OFFSET LITHOGRAPHY
SINGLE UNIT

GUIDE FOR TRAINERS

A practical reference for workplace trainers who are responsible for providing on-the-job training to printing machining apprentices.

SHEET-FED OFFSET LITHOGRAPHY
VOLUME (1) - SINGLE UNIT

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Adelaide
1991

A.C.N. 007 967 311

ISBN: 0 86397 057 5 (Hard copy)
TD/TNC: 26.08

Word processing by: Eleanor Woods

Published by:
TAFE National Centre for Research and Development Ltd.,
252 Kensington Road,
LEABROOK SA 5068

FOREWORD

The Printing Industry is indebted to the many people who gave their time and expertise to develop this training manual.

Planning for this project began in 1988. A Search Conference to provide input to the National Core Curriculum and the on-the-job training materials was held in Melbourne in March 1989. The project has progressed steadily since that date.

Developing national curriculum is not easy in an industry as diverse as printing, and is further complicated by the requirements of the various State education bureaucracies. The recent formation of a National Training Board with the objective of developing national skill standards for each industry should streamline the process in the future.

In February of this year the first two core training modules were distributed to the industry. These were the apprentice workbooks and trainer's guides for the safety and orientation modules of the curriculum.

Reference groups in Sydney and Melbourne reviewed the material in this the first of the skills training modules and provided invaluable advice on content and format to reflect the current best practices of the industry.

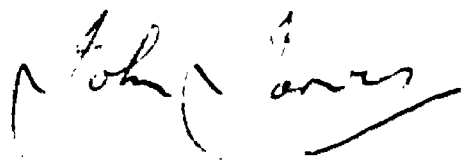
The members of the reference groups are:

Sydney	Allan Wetherell, School of Graphic Arts
	Keith Henderson, Anzpac
	Warwick Roden, Roden Print
	Greg Grace, Seligson & Clare
	Jim Richardson, Macarthur Press
	Frank Rew, PKIU.
Melbourne	Bob Black, Melbourne College of Printing
	Ian Kennedy, Colin Martyn Packaging Pty Ltd
	Graeme Glanville, Thomas Frame & Co Pty Ltd
	Gerard Wintle, Collie Cooke Pty Ltd
	Jeff Haines, Tudor Printery Pty Ltd
	Don Baron, PKIU.

Production of this training manual is timely in that it provides the framework for a structured training program that meets the requirements of the Training Guarantee Legislation. Providing other requirements are met, implementation of this training program will constitute eligible training expenditure.

Success or otherwise of this venture will depend on whether or not this manual gets used. Implementation of properly structured training is a sound investment in any company and is also rewarding for both trainer and trainee.

Finally I would like to acknowledge the perseverance and commitment of Grant Hofmeyer of the South Australian Division of NPITC, Jennifer Gibb and Hugh Guthrie of the TAFE National Research Centre, who brought this stage of the project to fruition.



John Jarvis
National Executive Director
NPITC

July 1991

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CONTENTS: PART B - ON-THE-JOB TRAINING MATERIAL

PART A - GUIDE FOR ON-THE-JOB TRAINERS

A GENERAL NOTE TO TRAINERS ABOUT THEIR RESPONSIBILITIES IN PROVIDING TRAINING ON-THE-JOB

This package is for printers who are responsible for providing on-the-job training to apprentices and other workers. The aim of this package is to provide quality training in the use of a single unit sheet-fed offset lithographic machine to produce a range of printed products.

The materials in this package give the trainer the framework and the content to be covered as suggested by the national curriculum in printing machining.

The material in this package is a resource; it is not a complete training package. The trainer will need to make some changes to the material (e.g. the detail on the checklists) depending on:

- the job
- the type of machine being used
- other workplace considerations.

This resource is a guide and aims to give all trainers as much help as possible. The trainer however does have some responsibility in adapting this resource to suit the specific training needs of the apprentice/learner.

It is recommended that before starting training the company should send the trainer on a short 'train-the-trainer' course.

These courses aim to teach anyone who is providing training on-the-job in a one-to-one or small group basis with skills in:

- planning and designing a training session
- delivering training
- assessing the trainee's performance on-the-job
- maintaining training records.

It is also recommended that the trainer find out which college the apprentice is attending for off-the-job training and that contact be made with the staff member in charge of the apprentice(s). It is important that both on- and off-the-job trainers communicate to ensure the training offered off-the-job supports what is happening on-the-job.

In order to be effective and achieve the purpose of producing a competent printing machinist, training must be systematic, carefully planned and cover all aspects of the topic.

PLANNING A TRAINING SESSION

When planning the training session the trainer should:

- identify the apprentice's existing level of skills
- identify the apprentice's training needs
- identify the quality and workplace safety standards that must be complied with
- break the training task down into logical steps
- list all the resources required in order to conduct training
- timetable training to fit in with daily work schedule.

DELIVERING A TRAINING SESSION

When delivering training the trainer should:

- explain how training will be conducted and assessed
- state the purpose of each session clearly
- explain the workplace safety issues that need to be considered
- explain the company's standard of quality and quality control/improvement procedures
- develop any learning resources or other aids which will help in training the apprentice
- use the machine to demonstrate and give clear explanations
- give the apprentice plenty of opportunity to practice
- encourage the apprentice to ask questions, take notes
- use mistakes made as opportunities for learning
- be positive, supportive, encouraging and enthusiastic.

ASSESSING THE APPRENTICE'S PERFORMANCE

The **Guidelines on Assessment** in this package explain how on-the-job training is to be assessed.

The assessment process described in the package is very similar to what happens on a daily basis on-the-job and therefore formalises what happens.

The apprentice will be assessed on his/her ability to produce a range of printed products that is commercially saleable and that meets specifications and standards relating to in-house quality control, production time, spoilage rates etc. It is also expected that the apprentice demonstrate a responsible attitude to workplace safety, maintain the press in good working order and overall is a positive and pleasant member of the press room team.

TRAINING RECORDS

The trainer will be required to record the apprentice's achievement of the aims of training in the:

- logbook
- job assessment sheets (supported by a portfolio of work).
- assessment profile

These are described in detail in the sections called **Assessment Records** and **Assessment Profile** later in this guide.

The trainer may also be required by the company to keep a record of training that he/she has conducted (e.g. to satisfy requirement of Training Guarantee Legislation).

All records should be:

- completed accurately and legibly
- completed regularly after each training session/assessment event
- stored in the proper place
- accessible to apprentice and the off-the-job trainer.

These notes about how to conduct a training session and the responsibilities of the trainer are an introduction.

Practical guidance on training is available to trainers in the form of short train-the-trainer courses.

NPITC, PATEFA or PKIU in each State/ Territory can provide information about the short courses that are available and that meet the requirements of the Training Guarantee Legislation.

Useful resources for on-the-job trainers are:

Laurie Field (1990) *Skilling Australia: A handbook for trainers and TAFE teachers* (Longman Cheshire Pty Ltd, Melbourne)
Gary Kroennert (1990) *Basic training for trainers - An Australian handbook for new trainers* (McGraw Hill Book Company, NSW)
Australian National Training Series (1990) *One-to-one skills instruction* (Kits comprising video tapes, learner's guide, mentor's guide and programmed instruction) Hawthorn Institute of Education and In Communication Pty Ltd.

AN INTRODUCTION TO THIS TRAINING MATERIAL

WHO IS THIS PACKAGE FOR?

Printing machinists who are responsible for training apprentices or retraining adult tradespeople in the use of sheet-fed offset lithographic presses.

CURRICULUM BASE

This package is the on-the-job application of the National Curriculum for Printing Machining (Basic Trade). The national curriculum divides sheet-fed offset lithography into 4 modules.

This volume of on-the-job training material covers modules 1 and 2 (single unit printing).

Volume 2 of the on-the-job training material will cover modules 3 and 4 (multi unit printing).

PRINTING PROCESS

This package covers Sheet-fed Offset Lithographic Printing Process using machines with the following features:

SINGLE SHEET/STREAM FEEDER
SINGLE UNIT PRINTING
STANDARD DAMPENING
STANDARD INKING
STANDARD DELIVERY.

PRINTED MATERIAL

For **module (1)** the range of printed products to be produced by the apprentice includes use of:

- uncoated substrates (of varying weight, caliper, texture)
- coated substrates (optional)
- single and multi colour work (3/4 colour work optional)
- single and multiple image plates
- type, line, stipple and solid work.

Examples of printed products at module (1) level include:

- leaflets
- covers
- personalised and office stationery.

For **module (2)** the range of printed products to be produced by the apprentice includes use of:

- uncoated substrates (of varying weight, caliper, texture)
- coated substrates (of varying weight, caliper, texture)
- multi colour work (up to 4 colour process work)
- single and multiple image plates
- type, line, stipple, solid and duo-tone.

Examples of printed products at module (2) level include:

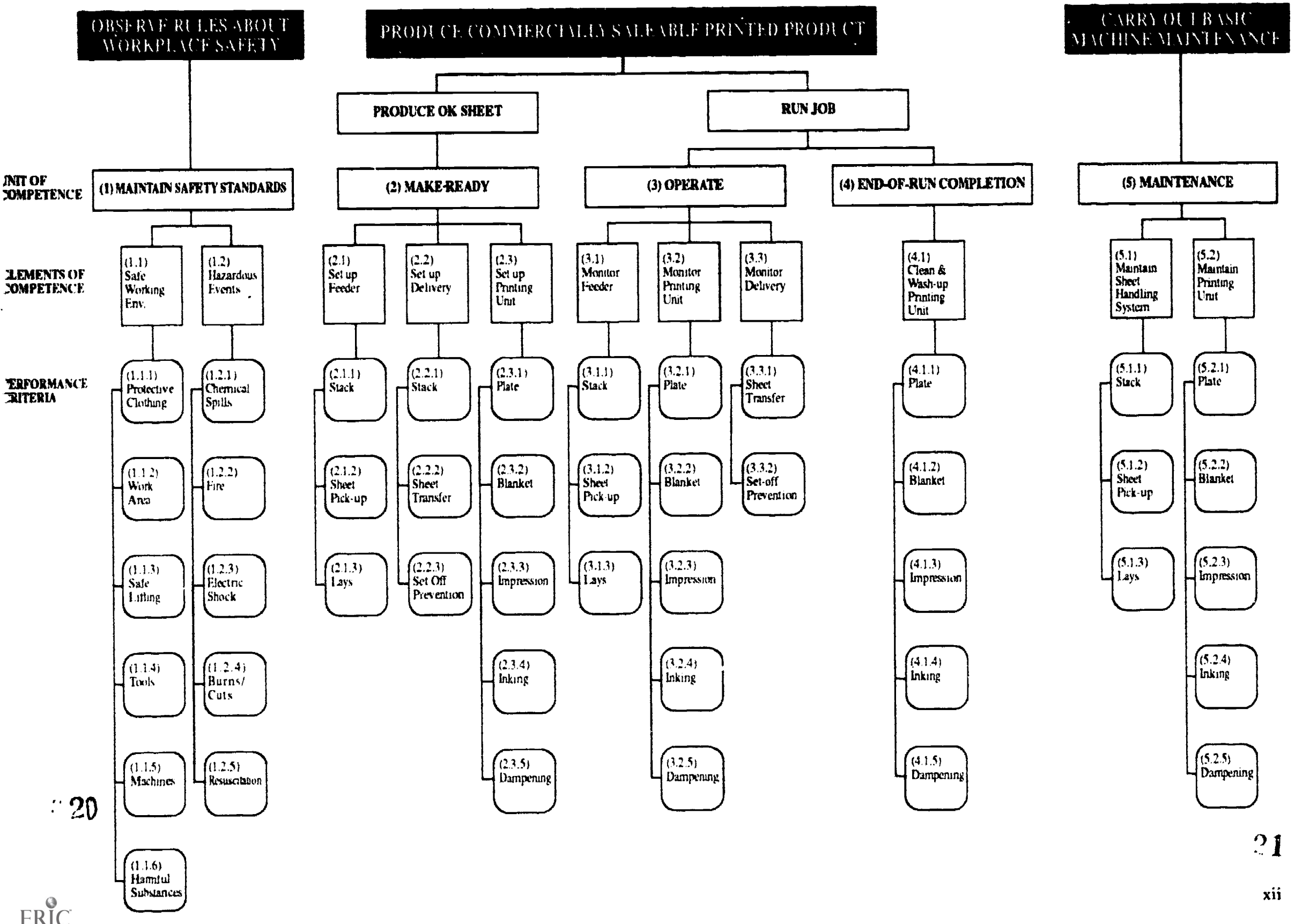
- posters
- pamphlets
- book covers/jackets.

AIM OF ON-THE-JOB TRAINING

The printing machinist has three major responsibilities when working in the press room. These are:

- to maintain standards of workplace safety
- to produce a commercially saleable printed product
- to carry out basic maintenance on the press to ensure it is in good working order for each make-ready.

The competencies required to achieve these three aims are outlined in the chart on the next page and explained in the following sections.


OBSERVE RULES ABOUT WORKPLACE SAFETY
PRODUCE COMMERCIALLY SALEABLE PRINTED PRODUCT
CARRY OUT BASIC MACHINE MAINTENANCE
PRODUCE OK SHEET
RUN JOB
UNIT OF COMPETENCE
(1) MAINTAIN SAFETY STANDARDS
(2) MAKE-READY
(3) OPERATE
(4) END-OF-RUN COMPLETION
(5) MAINTENANCE
ELEMENTS OF COMPETENCE
(1.1) Safe Working Env.
(1.2) Hazardous Events
(2.1) Set up Feeder
(2.2) Set up Delivery
(2.3) Set up Printing Unit
(3.1) Monitor Feeder
(3.2) Monitor Printing Unit
(3.3) Monitor Delivery
(4.1) Clean & Wash-up Printing Unit
(5.1) Maintain Sheet Handling System
(5.2) Maintain Printing Unit
PERFORMANCE CRITERIA
(1.1.1) Protective Clothing
(1.1.2) Work Area
(1.1.3) Safe Lifting
(1.1.4) Tools
(1.1.5) Machines
(1.1.6) Harmful Substances
(1.2.1) Chemical Spills
(1.2.2) Fire
(1.2.3) Electric Shock
(1.2.4) Burns/ Cuts
(1.2.5) Resuscitation
(2.1.1) Stack
(2.1.2) Sheet Pick-up
(2.1.3) Lays
(2.2.1) Stack
(2.2.2) Sheet Transfer
(2.2.3) Set Off Prevention
(2.3.1) Plate
(2.3.2) Blanket
(2.3.3) Impression
(2.3.4) Inking
(2.3.5) Dampening
(3.1.1) Stack
(3.1.2) Sheet Pick-up
(3.1.3) Lays
(3.2.1) Plate
(3.2.2) Blanket
(3.2.3) Impression
(3.2.4) Inking
(3.2.5) Dampening
(3.3.1) Sheet Transfer
(3.3.2) Set-off Prevention
(4.1.1) Plate
(4.1.2) Blanket
(4.1.3) Impression
(4.1.4) Inking
(4.1.5) Dampening
(5.1.1) Stack
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(5.1.3) Lays
(5.2.1) Plate
(5.2.2) Blanket
(5.2.3) Impression
(5.2.4) Inking
(5.2.5) Dampening

COMPETENCIES INVOLVED IN PRODUCING PRINTED PRODUCTS

WHAT DO WE MEAN BY COMPETENCE?

Competence refers to the ability to perform the activities within an occupation to the standard expected in employment.

Therefore, competencies to be achieved by the apprentice are the ability to:

- maintain safety in the press room
- make-ready the press and produce an OK sheet
- operate the press to produce a commercially saleable product
- wash-up and maintain the press ready for next make-ready.

In order to achieve competence to the standard expected in employment the apprentice is expected to adhere to:

- elements of competence and performance criteria (described in this training package)
- job specification (as described in job docket)
- rules about workplace safety
- enterprise-specific standards
  (These are the company's standards that relate to:
  - spoilage rates
  - production time
  - quality control).

In order to **produce a commercially saleable printed product** the apprentice has to be competent at:

- **make-ready** and set up tasks and producing an **OK sheet**
- monitoring **operation** of the press
- carrying out end-of-run **completion** tasks (including good house-keeping practices).

In addition the apprentice is responsible for the basic ongoing cleaning and **maintenance** of the press.

In achieving and demonstrating competence in each of these tasks, the apprentice is also responsible for **maintaining the safety of the press room** (see next section).

These tasks are defined as follows:

MAKE-READY

In this package 'make-ready' refers to:

- set up feeder/delivery (sheet handling)
- set up printing unit
- operate machine in order to produce the OK sheet.

OPERATE

This refers to all the tasks the printer does while the press is operating - in other words monitoring the quality of the printed product against the OK sheets as well as monitoring how the press is running.

COMPLETE

This means basically the tidy up and wash up tasks on the printing unit at the end of the job that the printer does in order to leave the printing unit clean and ready for the next job.

MAINTAIN

This means carrying out basic cleaning and on-going maintenance tasks on the press (bearing in mind the prescribed maintenance cycle in the operator's manual) to ensure that the press is maintained in good working order and ready for the next make-ready.

A SPECIAL NOTE ABOUT WORKPLACE SAFETY

This unit aims to present the responsibilities of the employee in MAINTAINING SAFETY in the workplace

It is the responsibility of the employer to provide a safe work environment that meets the requirements of OH&S procedures and legislative requirements.

It is the responsibility of the employees to work safely and to be aware of their responsibilities regarding their role in maintaining workplace safety.

It is also the responsibility of everyone in the workplace to know how to respond to emergency situations. This unit therefore consists of two elements of competence:

1.1 recognising potential hazards and maintaining the safety of the working environment

1.2 implementing measures for dealing with hazardous events in the workplace.

Although safety is presented as a separate unit it is integral to every element of competence and performance criteria throughout the 4 machine units - make-ready, operate, end-of-run completion and basic maintenance.

Therefore **performance criteria** relating to workplace safety should be included in each training session. For example when setting up the press, the apprentice will have to comply with safe work practices including:

1.1.1 "protective clothing and devices are worn"
1.1.2 "the work area is kept clean and free of hazards"
1.1.3 "safe lifting techniques are demonstrated . . ."

Safety is an attitude to be emphasised throughout training

FIRST AID TRAINING

1.2 "implements measures for dealing with hazardous events in the workplace".

This element of competence covers the basic common-sense response to the following emergencies including:

- chemicals
- fire
- burns
- cuts and bleeding
- electric shock.

The aim is not to teach and assess competence in first aid.

Competence in first aid can only be achieved by attending a course run by trained first aid officers from the Red Cross or Ambulance Services.

However the aim is to remind both workers and apprentices that although every step is taken to prevent emergencies/hazardous events they **can** and **do** occur and <u>if</u> they do there is a minimum response that every person should be capable of exhibiting.

Naturally this competence can not be assessed by actual demonstration of skill.

However, it can be assessed by:

a) asking apprentice to explain what he/she would do in a hypothetical situation
b) simulation and role play - e.g. demonstrate the method of freeing a victim of electric shock from power source.

At a minimum, each worker should know:

- what immediate steps to take
- what workplace procedure is regarding first aid and contacting a medical officer.

THE CONTENTS OF THIS PACKAGE

PART A: GUIDE FOR ON-THE-JOB TRAINERS

A general introduction to the training material in this volume (pages iii-xxv).

PART B: ON-THE-JOB TRAINING MATERIAL

- Training Material presented in 5 Units (pages 1-1 to 5-20):

  Unit 1 - Workplace safety (pages 1-1 to 1-19)
  Unit 2 - Make-ready (pages 2-1 to 2-41)
  Unit 3 - Operate (pages 3-1 to 3-8)
  Unit 4 - End-of-run completion (pages 4-1 to 4-7)
  Unit 5 - Maintenance (pages 5-1 to 5-20).

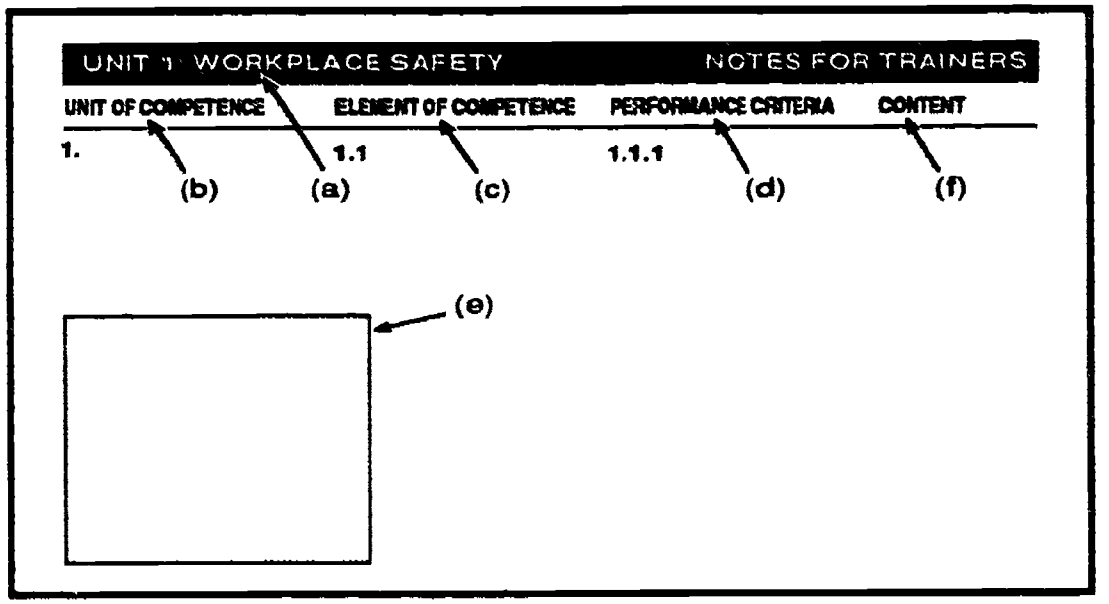
In Part B each Unit consists of:

- **Notes for trainers** that include statement of competences and performance criteria (i.e. standards)
  (printed on coloured paper)
- **Checklists**
- **Short answer questions** (Units 1,2, and 5 only).

NOTES FOR TRAINERS

The first few pages of each unit look like this and include:

- elements of competence
- performance criteria
- boundary statements
- list of contents.



Each of these sections is explained below:

(a) Title of Unit

(b) Unit of Competence - a short description of the purpose of the unit

(c) Element of competence - a description in outcome terms of all the components of the unit (the building blocks of the unit)

(d) Performance criteria - sub-divisions of the element of competence. They specify the evidence that needs to be demonstrated for achievement of the element of competence.

(e) Boundary statements - these specify the conditions/limiting factors under which performance is to be demonstrated, e.g.

- type of machine
- type of substrate
- type of job.

(f) Content - this is a guide for trainers and lists the content that needs to be covered during training.

Additional information for trainers, explanations, practical suggestions are also included in the **NOTES FOR TRAINERS**.

BOUNDARY STATEMENTS

The boundary statements are printed on the first page of each unit (in a shaded box). They specify the conditions/limiting factors under which performance is to be demonstrated in each unit of modules 1 & 2.

For modules 1 and 2 the following boundary statements are the same:

Unit 1 Workplace safety
Unit 3 Operate
Unit 4 End-of-run completion
Unit 5 Maintenance.

Unit 2 Make-ready has different boundary statements for module 1 & 2. This is because in module 2 the apprentice is expected to produce a wider range of more complex work than in module 1.

The boundary statements for all 5 units are listed below.

Unit 1 Workplace Safety

Modules 1 & 2 - Boundary Statement

Competence will be limited to:

- recognising and controlling potential hazards and eliminating danger by implementing safety rules and procedures concerning:
  - protective clothing
  - manual handling
  - hand tools
  - harmful substances
  - machines
- explaining what immediate action should be taken to deal with accidents that may occur in the press room:
  - chemical
  - fire
  - electricity
  - cuts/burns.

Unit 2 Make-Ready

Module 1 - Boundary Statement

Competence will be limited to using:

- single sheet/stream feeder
- single printing unit
- standard inking
- standard dampening
- standard delivery
- uncoated substrates (with an introduction to coated substrates)
- single and multiple image plates

in order to produce:

- 1/2 colour work (3 to 4 colour work is optional)
- type, line, stipple and solid work.

Module 2 - Boundary Statement

Competence will be limited to using:

- single sheet/stream feeder
- single printing unit
- standard inking
- standard and **alcohol dampening**
- standard delivery
- uncoated substrates
- coated substrates

in order to produce:

- up to 4 colour work
- type, line, stipple, solid and **tone work.**

Unit 3 Operate

Modules 1 & 2 - Boundary Statement

Competence will be limited to monitoring operation of the press while running a job. This is done by:

- checking a random sample of the printed product against the OK sheet (following in-house quality control procedures)

- observing the press in operation and making any adjustments that are required (taking into account company/machine specifications and workplace safety standards).

Unit 4 End-of-run completion

Modules 1 & 2 - Boundary Statement

Competence will be limited to cleaning and washing-up the printing unit according to machine specifications, company procedures and relevant workplace safety standards.

Unit 5 Maintenance

Modules 1 & 2 - Boundary Statement

Competence will be limited to ensuring the press is maintained in good working order and ready for next make-ready. Maintenance should comply with prescribed maintenance cycles, company procedures and workplace safety standards.

CHECKLISTS

These checklists are provided for all performance criteria in all units. They itemise all the activities/steps that have to be completed in order to satisfy each performance criterion.

They can be used in three ways:

- as an aid for the trainer - to ensure that all the necessary information has been covered during training
- as a self-help aid for the apprentice - for example, if the apprentice has to set up the inking system - then he/she may refer to the checklist to ensure everything has been done
- as an assessment tool (Explained later under 'Assessment Guidelines').

It is the trainer's responsibility to go through the checklists carefully and make any necessary additions, modifications, deletions.

SHORT ANSWER QUESTIONS

These questions are provided as a training aid. There may be times when a trainer is not sure that the apprentice:

- has all the necessary underpinning/background knowledge about the machines
- is applying the knowledge to the workplace.

These questions can be used when and if the trainer deems it appropriate.

If the apprentice demonstrates competence and answers questions correctly then the trainer can determine that the required learning has taken place.

If the apprentice is unable to answer the questions then this indicates that more training is needed.

The trainer may use the questions in two ways:

- ask the questions during/after working on the machine to check that the apprentice has the necessary knowledge
- give the questions to the apprentice before training in the form of worksheets and ask him/her to write out the answers in order to find out level of knowledge of the apprentice.

It is the trainer's decision whether to use all the questions, whether to use some of them, or whether to modify them, or to ask additional ones.

Trainers are encouraged to add more questions as the need arises.

ASSESSMENT GUIDELINES

WHAT IS COMPETENCY-BASED ASSESSMENT?

Competency-based assessment requires that:

- apprentices can be assessed for competency any time they (or their trainers/teachers) believe they are ready
- assessment is based on standards
- assessment for the most part is based on actual demonstration of skills.

TYPES OF ASSESSMENT

The assessment of this module has 2 components:

- process assessment
- performance assessment.

Process assessment

This means assessing how competent the apprentice is in:

- maintaining workplace safety
- make-ready tasks
- monitoring the operation of the machine
- end-of-run completion tasks
- maintenance tasks.

The checklists and short answer questions in this package should be used as needed to:

- check whether the apprentice meets the standard
- help the trainer to isolate problems areas if the apprentice fails his/her competency assessment.

These assessment tools will help the trainer to find out what the apprentice can and cannot do so that his/her training program can be adjusted accordingly.

Performance assessment

This involves examining the quality of the finished printed product based on the OK sheet and in relation to its agreed specifications.

The quality of the finished product provides the evidence of the apprentice's competence and performance on-the-job.

Assessment of performance is based on the apprentice producing a range of printed work using at least 2 different single unit offset litho machines, if practicable. These could include a stream and sheet-fed machine and/or machines of different make or type.

The range of work chosen for assessment purposes should fall within the limitations specified by the boundary statements and be based on the type of work usually printed in the enterprise.

The work used for assessment should be graded from simple routine work for the first activities that are assessed. Later assessment could concentrate on the more complex and challenging work undertaken within the enterprise. This includes work which is not routine and therefore may be used to test or assure the apprentice's competence in as wide a range of work as possible.

Assessment for Module 1 is based on an appropriate number of real/ simulated jobs done by the apprentice. Assessment for Module 2 is based on further real/simulated jobs done by the apprentice. As a rough guide, a minimum of ten jobs should be used for assessment of both modules 1 and 2. The apprentice is expected to achieve competence in every one of the jobs used for assessment.

Performance on each job will be assessed according to the

- standards of safety expected in the workplace (Unit 1)
- the standards (elements of competence and their associated performance criteria) specified in units 2-5 of this module
- the specifications for the job as stated on-the-job docket
- enterprise-specific standards including client standards (i.e. production time, spoilage rates, quality).

ENTERPRISE-SPECIFIC STANDARDS

PRODUCTION TIME

Time taken to complete the job will be based on the estimated total time of the job starting with a machine that has been cleaned and maintained ready for use.

The job will be finished when:

- the finished product is presented for assessment
- end-of-run completion and maintenance tasks are done.

Running times for jobs may be varied: however several of them (say 2 or 3) should have a total time (set-up, operate, complete, maintain) of 2-3 hours.

QUALITY

The level of quality required for the job will be set using an OK sheet signed either by the trainer/assessor or the client.

Quality will be assessed by selecting a suitable random sample of the final product and comparing these sheets with the OK sheet. The sampling procedure will be consistent with in-house quality control standards. It may be necessary to have a record of the enterprise standards for quality and quality control.

If any of the chosen sheets are below the standard of the OK sheet the apprentice will not be deemed competent.

SPOILAGE RATES

Spoilage rates will be within the enterprise standard for spoilage. Both make-ready and running spoilage should be specified for assessment purposes. The trainer will determine the acceptable spoilage rate for each job assessed and this will be recorded on the job assessment sheet.

ASSESSMENT RECORDS

Evidence of the apprentice's performance will be recorded in:

- the apprentice logbook
- job assessment sheets
- the portfolio of the apprentice's work (i.e. random proofs of some of the printed work produced during training).

A copy of the assessment profile also needs to be available.

APPRENTICE LOGBOOK

The logbook provides a permanent record of the apprentice's activities and achievements. It records:

- the competencies attained during training
- the range of work assessed.

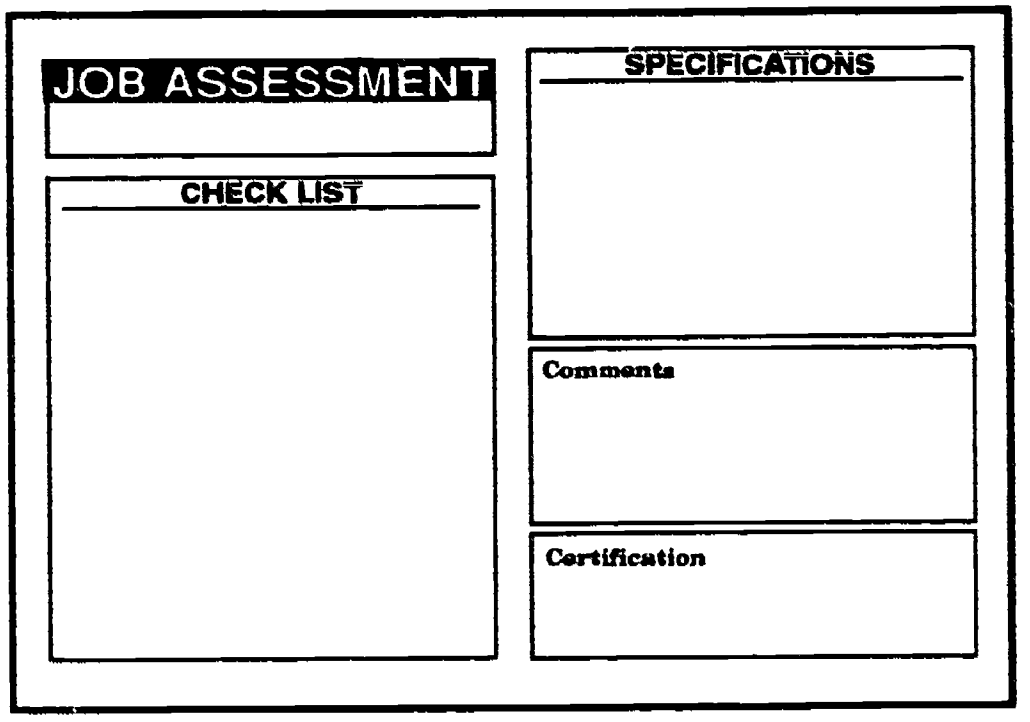
At the end of training all competencies listed in the standards should be achieved and recorded in the logbook.

The logbook provides space for the

- on-the-job trainer to sign off the module and make comments on the apprentice's performance
- off-the-job trainer to sign off the module and make comments on the apprentice's performance.

JOB ASSESSMENT SHEET

The job assessment sheet is a record of the assessment of performance. It looks like this:



The checklist provides a summary of the job process - it is a record of whether the following were achieved:

- the elements of competence
- enterprise standards (OH&S, quality, running time, spoilage rates).

The specifications are completed by the on-the-job trainer.

Either real or simulated jobs (training exercises) can be used.

The trainer will determine **before** the assessment:

- time to be taken to complete job
- spoilage rates.

The job docket will determine:

- substrate
- total run
- colour
- plates
- any special instructions.

The comments section is to be completed by the trainer and can be used:

- to provide feedback to the apprentice or the TAFE college on his/her performance

- to provide information to the current and any prospective employer about the apprentice's work performance under relatively controlled conditions

- as a permanent record of the assessment activity which describes

  - what was done
  - problems (if any) that arose
  - how these problems were overcome.

The certification statement is signed by both the trainer and the apprentice after the apprentice has completed the job and the job assessment sheet has been completed.

The trainer should consult with the apprentice in the preparation of the job assessment sheet because both must agree that it accurately records and reflects the assessment activities.

Any changes made to the sheet during or after its preparation should be initialled by both the trainer and the apprentice.

A sample job assessment is to be found on page xxiii.

PORTFOLIO OF WORK

The portfolio which accompanies the job assessment sheets will include random proofs of each of the jobs assessed.

JOB ASSESSMENT

A tick in any square on the checklist means that the job has been completed to machine/job requirements and the testing specifications have been met.

CHECKLIST

MAKE READY PRESS

Feeder/Delivery ☐

Printing Unit ☐

OK Sheet ☐

OPERATE PRESS

Feeder ☐

Printing Unit ☐

Delivery ☐

Random sampling of product ☐

END OF RUN COMPLETION ☐

MAINTENANCE

Feeder/Delivery ☐

Printing Unit ☐

QUALITY

OK Sheet ☐

Random sample ☐

WORKPLACE SAFETY ☐

TIME (to specification) ☐

MAKE READY SPOILAGE (to specification) ☐

RUNNING SPOILAGE (to specification) ☐

Please attach a random proof to this sheet.

SPECIFICATIONS

Date(s) _____ Job No. _____

Job type _____ Colour(s) _____

Substrate type _____

_____ Colour sequence _____

Time: estimated _____

actual _____ Plates _____

Total run _____

Sheets issued _____ Special instructions

Make ready spoilage:

estimated _____

actual _____

Running spoilage:

estimated _____

actual _____

Comments _____

TRAINER
I hereby certify that the ticks endorsed against the checklist on the left-hand side of this sheet are in accordance with the specifications for this job.

Date / /

APPRENTICE
I hereby attach my signature to this sheet, showing my agreement with having met the job specifications or the noted result.

Date / /

ASSESSMENT PROFILE

It is recognised that assessment activities need to be varied according to the range of work and machines available. The assessment profile is a means of documenting and summarising the on-the-job assessment that has occurred.

In the event of any dispute over assessment and/or apprentice competence it will be this sheet and the other assessment records which will be used to help resolve any problem.

The assessment profile is a list of all the jobs (printed products) that the apprentice produced in order to be assessed in modules (1) and (2).

The trainer completes the profile by writing a brief description of the job and then ticking all the features of the job - e.g:

ASSESSMENT PROFILE - MODULE (1)

Name of trainee: Eleanor Woods

Name of trainer: Tom Jones

Date Module (1) commenced 1 July 91 Date Module (1) completed .....

Machine(s) used: Heidelberg .....

	ASSESSMENT TASK	1 colour	2 colour	(>2 colour)	uncoated substrate	weight	typeface	solid/tint/pale	size (A4,A3,A5 etc.)	double-sided	number of copies
1	Letterhead	✓			✓	85gsm	✓		A4		200
2	Leaflet	✓			✓	135gsm	✓		A4	✓	400

At a glance the trainer can ensure that the apprentice has been given a suitable variety of assessment tasks and that these tasks progress from simple to more complex ones.

Sample assessment profiles for modules 1 and 2 are printed on p xxv.

ASSESSMENT PROFILE - MODULE (1)

Name of trainee: .....

Name of trainer: .....

Date Module (1) commenced ..... Date Module (1) completed .....

Machine(s) used: ....

	ASSESSMENT TASK	1 colour	2 colour	(>2 colour)	uncoated substrate	weight	type/line	solid/stipple	size (A4,A3,A5 etc.)	double-sided	number of copies
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

ASSESSMENT PROFILE - MODULE (2)

Name of trainee: .....

Name of trainer: .....

Date Module (2) commenced ..... Date Module (2) completed .....

Machine(s) used: ....

	ASSESSMENT TASK	2 colour	3 colour	4 colour	uncoated substrates	coated substrates	weight	type/line	solid/stipple	half tone	size	double-sided	number of copies
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

PART B ON-THE-JOB TRAINING MATERIAL

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
1. Maintain safety standards in the press room	1.1 Recognise potential hazards and maintain the safety of the working environment	1.1.1 Protective clothing and devices are worn when necessary	• clothes • shoes • jewellery/accessories • protective devices (see Checklist and Questions A)
		1.1.2 Work area is kept clean and free of hazards	• floors • extension cords • waste • housekeeping (see Checklist and Questions B)
		1.1.3 Safe lifting techniques with heavy weights are demonstrated	• lifting principles (see Checklist and Questions C)
		1.1.4 Tools are used with due regard to safe practices and are kept in good condition	• range of hand tools used in press room (see Checklist and Questions D)
		1.1.5 No injury to self or others and no damage to machine is caused when operating machine/equipment	• machine guards (see Checklist and Questions E)
		1.1.6 The ability to handle harmful substances is demonstrated	• material safety data sheets • dangerous goods regulations • labels on harmful substances (see Checklist and Questions F)

BOUNDARY STATEMENT - UNIT 1

a) Covers the ability to recognise and control potential hazards and eliminate danger by implementing OH&S procedures, rules and regulations in the area of:

- protective clothing/devices
- manual handling
- hand tools
- harmful substances
- machines

to ensure a safe working environment for all employees in the press room.

b) Covers the ability to explain what immediate action should be taken to deal with accidents that may occur in the press room which involve:

- chemicals
- fire
- electricity
- cuts

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
1. Maintain safety standards in the press room	1.2 Implement measures for dealing with hazardous events in the workplace	1.2.1 The ability to deal with chemical spills is demonstrated and any associated first aid required is identified	• basic first aid procedure • methods of cleaning up spills (see Checklist G)
		1.2.2 The ability to put out a range of fires which can occur in a workplace is demonstrated	• fire extinguishers (see Checklist H)
		1.2.3 The method of freeing a person receiving electrical shock and assessing the treatment needed by victim is demonstrated	• principles of conduction • non-conductive materials • assessment of injury (see Checklist I)
		1.2.4 The ability to manage burns and other wounds is demonstrated	• burns and scalds • severe bleeding • minor cuts/wounds (see Checklist J)
		1.2.5 The essentials of resuscitation are demonstrated	• method of checking consciousness, breathing, circulation • coma position • principles of expired air resuscitation (EAR) • principles of external cardiac compression (ECC) (see Checklist K)

The information in this unit should be emphasised throughout all aspects of work in the press room.

It is suggested that the trainer revise workplace safety rules and regulations before starting the training session and then during each training session emphasise the relevant safety issues that relate to the work the apprentice is doing.

UNIT 1: WORKPLACE SAFETY

CHECKLIST A

Element of Competence: 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA: 1.1.1 **PROTECTIVE CLOTHING AND DEVICES ARE WORN WHEN NECESSARY**

CLOTHING

- clothes are close-fitting ☐
- no loose sleeves ☐
- no scarves/ties ☐
- no loose belts ☐
- shoes have rubber soles and good, enclosed uppers ☐
- no rings/wristwatches/jewellery ☐
- wears required protective devices when necessary (see list in next column) ☐

PROTECTIVE DEVICES

(Indicate with a tick if work conditions require that any of these items be worn)

- safety glasses/goggles ☐
- face shields ☐
- ear protectors ☐
- gloves ☐
- overalls ☐
- safety shoes ☐
- silicon/barrier creams ☐
- hair net ☐
- masks ☐
- leather aprons ☐

SHORT ANSWER QUESTIONS A

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.1 PROTECTIVE CLOTHING AND DEVICES ARE WORN WHEN NECESSARY

Question	*Short Answer*
1. In what ways have you had to change the way you dress since you started work in the press room?	Answer will depend on individual
2. With regard to dressing safely and wearing protective clothing/devices what are: a) your responsibilities	a) to wear clothes that do not create a hazard
b) your employer's responsibilities	b) to provide a safe environment to work in and to provide protective devices when they are required
3. Explain why each of the following is not suitable clothing for the press room • baggy T-shirt • trousers with cuffs (turn-ups) • sandals • bracelets	• loose clothing - may get caught in machine • may trip over 'turn-up' in trousers • do not provide protection to toes from chemical spills, heavy objects • accessory may get caught in machine

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.2 WORK AREA IS KEPT CLEAN AND FREE OF HAZARDS

- personal work area is clean and tidy ☐
- keeps aisles, walkways and exits clear of obstructions ☐
- places used wipes and other waste in appropriate waste bins ☐
- stores/stacks spare stock/machine parts (e.g. cylinders and plates) in racks or shelves according to workplace regulations ☐
- returns tools not in use to correct location ☐
- replaces and secures lids on bottles/containers of inks and chemicals ☐
- repairs extension cords with frayed or damaged wiring ☐
- keeps extension cords free of aisles and pallet trucks ☐
- keeps electrical appliances clean and free of dust and spray powder ☐

UNIT 1: WORKPLACE SAFETY

SHORT ANSWER QUESTIONS B

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.2 WORK AREA IS KEPT CLEAN AND FREE OF HAZARDS

Question	*Short Answer*
1. Make a list of the 'housekeeping' you need to do at the end of a print run to ensure that your work area is left clean and tidy	Answer will depend on workplace conditions
2. Where in your press room are the following items stored: - blankets - used plates - used wipes - press chemicals - rolls of stock - ink - tools	Answer will depend on workplace conditions
3. a) Look around your press room and make a list of the potential hazards b) What action should you take to eliminate these hazards?	Answer will depend on workplace conditions

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.3 SAFE LIFTING TECHNIQUES WITH HEAVY WEIGHTS ARE DEMONSTRATED

- sizes up weight of load before lifting/lowering ☐
- If load is too heavy either:
  - gets help ☐
  - breaks load into smaller loads ☐
- stands with feet close to object to be lifted ☐
- squats, bending knees ☐
- lifts slowly ☐
- keeps the load as close to body as possible ☐
- squats when lowering the load ☐

- lowers the load slowly ☐
- does not twist/turn body when lifting/lowering ☐
- avoids fast jerking movements ☐

Additional checklist items if more than one person is lifting/lowering:

- lifters lift and lower in unison ☐
- lifters keep load level ☐
- lifters are on same side of load ☐

SHORT ANSWER QUESTIONS C

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.3 **SAFE LIFTING TECHNIQUES WITH HEAVY WEIGHTS ARE DEMONSTRATED**

Question	*Short Answer*
1. a) Make a list of the heavy items you are lifting regularly	Answer will depend on workplace conditions
b) which of these require more than one person to lift?	
2. a) What mechanical handling devices are used in your press room	- crowbars - hooks - roller conveyers - forklifts
b) When do you use these devices?	
3. Describe the correct method for lifting heavy loads	see Checklist C
4. According to state legislation what is the maximum load for manual handling?	16 KG?
5. What are the early symptoms of lower back problems?	- stiffness - dull aching pain (leading to incapacitating pain and discomfort)

UNIT 1: WORKPLACE SAFETY

CHECKLIST D

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.4 TOOLS ARE USED WITH DUE REGARD TO SAFE PRACTICES AND ARE KEPT IN GOOD CONDITION

- selects correct type and size of tool for job ☐
- holds and uses the tool correctly ☐
- maintains a firm grasp on tool during use ☐
- maintains sharpness of cutting tools ☐
- stores blades in scabbards ☐
- cleans and stores tool at end of job ☐
- discards and replaces or repairs tools that are worn out/damaged ☐

SHORT ANSWER QUESTIONS D

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.4 **TOOLS ARE USED WITH DUE REGARD TO SAFE PRACTICES AND ARE KEPT IN GOOD CONDITION**

Question	*Short Answer*
1. Which tool would you use for the following jobs:	
a) placing plate in position	Answer will depend on machine - tommy bar, spanner
b) adjusting rollers	tommy bar, spanner
c) changing the blanket	tommy bar, spanner
2. Where are tools usually stored in your press room?	Answer will depend on workplace

UNIT 1: WORKPLACE SAFETY

CHECKLIST E

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment

PERFORMANCE CRITERIA 1.1.5 NO INJURY TO SELF OR OTHERS AND NO DAMAGE TO MACHINE IS CAUSED WHEN OPERATING MACHINE/EQUIPMENT

- checks that all machine guards are in place ☐
- checks that all guards and safety devices are operative ☐
- reports any machine guards that are damaged/not in place/ not working correctly ☐
- switches machine on and off at the machine switch ☐
- checks that operator(s) are clear of machine before operating ☐
- keeps hands away from moving parts ☐
- ensures machine is clear of tools before operating ☐
- makes no major adjustments to machine when it is running ☐

SHORT ANSWER QUESTIONS E

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.5 NO INJURY TO SELF OR OTHERS AND NO DAMAGE TO MACHINE IS CAUSED WHEN OPERATING MACHINE/EQUIPMENT

Question	*Short Answer*
1. In your press room under what circumstances are you permitted to remove a machine guard?	Answer will depend on workplace conditions
2. Describe the safety devices that are fitted to/built into the machine you work on	Answer will depend on workplace conditions

CHECKLIST F

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.6 THE ABILITY TO HANDLE HARMFUL SUBSTANCES IS DEMONSTRATED

- washes hands with plain soap after handling harmful substances ☐
- uses protective hand creams ☐
- wears gloves if direct contact is likely to occur ☐
- pours/decants flammable substances in a well-ventilated place away from open flames/possible sparks ☐
- uses funnels or other apparatus to minimise risk of spilling when mixing/pouring/filling ☐
- removes spillage immediately ☐
- replaces and secures lids on containers ☐
- stores harmful substances in accordance with Dangerous Goods Regulations ☐

SHORT ANSWER QUESTIONS F

Element of Competence 1.1 Recognise potential hazards and maintain the safety of the working environment
PERFORMANCE CRITERIA 1.1.6 THE ABILITY TO HANDLE HARMFUL SUBSTANCES IS DEMONSTRATED

Question	*Short Answer*
1. Where are the material safety data sheets kept?	Answer will depend on workplace conditions
2. • List all the harmful substances you use in your work • Look at the labels on those substances and the material safety data sheets and explain why they are dangerous and how they should be handled	Answer will depend on workplace conditions
3. What protective creams have you been recommended to use on your hands?	Answer will depend on workplace conditions
4. In your press room when are you required to wear gloves?	Answer will depend on workplace conditions

Element of Competence 1.2 Implement measures for dealing with hazardous events in the workplace

PERFORMANCE CRITERIA 1.2.1 THE ABILITY TO DEAL WITH CHEMICAL SPILLS IS DEMONSTRATED AND ANY ASSOCIATED FIRST AID REQUIRED IS IDENTIFIED

- removes contaminated clothing ☐
- washes injured area in cold running water ☐
- contacts first aid officer/emergency services (depending on severity of injury) ☐
- removes spillage at once/renders harmless with sand ☐
- hoses area down ☐
- completes an accident report form once victim is in care of qualified medical/first aid officer ☐

CHECKLIST H

Element of Competence 1.2 Implement measures for dealing with hazardous events in the workplace
PERFORMANCE CRITERIA 1.2.2 THE ABILITY TO PUT OUT A RANGE OF FIRES WHICH CAN OCCUR IN A WORKPLACE IS DEMONSTRATED

- removes source of power (in case of electric fires) ☐
- chooses correct extinguisher ☐
- starts operation according to instructions ☐
- moves as close to fire as possible ☐
- moves discharge horn/nozzle from side to side ☐
- contacts emergency services (depending on severity of fire) ☐
- completes accident report form once fire is extinguished and workplace is free of hazard ☐

Element of Competence 1.2 Implement measures for dealing with hazardous events in the workplace

PERFORMANCE CRITERIA 1.2.3 THE METHOD OF FREEING A PERSON RECEIVING ELECTRICAL SHOCK AND ASSESSING THE TREATMENT NEEDED BY VICTIM IS DEMONSTRATED

EITHER

- switches off the power supply if safe to do so ☐

OR

- releases casualty from electrical contact using dry non-conductive material to pull or push the casualty away from conductor ☐

- assesses casualty to determine whether injury is due to:
  - electric shock ☐
  - burns ☐
  - falls ☐
  - combination of these 3 items ☐

- applies emergency first aid as dictated by casualty's symptoms ☐
- contacts first aid officer/emergency services ☐
- completes accident report form once victim is in care of qualified medical/first aid officer ☐

CHECKLIST J

UNIT 1: WORKPLACE SAFETY

Element of Competence 1.2 Implement measures for dealing with hazardous events in the workplace
PERFORMANCE CRITERIA 1.2.4 THE ABILITY TO MANAGE BURNS AND OTHER WOUNDS IS DEMONSTRATED

BURNS AND SCALDS

- holds burn area under clean cold running water ☐
- does not tear or pull clothing away from burn ☐
- does not touch burn area ☐
- contacts first aid officer/emergency services (depending on severity of burn) ☐
- treats victim for shock
  - puts at ease ☐
  - keeps quiet and warm ☐
  - loosens tight clothing ☐
  - elevates legs if possible ☐
  - reassures/keeps victim calm ☐
- completes accident report form once victim is in care of qualified medical/first aid officer ☐

SEVERE BLEEDING

- contacts first aid officer/emergency services ☐
- exposes whole wound ☐
- elevates injury if possible ☐
- applies pressure by pressing over wound with hand or squeezing edges of wound together ☐
- maintains pressure over wound by bandaging thick pad over the whole area of the wound ☐
- completes accident report form once victim is in care of qualified first aid/medical officer ☐

MINOR CUTS/WOUNDS

- allows slight or moderate cuts to bleed freely for 1-2 minutes ☐
- cleans wound with soft, clean material ☐
- covers wound with bandage ☐
- contacts first aid officer/medical officer if wound is deep ☐
- completes accident report form ☐

UNIT 1: WORKPLACE SAFETY

CHECKLIST K

Element of Competence 1.2 Implement measures for dealing with hazardous events in the workplace
PERFORMANCE CRITERIA 1.2.5 THE ESSENTIALS OF RESUSCITATION ARE DEMONSTRATED

- checks the casualty for - consciousness by shaking casualty gently, saying his/her name ☐
  breathing by observing chest movement and/or placing a mirror near casualty's mouth ☐
  circulation by checking pulse ☐

If casualty is unconscious and breathing normally

- moves casualty into coma position ☐
- continues to check breathing and circulation ☐

If casualty is not breathing but has a heartbeat

- clears airway ☐
- applies expired air resuscitation (EAR) ☐
- continues (EAR) until casualty starts breathing or expert help arrives ☐
- moves casualty into coma position once breathing starts ☐
- continues to check breathing and circulation ☐

If casualty is not breathing and has no heartbeat

- clears airway ☐
- applies EAR and external cardiac commission (ECC) using correct method ☐
- continues resuscitation until qualified medical officer takes over ☐

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
2. Make-ready the press	2.1 Set up the feeder system	2.1.1 The feeder stack is set up	• process of establishing job sequence • stock preparation • feeder stack preparation • relevant safety issues (see Training Notes/ Checklists/Questions A)
		2.1.2 The sheet pickup and transport system is set up (stream and single sheet)	• feeder head/sucker bar • sheet separation • sheet detection devices • anti-static devices • feedboard accessories • relevant safety issues (see Training Notes/Checklist/ Questions B)
		2.1.3 The lays and transfer gripper system are set up	• side and front lays • sheet detection devices • relevant safety issues (see Training Notes/Checklist/ Questions C)

BOUNDARY STATEMENT - UNIT 2

Covers the ability to make-ready a sheet-fed offset litho machine with:

- single sheet/stream feeder
- single unit printing section
- standard dampening
- standard inking
- standard delivery

Competence will be limited to using:

- uncoated substrates (with an introduction to coated substrates)
- single and multiple image plates
- type, line, stipple and solid work
- 1-2 colour work (3 to 4 colour work is optional for module 1)

Job specifications as stated on job docket and relevant workplace safety standards described in Unit 1 should be followed.

In module 2 the competence is expanded to include alcohol dampening, coated substrates, up to 4 colour work and tone work.

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
2. Make-ready the press	2.2 Set up the delivery section	2.2.1 The delivery stack is set up	• boards and trays • relevant safety issues (see Training Notes/Checklist/ Questions D)
		2.2.2 The sheet transfer and control system is set up	• components • anti-static devices • sheet slow-down devices • sheet drop • relevant safety issues (see Training Notes/Checklist/ Questions E)
		2.2.3 The set-off prevention devices are set up	• spray powder • sheet racking • care in handling • relevant safety issues (see Training Notes/Checklist/ Questions F)
	2.3 Set up the printing unit	2.3.1 The plate and plate cylinder are set up	• surface condition • plate selection • supplies of consumables • plate packings • image print length • specialised systems • plate/image position • relevant safety issues (see Training Notes/Checklist/ Questions G)

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA		CONTENT
2. Make-ready the press	2.3 Set up the printing unit (cont'd)	2.3.2	The blanket and blanket cylinder are set up	• blanket selection • blanket condition • blanket packings • blanket cylinder and bearers • relevant safety issues (see Training Notes/Checklist/ Questions H)
		2.3.3	The impression cylinder is set up	• cylinder settings • specialist and finishing processes • relevant safety issues (see Training Notes/Checklist/ Questions I)
		2.3.4	The inking system is set up	• ink selection • mixing/matching inks • ink additives • inking system • inking roller settings • ink duct preparation • relevant safety issues (see Training Notes/Checklist/ Questions J)
		2.3.5	The dampening system is set up	• fountain solution • dampening system • ink/water balance • water storage and feed systems • relevant safety issues (see Training Notes/ Checklist/Questions K)

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.1 THE FEEDER STACK IS SET UP

JOB SEQUENCE/INSTRUCTION

- explain the various systems that can be used to establish job sequence - that is:
  - production planning schedule
  - colour
  - stock
  - size
  - job docket number
  - delivery date
  - type/size of machine
- explain which system is used by the company
- give apprentices practice in interpreting a range of job instructions from very simple to very complex - using actual job dockets
- make a list of common terms (e.g. work and turn, order down, etc.) and distribute to apprentices

STOCK MACHINE PREPARATION

- take apprentices on a tour through press room and ask them to comment on condition of all stored stock
- show apprentices examples of different substrates and how to test grain direction of each
- collect examples of stock that has been adversely handled and comment on how to avoid this, e.g. discuss effects of:
  - set off
  - scuffing
  - finger marking
  - machine-based damage i.e.
  - catch-up
  - ghosting
  - gripper/sucker damage
  - pile height detectors
  - sheet guides etc.
  - misregister
- provide practice in knocking-up using different sizes and weights and substrates
- provide practice in fanning sheets out in smaller quantities
- let apprentices make adjustments to feel tension/lack of tension (side guide/rear guide tension)

REFERENCES

Porter, A.S. (1980) *Lithographic Presswork.* Pennsylvania: Graphic Arts Technical Foundation.

Wilson, T. (1984). *Printmate.* Melbourne: Associated Pulp and Paper Mills.

UNIT 2: MAKE-READY

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.1 THE FEEDER STACK IS SET UP

PREPARE STOCK

- establishes stock availability ☐
- checks stock condition ☐
- selects correct grain direction for print run ☐
- selects correct side for first time through press ☐
- handles pre-printed stock with care ☐
- knocks-up stock ☐
- aerates stock ☐
- levels stock using wedges ☐

FEEDER STACK COMPONENTS

- clears feeder area of stock/ components such as wedges that are not necessary for current print run ☐
- places boards and trays in position ☐
- engages locking devices ☐
- secures and locks trays ☐
- secures all settings to finger tight ☐
- places side, front and back guides in optimum position ☐
- ensures side and back guides are firm but not restrictive ☐
- cleans boards and trays of dust and spray powder ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS A

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.1 THE FEEDER STACK IS SET UP

Question	*Short Answer*
1. What do the following terms mean:	
- work and turn	• to print one side of a sheet then turn the sheet from left to right and print a second side (same gripper is used for printing both sides)
- work and tumble	• to print one side of a sheet then turn the sheet over from gripper to back using the same side guide and print the second side
2. What system is used by your company to establish job sequence?	• answer will depend on workplace conditions
3. How do you check stock to ensure it is in suitable condition?	• check if edges are trimmed • check for uneven pile • check for edge staining
4. What can cause damage to pre-printed stock?	• finger marks • scratching • work being damp • machine parts • atmospheric conditions
5. How do you ensure boards and trays are in suitable position?	• trays are in 'home' position • trays are secured and locked • all settings are secured to 'finger tight'
6. What are the major safety issues to consider in setting up the feeder stack?	• correct lifting procedure • paper cuts • machines and moving parts

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.2 THE SHEET PICKUP AND TRANSPORT SYSTEM IS SET UP

FEEDER HEAD/SUCKER BAR

- refer to machine manual for guide to effective setting up of feeder heads

- provide practice in:
  - gradually increasing settings so that sheets are separated, lifted, forwarded at production speed
  - minimum effective settings
  - setting up feeder using variety of substrates

- refer to operator's manual when providing training in:
  - nature and uses of mechanical devices (springs, fingers, tongues, other separators)
  - optimum blast bar height

- provide practice in:
  - setting up to give optimum feed at production speed
  - setting machine so that sheet is lifted with blast and not sucked from pile
  - recommended number of sheets being separated for optimum feed

SHEET DETECTORS

- background information to be explained to apprentice:
  - purpose of double sheet detectors
  - purpose of late sheet detectors
  - difference in operation between mechanical, electro-mechanical and electric detectors

- provide apprentices with opportunity to get a feel for fine finger tight adjustments

- show apprentices how late sheet detectors trip

ANTI-STATIC DEVICES

- background information to be explained to apprentices:
  - need for anti-static devices
  - effect of relative humidity and temperature

- demonstrate using substrates that cause static problems:
  - stock under 50 gsm
  - newsprint
  - cellophane
  - polyfilm

- comment on samples of substrate and press room conditions that promote static problems

FEEDBOARD

- refer to operator's manual before instructing apprentice on most effective setting up method

- differentiate between spring-loaded gripper and grippers capable of individual adjustment

- explain purpose of guides

MINIMUM EFFECTIVE RESTRICTION TO SHEET IS SUFFICIENT

- provide opportunity to:
  - observe action of spring loading on grippers
  - reset/check gripper tension

UNIT 2: MAKE-READY

CHECKLIST B

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.2 THE SHEET PICKUP AND TRANSPORT SYSTEM IS SET UP (STREAM)

FEEDER HEAD

- positions feeder head according to sheet dimension in relation to:
  - grippers
  - wheels
  - tapes
  - front lays
  - side lays
- ensures no damage is done to preprinted stock
- changes height/angle of feeder head to suit job
- selects minimum but efficient suction
- selects and sets up accessory suckers if needed
- uses an effetive combination of blast, tilt plus suction

SHEET SEPARATION/SHEET DETECTORS

- selects appropriate number of sheet separation devices and adjusts as required
- sets pile height detectors and re-locks adjustments after alteration to settings
- cleans optical/electronic parts and ensures they are in good working order
- minimises effects of static electricity as required

FEEDBOARD

- sets up air transport system
- selects minimum required number of guides
- sets up feedboard sheet-guides, smoothers, brushes for minimum effective control
- selects optimum settings for substrate

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.2 THE SHEET PICKUP AND TRANSPORT SYSTEM IS SET UP (SINGLE SHEET)

SUCKER BAR

- selects and sets up correct number/type of suckers ☐
- ensures no damage is done to pre-printed stock ☐
- positions and adjusts sucker bar to convey sheet to press ☐
- selects minimum but efficient suction ☐
- selects and sets up accessory suckers if needed ☐
- uses an effective combination of blast, tilt plus suction ☐

SHEET SEPARATION/SHEET DETECTORS

- selects appropriate number of sheet separation devices and adjusts as required ☐
- sets pile height detectors and re-locks adjustments after alteration to settings ☐
- cleans optical/electronic parts and ensures they are in good working order ☐
- minimises effects of static electricity as required ☐

FEEDBOARD

- checks that grippers and filters are clean ☐
- checks that grippers are even ☐
- selects minimum required number of guides ☐
- sets up feedboard wheels and balls for minimum effective control ☐
- selects optimum settings for substrate ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS B

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.2 THE SHEET PICKUP AND TRANSPORT SYSTEM IS SET UP

Question	*Short Answer*
1. When are accessory suckers needed?	• difficult stocks
2. What mechanical devices need to be adjusted when setting up sheet separation?	• springs • fingers • tongues • rubber separators
3. What is the purpose of the blast?	• to lift the sheet to suckers
4. What is the purpose of a pile height detector	• to monitor and adjust the pile height of the feeder as necessary
5. Describe 2 methods of minimising the effect of static electricity on printing production	• ensure machine is 'earthed' • check humidity and temperature of machine room • operate machine-based anti-static devices • 'earth' substrate to machine parts
6. What is the purpose of the stream guide wheels?	• to ensure that the sheet is correctly and squarely resting on front lays and that machine movement will not cause mis-register
7. What is the main use of the following accessories:	
• smoothers (flat)	• to keep the sheet contained on tapes - travelling to lays squarely with machine timing
• brushes	• to assist with (a) and also Q6.
• balls	• as for Q6.

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.3 THE LAYS AND TRANSFER GRIPPER SYSTEM ARE SET UP

SIDE AND FRONT LAYS

- explain to the apprentices the reason for changing side lay
- explain uses, limitations of special purpose lays
- explain the types of jobs that require special purpose lays, for example:
  - envelopes
  - stock smaller than machine specification size
- provide practice in:
  - changing side lays
  - 'feeling' distance of travel of lays
  - using special purpose lays
  - setting plate so that sheet travel is not restricted on a variety of substrates

SHEET DETECTION DEVICES

- background information to be explained to apprentice:
  - purpose of double sheet detectors
  - purpose of late sheet detectors
  - difference in operation between mechanical, electro-mechanical and electric detectors
- show apprentices how late sheet detectors trip
- provide apprentice with opportunity to get a feel for fine finger tight adjustments

UNIT 2: MAKE-READY

CHECKLIST C

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.3 THE LAYS AND TRANSFER GRIPPER SYSTEM ARE SET UP

SIDE AND FRONT LAYS

- ensures lays are clean/clear of foreign matter ☐
- selects and sets appropriate front lays including both special purpose lays if required ☐
- sets vernier adjustments to side and front lays to suit job ☐
- sets lay to push or pull according to job requirements ☐
- replaces feedboard cover plates ☐
- sets guide plate height in suitable position to substrate caliper ☐
- checks that hidden areas of the guide plates and lays are clean ☐
- adjusts transfer gripper height to setting required ☐
- checks that sheets are correctly fed into and despatched from lays ☐

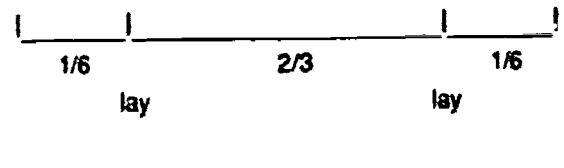
SHEET DETECTION DEVICES

- checks all detectors are clean ☐
- sets up sheet detection devices ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS C

Element of Competence: 2.1 Set up the feeder system
PERFORMANCE CRITERIA: 2.1.3 THE LAYS AND TRANSFER GRIPPER SYSTEM ARE SET UP

Question	*Short Answer*
1. Briefly describe the mechanism of the • 'pull' type side lay • 'push' type side lay	• Pull - sheet is pulled to side lay by spring-loaded revolving wheel • Push - sheet is pushed to register position by physical movement of side lay
2. When determining which front lays to use, what general rule is used to determine the width of the front lay edge?	
3. When do you need to use special purpose side lays?	• for sheets smaller than recommended minimum or difficult conditions on some other sizes and substrates
4. What type of sheet detection device do you have on any 3 machines in your workplace?	• answer will vary according to workplace but should include pile height, double and late sheet detection devices

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.1 THE DELIVERY STACK IS SET UP

BOARDS AND TRAYS

- show the apprentice the effects of sheets falling to one side or the other and 'bunching up' when backstop/guide is too loose/too tight

- allow plenty of practice in setting-up delivery when apprentice starts to train in setting up feeder

- ensure apprentice locates boards and trays so that they do not separate from lifting mechanism, under load.

UNIT 2: MAKE-READY

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.1 THE DELIVERY STACK IS SET UP

BOARDS AND TRAYS

- checks that boards and trays are clean and level ☐
- ensures boards and trays are arranged to suit size and nature of stock ☐
- assembles devices that are needed to maintain optimum delivery stacking ☐
- sets up racking/stacking boards ☐
- prepares change-over delivery trays ☐
- sets up side, front and back guides ☐
- sets delivery sheet guides ☐

SHORT ANSWER QUESTIONS D

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.1 **THE DELIVERY STACK IS SET UP**

Question	*Short Answer*
1. List the tasks to be done when preparing the delivery stack for run	• arrange boards and trays • check boards and trays are clean and level • adjust and set side, front and back guides • have levelling devices available • check pile raising and lowering wires/chains
2. When do you need to use:	
• wedges	• to level the stack to feeder head/sucker bars
• tagging slips	• to mark changes in stock, condition or nature of pre-print.

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.2 THE SHEET TRANSFER AND CONTROL SYSTEM IS SET UP

COMPONENTS

- refer to operator's manual for a guide to the effective set-up of sheet decurling devices
- show how sheet transfer and release is affected by machine speed by setting the cam and gripper opening correctly at idling speed and then increasing speed slowly to show difference at production level
- provide practice in re-setting 'sheet trips' within delivery area
- provide practice in accurately relocating bars on chain delivery. Stress implications of a bar coming loose at speed
- check that apprentice understands how grippers are adjusted

ANTI-STATIC DEVICES

- collect and comment on samples of substrate and press-room conditions that promote static problems
- explain the need for anti-static devices and the effect of relative humidity and temperature
- demonstrate the effect of static electricity using substrates that cause static problems e.g. newsprint, cellophane, polyfilm

SHEET SLOW-DOWN DEVICES

- explain that some presses that have a piston type air pump may show different blast and suction characteristics at different speeds
- provide practice in operating 'valve' type air controls.

UNIT 2: MAKE-READY

CHECKLIST E

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.2 THE SHEET TRANSFER AND CONTROL SYSTEM IS SET UP

COMPONENTS

- checks the action of grippers and cams at production speed ☐
- adjusts delivery cam ☐
- notes changes in air supply from piston pumps when setting up sheet release cams ☐
- adjusts guides, bars, star wheels to suit machine/job specifications ☐
- relocates guides into non-image areas to avoid image being affected ☐
- relocates spring loaded guide bars into appropriate position ☐
- adjusts sheet decurling devices if required ☐
- adjusts sheet detectors ☐

ANTI-STATIC DEVICES

- checks for static electricity ☐
- establishes whether there is a need for anti-static devices and sets up accordingly ☐
- minimises effects of static electricity ☐

SHEET SLOW-DOWN DEVICES

- operates sheet slow-down devices ☐
- demonstrates optimum slow-down at production speed ☐
- ensures no damage or mark is made to either image or stock ☐

SHEET DROP

- checks set up of sheet release system ☐
- checks set up of delivery guides ☐

SHORT ANSWER QUESTIONS E

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.2 THE SHEET TRANSFER AND CONTROL SYSTEM IS SET UP

Question	*Short Answer*
1. List all the devices in the delivery unit which should be checked/adjusted and prepared during set-up	• sheet decurling devices • anti-static devices • sheet slow-down devices • sheet detectors • stack levelling devices
2. Why is it important for each job to adjust guides, bars, star- wheels?	• in order to ensure that all these components avoid image areas and adequately support the sheet

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.3 THE SET-OFF PREVENTION DEVICES ARE SET UP

SPRAY POWDER

- revise with the apprentice the material learned off-the-job on the nature, applications and composition of spray powders

- during set-up explain to the apprentice how to handle printed work so that there is no adverse effect to image/substrate:
  - lift work without applying pressure to top of stack
  - use stacking boards and trays
  - stack a job in delivery without risking set-off

UNIT 2: MAKE-READY

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.3 THE SET-OFF PREVENTION DEVICES ARE SET UP

SPRAY POWDER

- selects the correct grade of spray powder for each job ☐
- uses the minimum amount of spray powder to achieve effective set-off prevention ☐
- determines optimum pile heights for stacking ☐
- sets up and operates the anti set-off devices ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS F

Element of Competence: 2.2 Set up the delivery section
PERFORMANCE CRITERIA: 2.2.3 THE SET-OFF PREVENTION DEVICES ARE SET UP

Question	*Short Answer*
1. What is the purpose of using spray powders?	• to provide a minute film of fine particles which prevent sheet from being affected by an image on the previous sheet. The particles of powder allow air to pass between sheets, aiding drying of ink
2. What grade of spray powder would you use for the following substrates?: - matt and bond paper - art paper - two sided cast coated board	• check manufacturer's recommendations of products in the workplace
3. Describe the correct way of handling printed work	• lift without applying pressure to top of stack • lift without unduly bending stock • use stacking boards and trays • keep away from dampness, extreme heat or cold
4. SUMMARY/REVIEW List the action you can take to ensure you produce a quality product	• clean working habits • attention to detail • double check adjustments • careful setting up procedure • accuracy

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.1 THE PLATE AND PLATE CYLINDER ARE SET UP

PLATE SELECTION

- allow the apprentice to determine plate and plate cylinder requirements from a wide variety of job dockets
- if possible show examples of plates with obvious faults and explain how plate problems can be avoided

PLATE PACKINGS

- emphasise that the quality of print run depends on nature and condition of packings
- explain reasons for using only impervious stable packings (not paper stock)
- explain what condition of packing is economical for use

IMAGE PRINT LENGTH

- refer to machine manual for basic figures relating to image print length
- demonstrate how to relate plate and packing to image print length on a vacant machine with test plate
- encourage apprentice to keep proofs for reference

SPECIALISED SYSTEMS

- establish a fast accurate plating process in consultation with usual operations as suggested in machine manual

PLATE/IMAGE POSITION

- have a plate made slightly out of square to encourage plate movement
- ensure apprentice does not attempt to make substantial image movements on the lays.

UNIT 2: MAKE-READY

CHECKLIST G

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.1 THE PLATE AND PLATE CYLINDER ARE SET UP

SURFACE CONDITION

- checks cylinder surface and bearers to ensure they are clean and free of foreign matter ☐
- checks cylinder surface and bearers to ensure they are not damaged ☐
- checks that clamp bar is square and returned to centre ☐
- secures all screws, locks, cams ☐
- returns circumferential adjustment of plate cylinder to zero (as appropriate) ☐

PLATE SELECTION

- selects correct plate for job/machine ☐
- assesses plate in terms of availability, suitability, condition ☐
- deals with typical surface problems:
  - oxidisation ☐
  - scratches ☐
  - dents ☐
  - foreign matter ☐
  - tears/cuts near clamp edges ☐
  - gum blinding ☐

SUPPLIES OF CONSUMABLES

maintains adequate supplies of:
- plate/press chemicals ☐
- sponges ☐
- wipes ☐
- cotton buds ☐
- inking-in solution ☐
- gum, desensitising agents ☐
- solvent ☐
- uses consumables sparingly with minimum wastage ☐

PLATE PACKINGS

- uses new plate packings as appropriate ☐
- checks caliper of packings in relation to plate thickness before installation ☐
- selects appropriate packings depending on plate/job ☐

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.1 THE PLATE AND PLATE CYLINDER ARE SET UP

IMAGE/PRINT LENGTH

- checks print length ☐
- makes all necessary adjustments to packings ☐
- makes accurate judgements on the need to under/over pack ☐

SPECIALISED SYSTEMS

- uses specialised plate pre-positioning systems if available ☐
- checks squareness and tensioning devices ☐
- checks stability and position of plate register pins ☐

PLATE/IMAGE POSITION

- positions image accurately on the sheet taking into account:
  - keyline ☐
  - plate twisting ☐
  - layout sheets ☐
  - proofs ☐
- ensures plate to cylinder contact is even ☐
- ensures plate does not tear at clamps ☐
- completes bulk of image positioning on the plate and circumferential adjustments ☐
- tightens cams, bolts, screws ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS G

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.1 THE PLATE AND PLATE CYLINDER ARE SET UP

Question	*Short Answer*
1. What type of jobs would you use the three plates listed below: • Photo Direct (Silver master type) • CT type (paper negative) • Substrative plate (developed from a negative or positive)	• runs up to about 5,000 run • better dot definition, runs up to 10,000 impressions (with care) • suitable for a wide variety of substrates, good definition past 200 d.p.i. Runs up to 25,000 impressions (with care)
2. List 4 types of surface problems that would make the plate unusable	• oxidisation • scratches • dents • tears or cuts near clamps/edges • exposure/processing faults
3. What circumstances would encourage you to change plate packing?	• change of plate caliper • change of packing substrate • damage to packing

SHORT ANSWER QUESTIONS G (cont'd)

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.1 THE PLATE AND PLATE CYLINDER ARE SET UP

Question	*Short Answer*
4. Describe all the steps involved in preparing a plate for use	• determine that it is the right plate(s) for the job • check for torn edges at grip or tail • check for evidence of foreign matter adhering to plate • check for signs of oxidization, scratches, faults in image or non-image area
5. List all the consumables that you need adequate supplies of during a print run	• plate etch • deletion fluid • swabs (cotton buds etc) • sponges/wipes • water • other supplies, specific to the plate type.

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.2 THE BLANKET AND BLANKET CYLINDER ARE SET UP

BLANKET SELECTION/CONDITION

- introduce specialised and finishing processes (e.g. litho. perf) if appropriate
- differentiate between different types of blanket (compressible, non-compressible)
- explain the importance of following manufacturer's specifications when preparing blanket surface
- stress the fact that QUALITY BLANKET = QUALITY IMAGE
- as a training resource keep samples of old blankets and separate these at layers to show their structure. Also show examples of blanket damage due to carelessness, burred substrate edges and spray/ink build-up

BLANKET CYLINDERS & BEARERS

- explain the concept of

  - 'inching'
  - adjustment to 'inch' increments
  - 'slow crawl' systems if appropriate

BLANKET PACKINGS

- use a wall chart and some printed examples to explain the relationship between surface circumference of cylinders and print length
- explain savings to be made by rotating order and direction of packing

UNIT 2: MAKE-READY

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.2 THE BLANKET AND BLANKET CYLINDER ARE SET UP

BLANKET SELECTION/CONDITION

- selects correct blanket for job/machine ☐
- assesses blanket condition for:
  - surface problems ☐
  - problems with carcase/rubber ☐
  - problems on back of blanket ☐
- carries out minor repairs to blanket ☐
- measures caliper ☐
- assesses correct amount of packing ☐
- sets mounting, tension and clamps to machine specifications ☐
- sets caliper and combined blanket and packing to machine specifications ☐

BLANKET CYLINDER & BEARERS

- ensures blanket cylinder and bearers are clean and free of foreign matter ☐
- checks cylinder surface to ensure there is no damage/imperfections ☐

BLANKET PACKINGS

- checks packings to ensure they are sound and suitable for further use ☐
- uses caliper measuring devices and follows mounting procedure ☐
- assesses suitability of materials to be used as packings ☐
- maintains a supply of spares ☐
- sets blanket/packing caliper to required image print length ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS H

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.2 THE BLANKET AND BLANKET CYLINDER ARE SET UP

Question	*Short Answer*
1. Make list of the types of blanket used in your press room and describe when each of these is used	• need to determine blanket to suit job - hard stock - soft blanket - soft stock - hard blanket • if a composite 50/50 blanket is used for most jobs - apprentice should be aware of policy
2. What do you look for when assessing the condition of blankets?	• surface problems - e.g. glaze, indentations, scratches, foreign matter • problems with carcase/surface • problems with back of blanket
3. Briefly describe how to make minor repairs to a blanket	• trace fault area on to back of blanket, build up contoured resistance to indentation in localised area
4. Briefly describe problems that would tempt you to discard a blanket	• rubber parted from carcase in image area • damage to surface at grip or tail
5. Describe the method of cleaning and storing the blanket	• clean off all surface matter • deglaze • wrap in clean paper • label - (machine size, type, date, reason for removal from machine) • seal ends of wrapper • store rolled blankets 'on end'

SHORT ANSWER QUESTIONS H (cont'd)

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.2 THE BLANKET AND BLANKET CYLINDER ARE SET UP

Question	*Short Answer*
4. Explain the reason for using caliper measuring device	• accurate caliper measurement of all elements ensures less wear on components, better and safer print reproduction
5. What are the manufacturer's recommendations for the mounting, tensioning and clamping of the blanket you are using?	• as manufacturer recommends but usually including: - cleaning surface - secure clamping at grip and tail - on-going surface care - re-tension blanket during use
6. List the pros and cons of using stick-on accessories (e.g. litho perf)	pros: - saves time and passes - cut can be lateral, circumferential or diagonal - use on any press, with or without 'add-on units' cons: - cuts into blanket - makes printing image near perforation line difficult - can tend to part from cylinder if not applied correctly - can be difficult to position accurately

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.3 THE IMPRESSION CYLINDER IS SET UP

CYLINDER SETTINGS

- start with settings less than minimum and ask the apprentice to gradually increase the pressure to acceptable minimum levels

SPECIALIST AND FINISHING PROCESSES

- provide practice in pre-positioning numbering machines and perforations on 'add-on' units (e.g. swing away, slide in, roll out etc.)

- refer to operator's manual for advice on setting up specialist processes

UNIT 2: MAKE-READY

CHECKLIST I

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.3 THE IMPRESSION CYLINDER IS SET UP

CYLINDER SETTINGS

- checks print length ☐
- sets minimum pressures ☐
- checks cylinder surface is free of imperfections and foreign matter ☐
- sets up accessories and aligns to job requirements ☐
- sets print pressures to effective minimum ☐
- checks machine timing for alignment before engaging 'add on' or 'swingaway' units ☐

SPECIALIST & FINISHING PROCESSES

- sets up specialist processes as required
  - numbering ☐
  - imprinting ☐
  - scoring/creasing ☐
  - perforating ☐

SHORT ANSWER QUESTIONS I

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.3 THE IMPRESSION CYLINDER IS SET UP

Question	*Short Answer*
1. What very important principle should you remember when adjusting and checking sheet control devices (guides, bars and wheels)?	• devices should guide and control. • they should not be restrictive or rendered ineffective by adjustments.

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.4 THE INKING SYSTEM IS SET UP

INK SELECTION

- produce a simple chart showing inks by brand, descriptions and colours suited to various applications

MIXING/MATCHING INKS

- explain the difference between:
  - gloss and matt inks
  - warm and cool colours
  - clean and dirty colours
  - shade and tint colours
  - opaque and transparent inks
- explain the difference between 'wet' and 'dry' matching methods

INK ADDITIVES

- explain the effects of:
  - solvent gel
  - paste
  - liquid reducers
- show the apprentice the effect of:
  - too much reducer
  - too much drier

INKING SYSTEM

- use manufacturer charts and other diagrammatic explanations of inking system

INK ROLLER SETTING

- let the apprentice make the adjustment for all forme/plate rollers (under supervision)

INK DUCT PREPARATION

- provide practice in setting a wide variety of ducts
- ensure apprentice is able to prepare ink duct to suit image/stock/machine specifications. A suggested technique is:
  - unscrew all keys until blade is free
  - lock the duct in place
  - place feeler strip between roller and blade
  - starting from centre of duct, adjust keys until feeler is nipped
  - block off keys in turn slowly until strip slips free
  - place ink in the duct
  - set duct roller rotation to near full
  - carry out initial duct setting to image area
  - reset rotation after initial duct setting

UNIT 2: MAKE-READY

CHECKLIST J

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.4 THE INKING SYSTEM IS SET UP

INK SELECTION

- demonstrates knowledge of ink structure and drying methods ☐
- explains the difference between 'long' and 'short' inks and applications ☐
- demonstrates a knowledge of the effects of high/low temperature and humidity ☐
- selects the ink that suits machine/job specifications ☐

MIXING/MATCHING INKS

- estimates ink quantity within tolerable limits ☐
- adds inks to the mix in the correct order ☐
- uses correct method for mixing inks ☐
- uses fewest colours possible to make match ☐

INK ADDITIVES

- identifies the need for additives ☐
- uses additives sparingly ☐

INKING SYSTEM

- demonstrates a knowledge of the principles of the inking system ☐
- checks that ink is transferred from the duct to the plate ☐
- identifies and solves ink and inking related problems ☐
- prevents 'ghosting' ☐

INK ROLLER SETTING

- checks inking rollers for:
  - foreign matter in system ☐
  - dried ink ☐
  - condition of rubber on roller stock ☐
- sets roller pressure to produce an even 3-4 mm stripe on dry plate ☐
- uses 'feeler' gauge to set distributor rollers evenly ☐
- sets ink duct roller so that it vibrates evenly laterally ☐

INK DUCT PREPARATION

- checks screw pressure on blade commencing from centre of duct ☐
- notes ink film reading during initial set up ☐
- fine tunes ink settings to suit image/job specifications ☐
- keeps the inking system clean ☐

SHORT ANSWER QUESTIONS J

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.4 THE INKING SYSTEM IS SET UP

Question	*Short Answer*
1. List the substrates you use most frequently in your press room and state which ink is used for each	• answer based on work-place practice - In general: - short inks - uncoated paper - longer inks - semi and coated stock
2. What are the characteristics of 'long' and 'short' inks?	• - short inks are 'butter like' in texture - long inks more like honey in texture - short inks - longer drying time - long inks - shorter drying time
3. Explain the differences between gloss and matt inks in terms of -	
• substance	• - matt inks - larger, denser particles gloss inks - smaller, transparent particles
• application	- matt inks - matt stock gloss inks - gloss stock
• drying time	- matt inks - longer drying time gloss inks - shorter drying time
• scuff resistance	- matt inks - less scuff resistance gloss inks - greater scuff resistance

SHORT ANSWER QUESTIONS J (Cont'd)

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.4 **THE INKING SYSTEM IS SET UP**

Question	*Short Answer*
4. What do the following terms mean:	
• warm colour	• yellow, orange, red brown etc.
• cool colour	• grey-blue, green, turquoise etc.
• clean colour	• yellow, red, green blue
• dirty colour	• khaki, dusky pink, steel blue, olive green, ochre yellow
• shade	• white mixed with a dark colour
• tint	• white mixed with a light colour
• opaque	• will not transmit light
• transparent	• will transmit light
5. List all the ink additives that are used in your press room. Explain under what circumstances each of these can be used.	• answer depends on workplace conditions
6. List the functions of the inking system	• transport ink from duct to plate • distribute ink as per duct settings via reciprocation system • control volume of ink being transported to plate • transform near solid ink in duct to near liquid at the plate
7. What signs of damage should you be looking for when routinely checking the rollers?	• rubber parting from stock • evidence of change of roller shape (concave/convex) • cuts or abrasion to roller surface • irregular hardening of roller • cracking on ends becoming evident on roller face

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.5 THE DAMPENING SYSTEM IS SET UP

DAMPENING SYSTEM

- use a wall chart or diagram of the dampening system taken from the operator's manual
- explain the pros and cons of both 'open' and 'sealed' bearings on damper rollers
- explain and provide practice in determining condition of 'fixing' of ends of damper covers

INK/WATER BALANCE

- provide constant practice in establishing ink/water balance

WATER/WATER STORAGE AND FEED SYSTEMS

- provide practice in mixing different solutions
- discuss pH, provide practice for apprentice in determining pH of water and pH of final solution mix
- explain the effects 'hard' and 'soft' water have on printing process

discuss and practice conductivity testing of solution relative to pH.

UNIT 2: MAKE-READY

CHECKLIST K

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.5 THE DAMPENING SYSTEM IS SET UP

FOUNTAIN SOLUTION

- selects required type of fountain solution for job/plate specification ☐
- follows manufacturer's instructions regarding recommended mix ☐
- checks that water is free of irregular contaminants ☐
- checks that water is as close to neutral pH as possible ☐
- uses specialised fountain solutions where recommended ☐
- stores bulk-mixed solution appropriately ☐

DAMPENING SYSTEM

- demonstrates a knowledge of the layout and design of the dampening system ☐
- maintains fountain level to ensure even flow to fountain roller ☐
- checks taps, tubes, pumps at set up ☐
- checks that damper covers are free of ink and oil and contaminants ☐
- checks nap for irregular wear ☐
- checks clamping/sewing on ends of covers ☐
- makes required damper settings ☐

INK/WATER BALANCE

- scans the plate surface in reflected light to check for excess water ☐
- ensures ink and water levels are lower than actually needed for print run ☐
- builds ink up to specifications ☐
- increases water to bare minimum to keep non-image area clean at production speed ☐

WATER STORAGE & FEED SYSTEMS

- checks feeder tanks/fountain ☐
- ensures recirculating filters are not dislodged when adding solution to the system ☐
- mixes different solutions using correct formula ☐
- keeps measuring containers clean ☐
- prepares water storage and feed system ☐

UNIT 2: MAKE-READY

SHORT ANSWER QUESTIONS K

Element of Competence: 2.3 Set up the printing unit
PERFORMANCE CRITERIA: 2.3.5 THE DAMPENING SYSTEM IS SET UP

Question	*Short Answer*
1. What is the purpose of fountain solution?	• to keep the non-image area free of ink
2. List the types of fountain solution used in your press room and when each is used	• answer depends on workplace conditions
3. How do you check the pH of the surface of stock?	• use few drops of distilled water, allow it to soak in for a few minutes, test with pH test paper or other electronic meter
4. List the items to be checked when setting up the dampening system	• cleanliness of covers • condition of covers • condition of bearings • volume of dampening solution • correct mix of dampening solution • pH of dampening solution • cleanliness of steel rollers and transfer system • operation of pump/valves/filters

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
3. Operate the press	3.1 Monitor operation of the feeder system	3.1.1 The feeder stack is checked	• stock preparation • relevant safety issues (see Checklist A)
		3.1.2 The sheet pick-up and transport system is observed and adjusted as required	• feeder head/sucker bar • sheet separation • sheet detectors • anti-static devices • feedboard grippers/suction • relevant safety issues (see Checklist A)
		3.1.3 The lays and transfer gripper system are observed and adjusted as required	• sheet detection devices • lay positioning • relevant safety issues (see Checklist A)

BOUNDARY STATEMENT - UNIT 3

Covers the ability to monitor operation of a sheet-fed offset litho machine with:

- single unit feeder
- single unit printing section
- standard inking
- standard dampening
- standard delivery

Monitoring the operation of the press includes:

- checking a random sample of the printed product against the OK sheet (following in-house quality control procedures)
- observing the press in operation and making any adjustments that are required, taking into account company/machine specifications and relevant OH&S standards as listed in Unit 1.

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
3. Operate the press	3.2 Monitor operation of the printing unit	3.2.1 The plate and plate cylinder are observed and adjusted as required	• plate and plate cylinder • packings • plate/image position • relevant safety issues (see Checklist B)
		3.2.2 The blanket and blanket cylinder are observed and adjusted as required	• blanket condition • blanket cylinder and bearers • relevant safety issues (see Checklist B)
		3.2.3 The impression cylinder is observed and adjusted as required	• cylinder and bearers • specialist finishing processes • relevant safety issues (see Checklist B)
		3.2.4 Control of ink colour, condition and inking system are checked and maintained	• ink density mixing, matching • ink additives • transfer of ink to plate • relevant safety issues (see Checklist B)
		3.2.5 The dampening system is observed and adjusted if required	• fountain level • dampening settings • relevant safety issues (see Checklist B)

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE		PERFORMANCE CRITERIA		CONTENT
3 Operate the press	3.3	Monitor operation of the delivery section	3.3.1	The sheet transfer and control system is observed and adjusted as required	• sheet transfer components • anti-static devices • sheet slow-down devices • sheet release system • relevant safety issues (see checklist C)
			3.3.2	The set-off prevention devices are observed and adjusted as required	• sheet drop • spray powder • other anti set-off/sheet drying devices • relevant safety issues (see Checklist C)

While the press is operating the apprentice will be:

- following in-house quality control procedures regarding random sampling and thereby checking the printed product against the OK sheet
- observing the press in action to make sure it is working smoothly

If the quality of the printed product is to the standard of the OK sheet then many of the items on the checklist in this unit will not need to be checked.

Therefore the checklists in this unit may be used for discussion/problem solving. For example, the trainer may ask:

> 'if the image starts to become fuzzy and loses its 'sharpness' - what could be the cause of this problem/what would you start checking in the machine?'

To aid such discussion, look at the list of problems below and if possible show samples.

Encourage the apprentice to discuss what parts of the press may be causing the problem.

CIRCUMFERENTIAL CREASING

LAY EDGE CORNERS TURNING UNDER

TEARS IN LAY EDGE

BLACK LINES/MARKS ON NON-IMAGE AREAS

SHIFT IN IMAGE POSITION

IMAGE APPEARING WASHED OUT

PUDDLES OF COLOUR ON GRIP EDGE

INCONSISTENT INK COVERAGE

EMULSIFICATION

DETERIORATION IN QUALITY OF IMAGE

- IMAGE BECOMING FUZZY
- IMAGE BECOMING MARBLED/MOTTLED

DRYING PROBLEMS/IMAGE PROBLEM ON REVERSE SIDE

The trainer may also:

- keep a portfolio of samples which contain such problems to show apprentices and use as basic for problem-solving
- encourage the apprentice to keep a list of all the problems he/she encountered in a print run and opposite each to write a brief description of how the problem was solved.

This exercise book or log of print problems would serve as a useful reference/teaching aid for the apprentice.

UNIT 3: OPERATE

CHECKLIST A

Element of Competence: 3.1 Monitor operation of the feeder system

PERFORMANCE CRITERIA:

3.1.1 THE FEEDER STACK IS CHECKED

- continues to check stock to ensure it is in suitable condition ☐
- checks correct side for first time through press ☐
- handles stock with care ☐
- knocks-up, aerates and levels stock as required ☐
- checks boards and trays remain in suitable position ☐

3.1.2 THE SHEET PICK-UP AND TRANSPORT SYSTEM IS OBSERVED AND ADJUSTED AS REQUIRED

- maintains effective combination of blast to tilt plus suction ☐
- maintains settings on sheet separation devices ☐
- maintains settings of late and double sheet detectors ☐
- keeps optical/electronic parts clean and in good working order ☐
- deals with (limits) any static electricity problem ☐
- keeps grippers clean, free of foreign matter ☐
- maintains all other settings at effective minimum ☐
- keeps filters clean ☐

3.1.3 THE LAYS AND TRANSFER GRIPPER ARE OBSERVED AND ADJUSTED AS REQUIRED

- keeps all detectors clean ☐
- checks that detectors accurately convey multiple sheeting and mis-register information ☐
- checks that sheets are despatched effectively to impression cylinder ☐

UNIT 3: OPERATE

Element of Competence: 3.2 Monitor operation of the printing unit

PERFORMANCE CRITERIA:

3.2.1 THE PLATE AND PLATE CYLINDER ARE OBSERVED AND ADJUSTED AS REQUIRED

- checks that bearers remain clean ☐
- deals with surface problems that arise during print run (e.g. oxidation, scratches, dents, foreign matter, tears, blinding) ☐
- checks plate edges for effects of excessive damping ☐
- checks quality of print in relation to possible effects of deteriorating or loose packing ☐
- checks that image position is maintained accurately on the sheet ☐

3.2.2 THE BLANKET AND BLANKET CYLINDER ARE OBSERVED AND ADJUSTED AS REQUIRED

- carries out minor repairs to blanket quickly and effectively if required ☐
- checks that blanket cylinders and bearers are kept clean and free of foreign matter ☐
- checks that there is no damage/ imperfections to surface of blanket cylinder ☐

3.2.3 THE IMPRESSION CYLINDER IS OBSERVED AND ADJUSTED AS REQUIRED

- checks that cylinder bearers are clean ☐
- maintains optimum pressure to blanket ☐
- monitors operation of specialist and finishing processes where applicable (numbering, imprinting, scoring, perforating) ☐

UNIT 3: OPERATE

CHECKLIST B (Cont'd)

Element of Competence: 3.2 Monitor operation of the printing unit

PERFORMANCE CRITERIA:

3.2.4 CONTROL OF INK COLOUR, CONDITION AND INKING SYSTEM ARE CHECKED AND MAINTAINED

- maintains adequate supplies of 'matching' ink ☐
- maintains adequate supplies of ink additives as required ☐
- deals promptly with effects of ink thinnning and colour density changes ☐
- is able to remedy effect of:
  - chalking ☐
  - ink drying on roller ends ☐
  - hickies and donuts ☐
  - skinning ☐
  - other ink transfer quality considerations ☐
- checks that ink is being transferred effectively onto plate ☐
- checks that inking system is kept clean ☐
- maintains ink duct settings ☐

3.2.5 THE DAMPENING SYSTEM IS OBSERVED AND ADJUSTED IF REQUIRED

- maintains fountain level to ensure even flow on to fountain roller ☐
- keeps covers free of ink and oil ☐
- maintains final water settings ☐
- follows correct established procedure when adding water ☐
- checks that feed tank/fountain contain enough solution during run ☐
- checks flow past recirculating filters ☐

UNIT 3: OPERATE

Element of Competence: 3.3 Monitor operation of the delivery section

PERFORMANCE CRITERIA:

3.3.1 THE SHEET TRANSFER AND CONTROL SYSTEM IS OBSERVED AND ADJUSTED AS REQUIRED

- checks operation of sheet release system ☐
- checks that sheet decurling devices operate as required ☐
- checks that sheet detectors operate as required ☐
- checks that anti-static devices are operating if required ☐
- checks that sheet slow-down devices are operating effectively with no marks or damage to stock ☐
- maintains even pile stacking ☐

3.3.2 THE SET-OFF PREVENTION DEVICES ARE OBSERVED AND ADJUSTED AS REQUIRED

- maintains minimum level of spray powder for effective set-off prevention ☐
- maintains optimum pile heights for stacking ☐
- observes continuous operation of spray and anti set-off devices ☐
- checks operation of back, front and side guides ☐
- checks sufficient printing overage is available ☐

UNIT 4: END-OF-RUN COMPLETION — NOTES FOR TRAINERS

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
4. Perform end-of-run completion tasks on the press	4.1 Clean and wash up the printing unit	4.1.1 Plate and plate cylinder are cleaned	• plate/plate cylinder • packings • relevant safety issues (see Checklist A)
		4.1.2 Blanket and blanket cylinder are cleaned	• blanket condition • blanket cylinder and bearers • blanket packings • relevant safety issues (see Checklist B)
		4.1.3 Impression cylinder is cleaned	• specialist and finishing processes • grippers • face of cylinder/bearers • relevant safety issues (see Checklist C)
		4.1.4 Inking system is washed up	• ink • ink duct • rollers • relevant safety issues (see Checklist D)
		4.1.5 The dampening system is cleaned	• steel rollers • damper rollers • fountain solution • relevant issues (see Checklist E)

BOUNDARY STATEMENT - UNIT 4

Covers the ability to clean and wash-up the printing unit (with standard inking and standard dampening) on a sheet-fed offset litho machine according to machine specifications, company procedures and relevant workplace safety standards as described in Unit 1.

The primary aim of this unit is to train the apprentice in how to clean and wash-up the printing unit at the end of a run.

Although this is the focus of the unit, the trainer should also encourage the apprentice to develop "Good housekeeping habits".

Therefore in addition to washing-up the printing unit at the end of a run the apprentice should be trained to:

- clean all areas of paper dust and spray powder
- remove wedges and levelling devices
- remove setters/wasters
- mark the lays
- store proofs
- prepare the printed stock for the next process (drying, wrapping, covering)

Element of Competence: 4.1 Clean and wash-up the printing unit
PERFORMANCE CRITERIA: 4.1.1 PLATE AND PLATE CYLINDER ARE CLEANED

PLATE/PLATE CYLINDER

- removes used printing plate ☐
- determines future of plate:

  clean, gum-up and store; ☐

  or

  discard ☐
- secures clamps, cams, bolts ☐
- returns clamp bar to 'square' ☐
- checks cylinder surface and bearers for cleanliness and damage ☐
- removes plate chemicals, wipes, tools, sponges from machine area ☐
- refills containers of solvent, plate chemistry ☐

PACKINGS

- assesses condition of used packings ☐
- determines future of used packings:

  return to storage ☐

  continue use ☐

  discard ☐

UNIT 4: END-OF-RUN COMPLETION

Element of Competence: 4.1 Clean and wash-up the printing unit
PERFORMANCE CRITERIA: 4.1.2 BLANKET AND BLANKET CYLINDER ARE CLEANED

BLANKET CONDITION

- cleans and checks condition of blanket ☐
- determines future of blanket:
  - prepare for storage ☐
  - discard ☐
  - continue use ☐
- checks and re-tightens:
  - clamp bars ☐
  - securing bolts ☐
  - cams ☐
- removes blanket chemicals, wipes, tools, sponges from machine area ☐

BLANKET CYLINDER & BEARERS

- cleans cylinder surface ☐
- cleans cylinder bearers ☐

BLANKET PACKINGS

- assesses blanket packing in terms of its future use:
  - return to storage ☐
  - continue use ☐
  - discard ☐
- checks remaining stock of packings ☐

Element of Competence: 4.1 Clean and wash-up the printing unit
PERFORMANCE CRITERIA: 4.1.3 IMPRESSION CYLINDER IS CLEANED

SPECIALIST AND FINISHING PROCESSES

- removes numbering/perforating unit ☐
- cleans and lubricates numbering and perforating unit and numbering boxes ☐
- removes and cleans operating cams ☐
- removes imprinting plate(s)/collars ☐
- cleans and washes up imprinting device as required ☐
- removes or de-activates scoring devices ☐
- removes or de-activates perforators ☐
- removes 'litho-perf' strip from impression cylinder ☐
- checks effect of 'litho-perf' on blanket ☐

Element of Competence: 4.1 Clean and wash-up the printing unit
PERFORMANCE CRITERIA: 4.1.4 INKING SYSTEM IS WASHED UP

INK

- removes ink from ink duct (if ink change is required) ☐
- determines future use of excess ink:
  - store ☐
  - discard in hazard-proof container ☐
- labels ink to be stored clearly using appropriate labelling system, (e.g. job code, colour matching system 'number') ☐
- replaces lids on tins of ink/additives ☐
- returns ink tins/additives to storage ☐
- cleans ink slabs and ink knives ☐
- discards wipes in hazard-proof container ☐

INK DUCT

- cleans ink duct ☐
- checks that keys are 'backed' off ☐
- cleans under-edge of blade ☐
- ensures no evidence of ink colour remains ☐

ROLLERS

- mounts wash-up blade if required ☐
- washes up rollers to requirements ☐
- uses minimum effective roller washing agent ensuring rollers do not run dry ☐
- cleans tray ☐
- collects and discards wipes in hazard-proof container ☐
- checks and reports on condition of rollers - face and ends ☐

UNIT 4: END-OF-RUN COMPLETION

CHECKLIST E

Element of Competence: 4.1 Clean and wash-up the printing unit
PERFORMANCE CRITERIA: 4.1.5 THE DAMPENING SYSTEM IS CLEANED

DAMPENERS

- assesses condition of dampeners and if required removes and cleans dampers with recommended cleaning fluid ☐
- checks suitability of 'nap' for further use ☐
- checks sewing/clamping on ends of rollers ☐
- checks condition of rubber when changing covers ☐
- cleans and desensitises steel rollers ☐

FOUNTAIN SOLUTION

- empties fountain if required ☐
- tops up or replaces solution as required ☐
- stores measuring containers away from contamination for future use ☐

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
5. Carry out routine maintenance tasks on the press	5.1 Carry out routine maintenance on the sheet handling system	5.1.1 The feeder and delivery stacks are cleaned, checked and lubricated as required	• boards and trays • guides • air pipes/fittings • sheet transfer • set-off prevention • relevant safety issues (see Checklist and Questions A)
		5.1.2 The sheet pick-up and transport system is cleaned, checked and lubricated as required	• feeder head • sucker bar • sheet detectors • anti-static devices • feedboard grippers • relevant safety issues (see Checklist and Questions B)
		5.1.3 The lays and transfer gripper system are cleaned, checked and lubricated as required	• side and front lays • transfer grippers • relevant safety issues (see Checklist and Questions C)

BOUNDARY STATEMENT - UNIT 5

Covers the ability to carry out basic on-going maintenance tasks on a sheet-fed offset litho machine with:

- single sheet/stream feeder
- single unit printing section
- standard dampening
- standard inking
- standard delivery

to ensure that machine is maintained in good working order and ready for use. Maintenance tasks comply with prescribed maintenance cycle as described in the operator's manual, company procedures and workplace safety standards as listed in Unit 1.

UNIT OF COMPETENCE	ELEMENT OF COMPETENCE	PERFORMANCE CRITERIA	CONTENT
5. Carry out routine maintenance tasks on the press	5.2 Carry out routine maintenance on the printing unit	5.2.1 The plate and plate cylinder are checked and lubricated as required	• plate cylinder and bearers • plate pre-positioning systems • relevant safety issues (see Checklist and Questions D)
		5.2.2 The blanket and blanket cylinder are checked and lubricated as required	• blanket cylinder and bearers • relevant safety issues (see Checklist and Questions E)
		5.2.3 The impression cylinder is checked and lubicated as required	• impression cylinder • specialist and finishing processes • relevant safety issues (see Checklist and Questions F)
		5.2.4 The inking system is checked and lubricated as required	• rollers and ducts • relevant safety issues (see Checklist and Questions G)
		5.2.5 The dampening system is checked and lubricated as required	• damper covers/roller stocks • 'water' system • relevant safety issues (see Checklist and Questions H)

The amount and frequency of maintenance carried out on the press will depend on:

- the type of jobs running on the press that day/week
- prescribed maintenance cycle as described in the operator's manual
- whether or not the workplace has a set time for maintenance - e.g. every Friday
- the problems which may have occurred during make-ready/operate.

The aim of this unit is to promote the practice of ensuring that at the end of the run the press is not only tidied and washed up (see Unit 4 MAINTENANCE) but also that any basic maintenance is carried out so that the machine is clean, tidy and in good working order for the next make-ready.

The checklists therefore list 2 types of maintenance:

- end-of-run
- periodic (e.g. end of week)

The trainer will need to adapt these checklists to suit workplace practice.

UNIT 5: MAINTENANCE

CHECKLIST A

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.1 THE FEEDER AND DELIVERY STACKS ARE CLEANED, CHECKED AND LUBRICATED AS REQUIRED

FEEDER STACK

END-OF-RUN

- cleans boards and trays ☐
- cleans guides ☐
- cleans air-holes of spray powder/paper dust ☐
- cleans floor and bench area around feeder ☐

PERIODIC

- cleans and lubricates pile raising/lowering mechanism ☐
- checks front and side guides for mobility/stability ☐
- cleans air filters ☐
- reports/repairs/replaces any damaged or worn parts/components ☐
- updates maintenance records as required ☐

DELIVERY STACK

END-OF-RUN

- cleans sheet transfer devices ☐
- cleans set-off precaution devices ☐
- removes build-up of spray powder ☐
- cleans floor and bench area around delivery stack ☐

PERIODIC

- cleans and lubricates pile raising/lowering mechanism ☐
- checks that all components of the delivery stack operate freely and without restriction ☐
- checks condition of air pipes and fittings ☐
- lubricates components according to manufacturer's specifications ☐
- reports/repairs/replaces any damaged or worn parts/components ☐
- updates maintenance records as required ☐

SHORT ANSWER QUESTIONS A

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.1 **THE FEEDER AND DELIVERY STACKS ARE CLEANED, CHECKED AND LUBRICATED AS REQUIRED**

Question	*Short Answer*
1. What are the implications of not carrying out maintenance tasks on the sheet feeder?	• accumulating foreign matter on stack components - particularly screw threads and slides • long setting-up times • deterioration of soft components, (suckers, airlines etc.). • housekeeping in adjacent areas • safety/quality issues
2. What long term effect would an excessive build-up of spray powder have on feeders?	• increased wear on moving parts • absorption of oil into spray powder may transfer to stock • more time needed for cleaning • blockages to oil holes and surface lubricating areas
3. Explain how static electricity build-up can be prevented on your press	• earth the press correctly • adjust temperature, humidity and moisture content of stock and surrounding air (Note: explanations of 'ionising' air will be covered in later modules)

UNIT 5: MAINTENANCE

CHECKLIST B

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.2 THE SHEET PICK-UP AND TRANSPORT SYSTEM IS CLEANED, CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- checks connection of airlines ☐
- removes and cleans integral filters as necessary ☐
- cleans all suckers of spray powder/paper dust/ink ☐
- cleans and checks lenses on electrical optical detectors ☐
- cleans and checks mechanical/electrical sheet detectors ☐
- deactivates anti-static devices ☐
- accounts for 'attached' remedies for static electricity (e.g. silver foil) ☐
- cleans and checks lubrication points under feedboard ☐
- cleans and checks condition of wheels and other moving parts (tapes, balls, guides, brushes) ☐
- removes and stores accessories ☐
- reports/repairs/replaces any worn or damaged parts/components ☐
- updates maintenance records as required ☐

PERIODIC

- checks parts in contact with stock for wear/damage ☐
- lubricates suckers/suction system as required ☐
- checks that all parts in electrical/mechanical detectors operate freely ☐
- cleans and checks pile height detector bar ☐
- cleans electrical/optical/late and double sheet detectors ☐
- lubricates sheet detectors as required ☐
- cleans anti-static devices as recommended by manufacturer ☐

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.2 THE SHEET PICK-UP AND TRANSPORT SYSTEM IS CLEANED, CHECKED AND LUBRICATED AS REQUIRED

- cleans and checks that grippers and gripper mechanism operate freely ☐
- lightly lubricates wheels and moving parts ☐
- reports/repairs or replaces any worn or damaged parts/components ☐
- updates maintenance records ☐

UNIT 5: MAINTENANCE

SHORT ANSWER QUESTIONS B

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.2 THE SHEET PICK-UP AND TRANSPORT SYSTEM IS CLEANED, CHECKED AND LUBRICATED AS REQUIRED

Question	*Answer*
1. Briefly explain how to clean the air filters on presses known to you	• air blast the filter so as to not force dust into the filter • rinse in solvent • dry in ventilated area • discard and replace (paper type filters)
2. When checking an accessory sucker, what factors would indicate to you that it should be discarded?	• deep cracks around circumference • any stickiness or decomposition of the substance • any large sections missing • any tears around the circumference • distortion to shape • loss of capacity to remain attached and in position
3. What is the key factor in cleaning the lenses on an optical detection device?	Ensure that the light contact is not dislodged, scratched or obstructed
4. List 3 important factors in the care of transfer tapes	• clean ink, dust, spray powder • keep at correct tension • check underneath as well as surface • check joins regularly • check edges regularly and note extent of fraying

UNIT 5: MAINTENANCE

CHECKLIST C

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.3 THE LAYS AND TRANSFER GRIPPER SYSTEM ARE CLEANED, CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- cleans all areas of paper dust, spray powder and ink build-up ☐
- cleans transfer grippers ☐
- reports any signs of abnormal wear ☐

PERIODIC

- cleans and checks condition and operation of side and front lays ☐
- cleans and checks condition of cover/guide plates ☐
- cleans, checks and returns to storage special purpose and 'narrow margin' lays ☐
- checks that grippers and cams operate freely ☐
- lubricates transfer gripper system as required ☐
- reports/repairs/relaces any damaged or worn parts/components as required ☐
- updates maintenance records if necessary ☐

2:7

2:6

UNIT 5: MAINTENANCE

SHORT ANSWER QUESTIONS C

Element of Competence: 5.1 Carry out routine maintenance on the sheet handling system
PERFORMANCE CRITERIA: 5.1.3 THE LAYS AND TRANSFER GRIPPER SYSTEM ARE CLEANED, CHECKED AND LUBRICATED AS REQUIRED

Question	*Short Answers*
1. Describe four important features of transfer grippers	• capacity to grip the sheet with same tension • capacity to release at same time so that sheet is not torn • capacity to exert sufficient pressure without indentation to substrate • easy access for cleaning purposes

UNIT 5: MAINTENANCE

CHECKLIST D

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.1 THE PLATE AND PLATE CYLINDER ARE CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- checks condition of cylinder surface and bearers ☐
- checks that cams/clamps operate freely (without restriction) ☐
- accounts for all plate pre-positioning pins ☐
- checks condition of plate pre-positioning pins ☐

PERIODIC

- lubricates cams/clamps to manufacturer's specifications ☐
- reports/repairs/replaces any worn or damaged parts/components ☐
- updates maintenance records as required ☐

SHORT ANSWER QUESTIONS D

UNIT 5: MAINTENANCE

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.1 THE PLATE AND PLATE CYLINDER ARE CHECKED AND LUBRICATED AS REQUIRED

Question

1. List at least 5 surface signs that would suggest to you the plate you are using should be discarded.

2. Describe what would happen if you returned the plate cylinder circumference adjustment to zero and didn't re-secure it.

Short Answer

- severe scratches in either image or non-image areas
- signs of damage and wear to non-image areas around circumference
- image areas showing less definition
- tears at grip or tail of plate
- dents to plate substrate
- unacceptable oxidisation
- immovable foreign matter adhering to surface

- cylinder would not maintain constant position
- securing bolts would either be sheared off or un-wind and fall into machine, causing major damage.

UNIT 5: MAINTENANCE

CHECKLIST E

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.2 THE BLANKET AND BLANKET CYLINDER ARE CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- checks condition of cylinder surface and bearers ☐
- checks that cams/clamps operate freely/without restriction ☐
- updates maintenance records as required ☐

PERIODIC

- lubricates cams/clamps according to manufacturer's specifications ☐
- updates maintenance records as required ☐

SHORT ANSWER QUESTIONS E

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.2 THE BLANKET AND BLANKET CYLINDER ARE CHECKED AND LUBRICATED AS REQUIRED

Question	*Short Answer*
1. List the physical features that could indicate that a blanket is not fit for further use.	• layers separating from the carcase • indentation and scoring of surface rubber • disintegration of rubber or carcase • irreparable glazing or distortion of the surface

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2 '7

UNIT 5: MAINTENANCE

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.3 THE IMPRESSION CYLINDER IS CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- checks condition of cylinder surface ☐
- checks that cams operate freely/without restriction ☐

PERIODIC

- lubricates cams according to manufacturer's specifications ☐
- reports/repairs/replaces any worn or damaged parts/components ☐
- updates maintenance records as required ☐

SHORT ANSWER QUESTIONS F

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.3 **THE IMPRESSION CYLINDER IS CHECKED AND LUBRICATED AS REQUIRED**

Question	*Short Answer*
1. What are the implications of not carrying out routine maintenance on the impression cylinder?	• accumulation of foreign matter on cylinder surface and bearers will affect impression and reproduction • can complicate setting up and affect blanket wear

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Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.4 THE INKING SYSTEM IS CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- lubricates stocks as rollers are replaced ☐
- checks general condition of rollers ☐
- cleans excess ink build-up from all roller ends ☐

PERIODIC

- checks roller bearings for signs of undue wear/damage ☐
- checks all roller stocks for signs of undue wear ☐
- assesses rollers that need deep cleaning treatment and keeps separate ☐
- cleans and checks duct components ☐
- lubricates duct according to manufacturer's specifications ☐
- reports/repairs/replaces any worn or damaged parts/components ☐
- updates maintenance records as necessary ☐
- checks roller setting stripe to
  - oscillator ☐
  - plate ☐

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SHORT ANSWER QUESTIONS G

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.4 THE INKING SYSTEM IS CHECKED AND LUBRICATED AS REQUIRED

Question	*Short Answer*
1. What action can you take to reduce the effects of 'skinning' on stored ink?	• ensure lids are replaced on containers undamaged • use proprietary sprays designed to reduce skinning sparingly
2. What are the long term effects of incorrect and careless adjustment of the ink duct blade?	• screws may score the roller • duct blade may wear excessively on ends

UNIT 5: MAINTENANCE

CHECKLIST H

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.5 THE DAMPENING SYSTEM IS CHECKED AND LUBRICATED AS REQUIRED

END-OF-RUN

- checks damper covers to ensure they are fixed to roller stocks ☐
- checks damper roller stocks:
  - bearings ☐
  - steel pick-up rollers ☐
- lubricates:
  - damper roller stocks ☐
  - bearings ☐
  - steel pick-up rollers ☐
- replaces filters as necessary ☐
- checks area under and around machine is clean and free of oil leaks ☐

PERIODIC

- checks operation of recirculating pump and motor ☐
- cleans area under tank for evidence of leakage due to corrosion or damage ☐
- checks plumbing joints ☐
- carries out a complete flush and clean of 'water' system (pumps, pipes, filters, reservoirs, troughs) ☐

UNIT 5: MAINTENANCE

Element of Competence: 5.2 Carry out routine maintenance on the printing unit
PERFORMANCE CRITERIA: 5.2.5 THE DAMPENING SYSTEM IS CHECKED AND LUBRICATED AS REQUIRED

Question	*Short Answer*
1. List the effects on the plate and print quality of failure to replace damper covers when required	• patchy damping control across plate • adverse effect on image areas • poor image quality because of the need to use more water • increased wear to plate