

Excavator 360

Below 10 tonne

A58

Technical Test – Theory

Roles and responsibilities	1. What is the definition of, or how can a hazard be described?
	A
	2. What is the purpose of a risk assessment?
	A
	3. List SIX typical subject areas that should be covered in a site induction.
	A
	4. What THREE main duties of the Health and Safety at Work Act must employees follow?
	A
	5. What does the Health and Safety at Work Act require employers to do with regards specifically to plant?
	A
	6. a) What is the purpose of a Method Statement and b) what is required of the operator?
	A
	7. Name FOUR different types or levels of sanctions that can be applied (by employers and judicial bodies) to plant operators who do not comply with, or follow legislation and regulations.
	A
	8. Plant operators are generally regarded as 'safety-critical' workers. What does this mean?
	A

continued...

Roles and responsibilities continued	9. Name THREE ways in which an operator can minimise their impact upon the environment whilst using the machine.
	A
	10. In what situation does a hard hat NOT need to be worn when operating a 360 excavator?
	A
	11. The operator has to fit and use a new bucket using a quick-hitch coupler that they are unfamiliar with. What do Regulations (i.e. PUWER 98) and other guidance require the operator to have?
	A
	12. What are the possible outcomes if being prosecuted (by judicial bodies) for not complying with legislation and regulations?
	A
	13. How can a qualification or card benefit a plant operator?
	A
Preparing for work	14. Name THREE ways that a plant operator can contribute in ensuring repeat business with the client or main contractor.
	A
	15. Where should the excavator's Operator's Manual be kept and why?
	A
	16. If the operator has to top-up the hydraulic oil, state TWO precautions to ensure cleanliness of the system.
	A

continued...

For questions 17 and 18 the Operator's Manual for the machine being used for the test MUST be available for reference by the candidate	
Preparing for work continued	17. Using the Operator's Manual, state the figure for setting track tension. For wheeled units, state the tyres' operating pressure.
	A
	18. Using the Operator's Manual, state the cold-starting procedure for the machine.
	A
	19. State the purpose of the check valve(s) located on the boom cylinder rams.
	A
	20. What is the purpose of a roll or ROPS frame?
	A
	21. If checking the oil level using a dipstick, why must gloves be worn?
	A
	22. Apart from the operator, who else may need to use the machine's Operator's Manual?
	A
	23. What is the purpose of the counterweight of the machine?
	A
	24. What is meant by zero-tail swing excavators?
A	
25. During work, the engine starts to overheat. Explain the danger if someone tries to remove the radiator or expansion tank cap.	
A	
Travelling and manoeuvring	26. If both travel levers (or travel pedal for wheeled machines) are pushed forwards when the track motors (or driving wheels) are in front of the cab, in which direction would the machine move?
	A

continued...

Travelling and manoeuvring continued	27. If the machine is being travelled or working on the public highway, including adjacent pavements and verges, the Road Traffic Act applies. a) What type of licence and which classes should the operator hold and b) what is the minimum age allowed?
	A
	28. When MUST a banksman/signaller be used before moving an excavator?
	A
	29. Why must the seat belt be worn, even with the cab door closed?
	A
Setting up for work	30. Give FOUR reasons that may cause the machine to tip over – forwards and/or sideways.
	A
	31. What information does the 'dig-envelope' (also known as 'working range') chart give? (Candidates may be shown a copy of a chart)
	A
	32. Explain ALL visual checks that must be carried out on all types of quick-hitch bucket attaching systems before use.
	A
	33. On a semi-automatic quick-hitch bucket attaching system: a) what is the purpose of the safety pin and b) what checks MUST be made to the pin before use?
	A
34. Cable avoidance tools (CATs) can detect a variety of buried services. What type of material do they have limitations in locating?	
A	

continued...

Setting up for work continued	35. Describe ONE physical method of checking that a bucket is fully secured to the quick-hitch coupler prior to work.
	A
	36. Name TWO types of equipment used to ensure that excavation levels, measurements and positions are to the required specification.
	A
	37. When working in a confined area or space: a) what danger can be present with regards to the counterweight of the machine, b) what is the recommended minimum distance and c) what measures must be implemented if the gap is less?
	A
	38. If setting up to excavate in a confined area, name TWO things that should be taken into account before starting.
	A
	39. What particular and specific hazards can affect the stability of the machine when working on old industrial (Brownfield) sites?
	A
	40. If setting up to work in a pedestrianised area, state THREE factors that need to be taken into account.
	A
41. The operator is asked to excavate a new trench. State FIVE different requirements that must be considered or implemented before work commences.	
A	
42. Before manually changing any bucket: a) where should the bucket be positioned (in relation to the ground) before removing the final pin and b) why?	
A	

continued...

Setting up for work continued	43. With regards to lifting accessories, irrespective of who supplied the accessories, what THREE factors should be ensured before the accessories are used?
	A
	44. a) What is the recommended minimum distance to be kept away from overhead power lines mounted on wooden poles when setting up the machine and b) explain why a distance should be kept.
	A
Working tasks	45. If a trench has a depth of 2.0 metres: a) what is the minimum distance to maintain from the edge of the trench when placing spoil and b) explain why.
	A
	46. Why should different soils be segregated during excavating?
	A
	47. Give THREE reasons why an oversize bucket should not be used when excavating trenches to specification.
	A
	48. a) Why should the slewing direction be to the left wherever possible and b) explain why.
	A
	49. Why must excavator operators not begin to load vehicles until the forward tipping dumper driver is clear of their machine?
	A
50. What makes up the total (or gross) weight of a load that is to be lifted'?	
A	
	51. Using the lifting capacity diagram (Annex A): a) what is the maximum lifting capacity at 4 metres radius over the sides of the track with the load at a height of 1.0 metre, b) what effect does fitting a bucket have on the lifting capacity and c) what effect does the dozer blade have on the lifting capacity?
	A
	52. What factors determine the shoring requirements of a trench?
	A

continued...

Working tasks continued	53. Give TWO reasons why, wherever possible, operators should excavate ground in layers.
	A
	54. If a yellow coloured marker tape is unearthed during excavating, which two types of services could this indicate?
	A
	55. What is the nearest distance allowed to gas pipes when excavating with the machine?
	A
	56. When slewing with a load, where should the operator be looking?
	A
	57. What is the meaning of this hand signal (being demonstrated by the Tester)?
	A
	58. Explain a possible danger if the excavator is lifting a load on sloping ground, even though the load chart indicates that the machine can lift that load?
	A
	59. Before lowering a pipe into a deep trench, what trench-related checks must be made?
	A
Completing work	60. If the excavator is carrying out deep excavating work using the full working range, what hazard may occur?
	A
Shutdown	61. Describe TWO actions to be taken for an open trench at the end of a working day.
	A
	62. Before leaving the cab for a rest break, after parking and switching off the machine, what final action must be carried out?
	A
	63. When parking the machine at the end of the shift, name THREE places where the machine should NOT be parked.
	A

continued...

Shutdown continued	64. The operator has been asked to drive the machine onto a transporter/trailer. a) Who is responsible for the loading operations and b) state FOUR actions to be considered by the operator before loading commences.
	A
	65. Why should an excavator be re-fuelled at the end of the day?
	A

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Technical Test – Practical

RESOURCES

Required

Machine	<ul style="list-style-type: none"> • 360 Excavator equipped with a grading blade and fitted with a standard excavating bucket or quick hitch
Area	<ul style="list-style-type: none"> • Ground, clear of hazards which must include: <ul style="list-style-type: none"> – level area for excavating – rough terrain – slope or slopes – spoil/material to load vehicles
Other equipment	<ul style="list-style-type: none"> • Load-carrying vehicle for spoil/material • A replacement bucket for reinstating and changing activities • Items to create restrictions for manoeuvring • Laser equipped measuring equipment to ensure trench specifications are met • Lifting accessories for the load to be lifted • Measuring tape for measuring the maximum radius of the excavator • Slinger and signaller assistance
Loads	<ul style="list-style-type: none"> • 1 x load, able to be slung being not less than 60% of the full radius of the machine
Notes	<ul style="list-style-type: none"> • The machine selected for the test must meet the specification for the required endorsement, be in serviceable condition and conform with current legislation • The operator's manual must be with the excavator • The slope must have at least an 18% (1:5.5) incline with sufficient manoeuvring room at the top, or a straight ramp with an up and down route with a flat area at the summit • The nominated area must be safe to allow excavations up to 2 metres deep • The load carrying vehicle must have a minimum capacity equivalent to 6 full bucket loads of the excavator being used for the test • All lifting accessories must be fit for purpose and certificated • The weight of all loads must be known • Load (lifting) charts for the excavator being used for the test must be available for use • The slinger and signaller must be certificated and competent • The same bucket may be used for reinstating and changing purposes

ACTIVITY

Instructions

Sequence	<ul style="list-style-type: none"> • Activity 1 must be undertaken at the start of the test • Activities 2, 4 and 5, 6, 7 and 8 can be undertaken at any time during the test • Activity 10 must be undertaken at the end of the test <p>The test must be completed within a given time. The specifications' section gives further information.</p>
Preparing for work	1 Complete all manufacturers' pre-start and running checks and prepare the excavator for travel
Travelling & manoeuvring (refer to specifications)	2 Travel to the work area and: <ul style="list-style-type: none"> – travel up and down the slope – pass through a restriction – travel over rough terrain
Setting up for work	3 Prepare and set the excavator for the relevant work
Working tasks (refer to specifications)	4 Produce a vertical trench to the specified dimensions 5 Produce 2 x straight trenches to form a 'T' pattern with square starts and finishes 6 Load material into a vehicle 7 Change the bucket 8 Lift the load from minimum radius, position the load at 75% of full radius and rotate for a minimum of 180 degrees. On completion land the load at a given point and detach. 9 Reinststate the work area back to the original state
Shutting down	10 Park the excavator and carry out shut-down and securing procedures
Notes	<ul style="list-style-type: none"> • For activity 2, wheeled excavators must pass through the restriction in a forward and reverse direction • For activity 7, the dipper must be raised and slewed away from the bucket before attaching, if using the same bucket • For activity 8, the lift shall be undertaken using static duties only • For activity 9, the grading blade shall be employed • If the machine is hot, checks unable to be carried out (i.e. coolant) may be assessed by the Tester using verbal questions

Activity measurements

Travel restrictions	<ul style="list-style-type: none">• 600 mm (activity 2)
Trench depths	<ul style="list-style-type: none">• Up to 5 tonnes = 0.5 metre ± 35 mm and straight within ± 60 mm• Above 5 tonnes = 1.0 metre ± 35 mm and straight within ± 60 mm
Trench length	<ul style="list-style-type: none">• Up to 5 tonnes = 5 metres and 2 metres• Above 5 tonnes = 10 metres and 4 metres
Moving loads	<ul style="list-style-type: none">• Maximum height of underside of the load = 1 metre (when being moved)
Load placing	<ul style="list-style-type: none">• 100 mm of a given position
Test timings	<ul style="list-style-type: none">• The test must be completed within 2 hours and 45 minutes

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Technical Test – Practical

Basic details	Test ref.	Candidate name
	Tester name	Candidate ref.
	Tester ref.	Date of test
	Make and model	Start time of test
		Duration

MANDATORY		Correctly carried out during the test?	Y / N
Preparing	1 All pre-start and running checks (or responses to relevant questions)		
Travelling	2 Restrictions cleared		
	3 Excavator set for travel		
	4 Encountered hazards cleared		
	5 Boom/dipper arm position when ascending and descending inclines		
Setting up	6 Faced direction of travel whilst travelling		
	7 Allocated area checked and clear of hazards prior to each activity		
Working	8 Excavator laterally level whilst excavating		
	9 Excavated material clear of trench		
	10 Trenches conform to the stated sizes and tolerances		
	11 Full bucket loads when excavating (except for finishing work) and loading		
	12 Loading vehicle and excavator position prior to loading		
	13 Vehicle evenly loaded but not overloaded		
	14 Existing bucket removed and replacement bucket installed		
	15 Excavator positioning prior to lifting loads		
	16 SWL not exceeded at all times		
	17 Lifted, moved and lowered load in a controlled manner		
	18 Stability of the machine maintained at all times		
	19 Excavated area reinstated back to the original contours		
	20 Grading blade utilised for reinstating work		
Shutdown	21 All shutdown and securing procedures		
Other	22 Legislation, manufacturers' and health and safety requirements complied with		
	23 Test completed within the given time		

All of these items must be awarded

Achieved / Not achieved

FAULTS

Candidate incorrectly carried out the following:

Fault Mark Penalty

Travelling	1 Excavator mounting and dismounting		1	
	2 Full observation before moving		2	
	3 Full observation whilst travelling		2	
	4 Observation before slewing upper structure		2	
	5 Drive sprockets kept to the rear when travelling		1	
	6 Travel speed matched to the ground type and conditions		1	
	7 Tight turns avoided when travelling (tracked machines only)		1	
Working	8 Site and set for excavating		2	
	9 Trench excavated in layers		1	
	10 Sideswiping with bucket		1	
	11 Edges of the excavations clean and clear		2	
	12 Material cleanly placed into the loading vehicle		1	
	13 Contact with vehicle avoided when loading		1	
	14 Load placing within given tolerances		2	
	15 Keeping load height within given tolerance		1	
	16 Use of Steering/hydraulic controls		1	

Not exceeded 8 penalties

Total penalties

Achieved / Not achieved

