

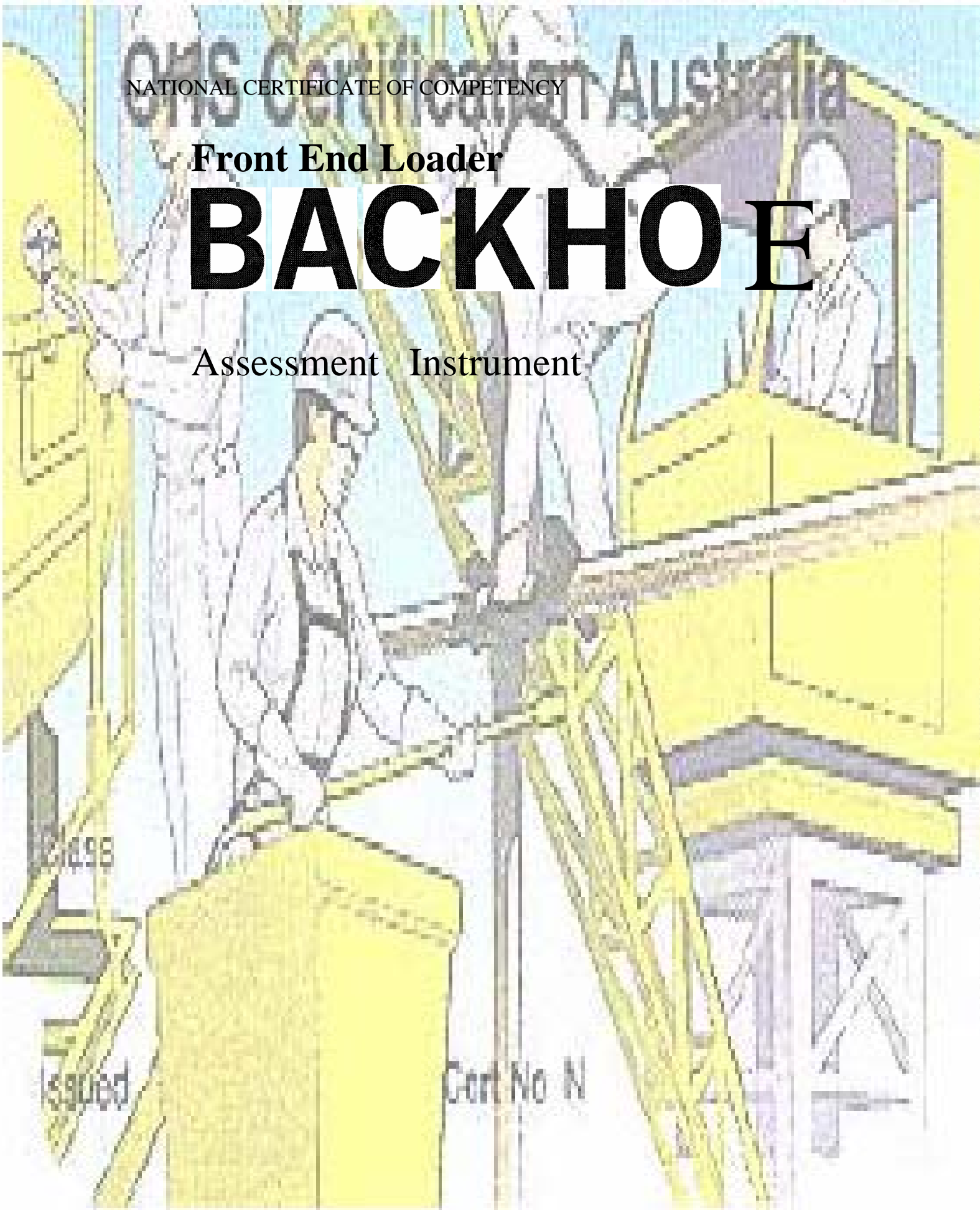
NATIONAL CERTIFICATE OF COMPETENCY

CRICOS Certificate Australia

Front End Loader

# BACKHOE

Assessment Instrument



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# **Load shifting Equipment**

**Front-end Loader/Backhoe**

**ASSESSMENT**

**Part 1 Performance**

**Part 2 Oral/Written**

# Assessor guidelines—general

## 1. Introduction

### 2. Preparing for the assessment

#### Li Scope

These general guidelines apply to all the assessment instruments for the certificates of competency prescribed by the *National Guidelines for Occupational Health and Safety Competency Standards for the Operation of load shifting Equipment and Other Types of Specified Equipment*.

Assessors should also be familiar with the publication *Assessment guidelines for National Occupational Health and Safety Certification Standard for users and operators of industrial equipment*.

1.2 Additional guidelines, which provide additional specific information to certificate assessors, are also included in each assessment instrument. Included, where appropriate, are specific instructions on the usefulness of training records (such as log books) and other certificates with overlapping competencies.

1.3 Evidence of competence Evidence of competence is established in a number of ways. The methods used in the following instruments involve:

Assessment of practical Performance

- Written and/or oral answers to questions on underpinning Knowledge.

2.1 Study the instruments you need to read the assessment instruments and specific instructions carefully before beginning an assessment.

#### 3.2 Practical performance

Complete the performance checklist, as the applicant works through the required tasks. Wherever possible, this should be done in a normal working environment.

Do not ask the applicant questions

#### 2.2 Confirm appointments

Prior to an assessment, you need to confirm the date, time and location of the assessment with the applicants and any other relevant people.

2.3 Equipment availability the availability of equipment, materials and a suitable working area must be organized and confirmed, prior to the assessment.

#### 2.4 Workplace factors

Because procedures and processes vary greatly between workplaces, it is important for assessors to plan their approaches to meet the requirements of the individual workplace.

Make sure you take the timeframe into account when planning the assessment and also make applicants aware of any time limits.

2.5 Selecting questions for the written/oral assessment should be randomly selected, either by hand or using the computer system, if applicable.

## 3. Conducting the assessment

3.1 Provide an explanation Begin by explaining clearly to the applicants what is required of them. Check that applicants have provided (or have been provided with) the necessary tools and equipment.

while he or she is performing a task, as this can be distracting, and may affect the time taken to complete the assessment.

If, at any time, the applicant is endangering himself/herself or others, stop the assessment immediately. This

indicates that the applicant is not yet competent and may require further training, before being reassessed. Assessments should also be stopped, if equipment or property is likely to be damaged.

### 3.3 Knowledge

The knowledge assessment covers both oral and written exercises. The model answers provided with the knowledge assessment instruments are not necessarily exhaustive. Use your own judgment when scoring alternative answers.

- 3.4 Recording responses each item and question on the assessment forms you use is accompanied by a box. Assessors must complete every box as follows:

**C** CORRECT

PERFORMANCE/ANSWER

**NYC** NOT YET ACHIEVED

**N / A** NOT APPLICABLE

If a box is marked incorrectly, cross out the mistake, mark the correct response alongside, and initial the change.

## • **Determining competencies**

### 4.1 Assessment summary

A specific assessment summary is given for each certificate class. This is to be filled in and signed by the assessor, and countersigned by the applicant.

The original and duplicate are given to the applicant. The applicant provides the original to the certifying authority. The assessor retains the triplicate.

### 4.2 Competency requirements in order for you

to deem an applicant competent, he or she must have completed each section of the assessment to the standard required. You should note any time constraints when arriving at your decision.

The standard required for each instrument is specified in the specific guidelines and/or on the summary page at the end of each assessment.

In the case of a repeat assessment, the assessor can decide to apply the whole or only part of the assessment.

### 4.3 Additional comments

Where an applicant falls to meet the standard of competence, you should add a written comment on the Assessment Summary, which briefly explains the problem.

Advice to the applicant, on the appropriate remedial action should also be included. This will also assist the certificate assessor, in the event that the applicant undergoes future reassessment.

Likewise, if an applicant demonstrates outstanding or remarkable performance, this should be noted,

### 4.4 Further investigation

As a certificate assessor, it is your role to determine whether or not an applicant has achieved the standard necessary for the certifying authority to be able to grant a certificate of competency.

Whenever you are unsure of the applicant's performance or knowledge or performance, ask additional questions, and obtain additional evidence, before making your final decision.

# **National Guidelines for OHS Competency Standards**

**Load shifting Equipment**

**Front-end Loader/Backhoe**

**Performance Assessment**

# FRONT-END LOADER/BACKHOE

## (Performance assessment)

### Assessor guidelines— specific

#### ASSESSMENT INSTRUMENT SPECIFICATIONS

The performance assessment covers the following Load shifting elements,

1.1, 1.2, 1.3, 2.1, 3.1 & 3.2

The assessment requires the operator to check the equipment, plan the work and to safely and competently operate the front-end loader/backhoe.

The assessment is performed in ten sections:

- 1.1 Conduct routine preoperational check front-end loader/backhoe, equipment and the security of attachments.
- 1.2 Inspect the site, plan work and select and fit appropriate Attachments.
- 1.3 Conduct pre-operational and post start up checks.
- 1.4 Drive to the work area.
- 1.5 Set up machine and excavate a trench.
- 1.7 Backfill the trench and load or simulate loading a truck,
- 1.8 **Consolidate and level a Surface,**
- 1.9 **Pick up and shift material in The bucket.**
- 1.10 Shut down equipment and secure site.

2. Prior learning and experience

2.1 An applicant who holds a **front-end loader, excavator**, dragline or dozer certificate do not require assessment in sections 2, 3, 4, 7, 8 and 9.

2.2 Applicant who produces satisfactory documentary evidence (such as a log book) which establishes 50 days experience in front-end loader/backhoe operations specifically covering competencies tested in sections 2, 3, 4, 7, 8 and 9 does not require assessment in these sections.

3. The performance assessment can be conducted at any location, which has:

- Sufficient clear space to operate the machine
- Ground suitable for excavating.

1.6 Use the front-end loader/backhoe as a crane.

4. Equipment and Resources Required:

Front-end loader/backhoe and equipment.

A wire rope sling, chain sling, shackle and a fibre rope tag Line.

Suitable loads to sling (such as a bundle of timber and a Concrete pipe.

Suitable site on which to use the front-end loader / backhoe and equipment to excavate and backfill a trench, use the front-end loader/backhoe in the crane mode and to load or simulate loading of a truck.

- |  |   |
|--|---|
| <p>9. The items in the shaded boxes are of critical importance. Failing to get any of these correct means that competency has not been achieved.</p> <p>10. Where an applicant is assessed as ‘not yet competent’ he/she must be informed of the reason(s) in order to gain further appropriate training.</p> <p>11. The full performance assessment can take up to 1 hour 30 minutes.</p> <p>12. The general assessment requirements are set out in Assessor’s guidelines general.</p> <p>13.</p> <p>5. Unless other arrangements are agreed to by the assessor, it will be the responsibility of the applicant, applicant’s employer or trainer to provide the required equipment and resources.</p> | <p>7. The performance of each applicant is to be recorded on the assessor’s checklist,</p> <p>8. Safety of personnel:<br/><br/>When an applicant is working dangerously, recklessly or without the necessary co-ordination, the assessor must direct the applicant to cease work and terminate those parts of the assessment immediately.</p> |
|--|---|

The applicant’s competence in each unit is to be summarized for both performance and knowledge on the **summary sheet**. **Competence is** achieved for a unit when the required number of boxes for that unit has been ticked or marked ‘N/A’.

Overall competence is achieved when **competence in all units has been** assessed,

**6. To be assessed an applicant must**

Wear:

- Safety helmet (where required)
- Appropriate footwear
- Other protective clothing and equipment as appropriate.

**CONDUCT ROUTINE CHECKS:**

**Performance Criteria 1.1.1 and 1.1.2**

1. **Conducts routine checks on vehicle/equipment:**
- Tire condition and inflation

**Checks liquid levels**

- Fuel**
- Hydraulic oil**
- Engine oil**
- Battery
- Coolant
- Checks structure for defects**
- Damaged or broken parts**
- Loose nuts, bolts and couplings**

**Checks attachments for defects**

**Damage**

- Bucket for missing, worn or loose teeth
- Hoses, fittings, hydraulic rams for oil leaks
- Connections for missing pins or Keepers
- Grease holes and grease pins

**Checks other equipment for defects**

- Wire slings
- Chain slings
- Shackles
- Other gear
- Checks attachments for security

**PLAN WORK AND CHECK EQUIPMENT:**

**Performance Criteria 1.2.1, 1.2.3 and 1.2.5**

2. Inspects site and plans work:

**Identifies hazards**

- Power lines
- Phone lines
- Service drains
- Obstructions

**Access and path of movement is indicated**

- To work area
- For loads

**Fits appropriate equipment**

- Suitable tools used**
- Secures catches**
- Correct procedure adopted**
- Works safely**

**Performance Criteria 1.3.1.**

3. Conducts pre-operational and post startup checks in accordance with manufacturer's specifications/ operating manual.
- Mounts correctly
  - Adjusts seat
  - In neutral
  - Warning device
  - Engine starts
  - Gauges

- Warm-up allowed
- Attachment movement
- Clear for travel
- Foot brake
- Holding brake
- Steering

### **SHIFT LOAD:**

#### **Performance criteria 2.1.1 & 2.1.3**

#### **4. Drives to the work area .**

- Raises attachments smoothly
- Secures backhoe bucket
- Ensures travel direction clear
- Selects appropriate route
- Travels at safe speed

#### **5. Sets up backhoe and excavates .**

- Positions backhoe competently
- Applies brake
- Lowers bucket
- Secures and mounts backhoe seat
- Checks controls
- Lowers stabilizers (lowest side first)
- Back wheels off ground
- Smoothly operates controls
- Tackles task in logical sequence
- Uses sufficient revs for work
- Uses correct bucket angle

- Crowds sufficiently to fill bucket
- Deposits full buckets of soil
- Deposits soil away from trench
- Keeps persons out of operating radius
- Cuts trench to specifications
- Demonstrates digging around a pipe

#### **Performance Criteria 2.1.2**

#### **6. Operates front-end loader/backhoe as a Crane -**

- Checks sling attachment point
- Establishes weight of load
- Load not more than SWL for the operation
- Selects appropriate slings and gear
- Raises bucket to connect load
- Supervises correct slinging of the load
- Ensures tag line connected (if required)
- Trial lifts load
- Moves load to hand signals
- Moves load safely
- Lowers load to designate Location

7. Backfills trench and loads truck .
  - Bucket at correct level and angle
  - Uses sufficient revs and speed
  - Avoids excessive wheel spin
  - Crowds bucket to fill
  - Ensures direction of travel clear
  - Travels with bucket low
  - Acceptable and safe speed
  - Minimizes spillage and ground damage
  - Uses appropriate path of travel
  - Approaches trench or truck correctly
  - Smoothly raises and dumps load
  - Repositions bucket ready for reload
  - Maintains stockpile and working surface
8. Consolidates and levels surface .
  - Consolidates fill with loader
  - Levels surface with bucket blade
  - Leaves excess fill for natural compaction
  - Maintains level surface to work from
9. Picks up and shifts material in the bucket:
  - Picks up material
  - Shifts material in bucket

**Performance criteria 2.1.1, 2.1.4, 2.1.5 and 2.1.6**

**General performance of sections 4, 5, 6, 7, 8 and 9**

- Equipment suitable for the work
- Machine suitable for ground conditions
- Competently shifts material
- Equipment operated at a safe speed
- Signals are interpreted and observed
- Loads placed to ensure stability
- Loads placed to avoid causing hazard

**SHUT DOWN EQUIPMENT AND**

**SECURE SITE:**

**Performance criteria 3.1.1, 3.1.2 and 3.2.1**

**10. Shuts down equipment and secures site:**

**Parks equipment .**

- Machine parked in suitable area**
- **Attachments lowered to ground**
- Cutting edge of bucket on ground**

### **Shuts down equipment -**

- Idles to stop, locks ignition
- Moves controls to release pressure
  
- Applies safety lock (where applicable)
- **Neutralizes controls**
- Applies holding brake

### **Avoids Hazards**

- **Removes keys**
- Parks away from danger areas**
- Locks cabin (if applicable)**

**Load shifting Equipment**

**Front-end Loader/Backhoe**

**Oral/Written Assessment**

**June 1995**

# FRONT-END LOADER / BACKHOE

(Knowledge)

## Assessor guidelines— specific

1. Knowledge assessment for Front-

### ASSESSMENT INSTRUMENT SPECIFICATIONS

The knowledge assessment covers the following  
Load shifting elements.

1.1, 1.2, 1.3, 2.1, 3.1 & 3.2

1. Unit 1.0

1.1 Conduct **routine checks**

1.1.1 (select 4)

1.1.2 (Select 1)

1.2 Plan work

1.2.1

1.2.2

1.2.3

1.2.4

1.2.5

1.3 **Check controls and  
equipment**

1.3.1 (select 1)

1.3.2 (select 1)

Unit 2.0

**Shift load**

2.1.1(Select 1)

2.1.2(Select 3)

2.1.3(Select 1)

2.1.5(Select 1)

2.1.7 (Select 2)

Unit 3.0

3.1 **Shut down equipment**

3.1.1 (select 1)

3.1.3 (select 1)

3.2 **Secure site**

end Loader/Backhoe is divided into  
three units and seventeen sections  
(performance criteria 1.1.1, 1.1.2 etc).

To satisfy the requirements for competency  
the applicant must correctly answer  
(either in writing or orally) the specified number of  
questions in each of the following sections:

3.2.1 (select 1)

3. Prior learning and experience:

**An applicant who holds a  
front-end loader, excavator,  
dragline or dozer certificate that  
answers questions for performance  
criteria 1.1.1, 2.1.2 and 2.1.5  
satisfactorily is not required to complete  
the rest of the assessment.**

**4. Full knowledge assessment  
of twenty-six questions can take up  
to thirty minutes.**

**5. The items in the shaded boxes  
are of critical importance. Failing  
to get any of these correct means  
that competency has not been  
achieved.**

**6. The applicant's competence in  
each unit is to be summarized for  
both performance and  
knowledge on the summary  
sheet. Competence is achieved  
for a unit when the required  
number of boxes for that unit has  
been ticked or marked 'N/A'**

**7. Overall competence is achieved  
when competence in all units has  
been assessed**

**CONDUCT ROUTINE CHECKS:**

**Performance criteria 1.1.1 (select 4**

**Including 1 with a shaded box)**

1. What precaution must be taken when inspecting under a raised attachment?  
*A Provision provided to prevent attachment descending. Chocks, Blocks Supports*
2. Name three defects to look for in the hydraulic system.  
*Oil leaks, loose connections, splits, fractures or bulges in hoses.*
3. When should slings be inspected?  
*Prior to their use. (AS1666)*
4. What % wears in a shackle would cause it to be discarded?  
*10% wear.*
5. Briefly describe how you would check the air pressure of water filled tires.  
*Check with the valve at the top of the wheel*
6. What shall be provided on a front-end loader/backhoe before it is used as a crane?  
*Special provision to attach the slings to and the SWL marked on the equipment.*

**PLAN WORK:**

**Performance criteria 1.2.1 (select 2)**

7. In built-up areas what checks should be made before excavating?  
*Check for power, telephone, gas or Drainage lines.*
8. What would you refer to in order to establish the location of underground services?

*Supply authority or council maps.*

9. Name two methods that you would use to prevent a cave in of a trench or excavation?  
*Shoring, battering or benching.*
10. What safety precautions should be taken to inflate split rim wheels?  
*Do not stand in front of the wheel  
And inflate tire in a cage if Available.*
11. Is it permissible to join a chain sling with a bolt?  
*No.*
12. If you accidentally damaged an underground electrical cable whom would you immediately contact to render the power supply safe?  
*The electrical supply authority.*

13. What % of broken wires within a lay or in eight diameters of a wire rope sing would cause it to be discarded?  
*10% of the wires.*

**Performance criteria 1.1.2 (select 1)**

14. What must be done to a lowered backhoe bucket before traveling?  
*Raise the bucket and secure it.*

**Performance criteria 1.2.2 (select 3 including 1 with a shaded box)**

15. What shall be provided to prevent a person falling into a trench?  
*Barricades or guardrails or fencing.*
16. When should ear protection be worn?  
*Where the noise could contribute the loss of hearing.*
17. . What is the danger of loading a truck across a sloping surface?  
*The loader could overturn.*

18. When should an operator wear a safety helmet?  
*Where the person could be struck on The head.*

- 19 In doubtful SOIL what depth trench is required to be shored before it is entered?  
 *Trenches over 1.5m deep.*

20. What is the minimum type of footwear that an operator should wear to operate load-shifting equipment?  
*Non-slip foot-wear that encloses the Foot.*

Performance criteria 1.2.3 (select 1)

21. Which is the preferred route of travel, diagonally across or directly down sloping surface?  
*Directly down the sloping surface.*

22. What gear should be selected to travel down a steep sloping surface?  
*A low gear. The gear required climbing the sloping surface.*

Performance criteria 1.2.4 (select 1)

23. What would you be required to obtain from the Relevant Authority to operate a machine in a hazardous working area?  
 *The required permits.*

24. What Government license do you require to drive a front-end loader / backhoe over 4.5 tonnes on a public road?  
 *The appropriate heavy vehicle Licenses.*

Performance criteria 1.2.5 (select 1)

25. What attachment would you use to break up reinforced concrete?  
 *Hydraulic hammer attachment.*

26. When a front-end loader/backhoe is used in a demolition process what shall be provided to the machine to protect the operator?  
 *A fall on Protective Structure (F.O.P.S) (AS 2601)*

### CHECK CONTROLS AND EQUIPMENT:

Performance Criteria 1.3.1 (select 1)

27. What action would you take if you noticed a bulge form in a hydraulic hose?  
 *Replace the hose before the machine Is used.*

28. When should tests, checks and inspections be made by the operator on the front-end loader backhoe that is to be operated?  
 *Daily before use.*

Performance criteria 1.3.2 (select 1)

29. What action would you take with  Damage and defects found on the machine?  
*Report the damage and defects to authorized person and ensure safety is not jeopardized.*

### SHIFT LOAD:

Performance criteria 2.1.1 (select 1)

30. Is it permissible to hoist persons with the bucket of a front-end loader/backhoe?  
 *No.*
31. Is it permissible to attach slings to the teeth of the bucket?  
 *No.*

**Performance criteria 2.1.2 (select 3)**

32.  What effect would sloping ground have on the load that you would hoist and carry with the front-end loader/backhoe?

*It would reduce the load that could be safely carried.*

33.  What is the approximate weight of cubic metre of concrete?

*2.4 tonnes.*

34.  What is the approximate SWL of a 12mm diameter wire rope?  
( $D \times D \times F = SWL$ )

*12 x 12 x 8 = 1152kg.*

35.  Of topsoil or clay, which is more cohesive and harder, to excavate, push and spread?

*Clay.*

36.  What effect does a choker hitch around a square load have on the SWL for the sling?

*Reduces the SWL by 50%.*

37.  State the rule of thumb formula to calculate the SWL of wire rope.

*Diameter squared in mm x 8 = SWL  
In kgs.*

**Performance criteria 2.1.3 (select 1)**

38.  Before reversing the machine what precaution should be taken?

*Ensure the direction of travel is clear.*

39.  What is the added danger when a trench is under cut?

*The trench is more likely to cave in.*

40.  Applicant to state the meaning of the hand signal for “lowering Hoist” demonstrated by the assessor.

*Hoisting lower.*

41.  Applicant to state the meaning of the hand signal for “hoisting raise” demonstrated by the assessor.

*Hoisting raise.*

42.  Applicant to state the meaning of the hand signal of “stop” demonstrated by the assessor.

*Stop.*

**Performance criteria 2.1.7 (select 2)**

43.  What action would you take if a hydraulic hose sprung a leak while the bucket was raised?

*Lower bucket and have repairs Carried out.*

44.  If the machine contacted a live Power line, which could not be released, or the power turned off, how would you dismantle the machine?

*Jump clear ensuring contact with the ground and machine is not at the same time.*

45.  If the slings shifted on a load being hoisted, what action would you take?  
*Stop the crane, warn people in the area, then carefully lower the load and have the slings re-positioned and secured.*

**SHUT DOWN EQUIPMENT:**

**Performance criteria 3.1.1 (select 1)**

46.  Name three areas where you would not park the front-end loader/backhoe.  
*Access ways, near overhangs, refueling sites, tidal or flood areas, adjacent to an excavation*

47.  When leaving the load shifting equipment what should be done with all hydraulically raised attachments?

*Attachments lowered and pressure removed from hydraulic lines,*

**Performance criteria 3.1.3 (select 1)**

48.  What post-operational checks the operator on the front-end loader/backhoe to prepare it ready to be reoperated should carry out?  
*Check the structure and equipment for defects and wear and the oil, fuel and water levels*

SECURE SITE:

**Performance criteria 3.2.1 (select 1)**

49.  What shall be provided when a front-end loader/backhoe has to be parked on or protrudes onto an access way?  
*Barricades, lights and signs.*
50.  For what reason should the key are removed from the ignition of the machine?  
*To prevent unauthorized movement.*
51.  Before leaving the site what must be provided to restrict access to the site?