

Student name: _____

Date: _____



INDUSTRIAL ROPE ACCESS EXAM PAPER

Read each question carefully then answer in the manner required.

Please sign your paper at the end.

You must write clearly in permanent ink (do not use pencil).

IMPORTANT NOTE:

1. Have you obtained your **USI code** yet?

You must have a valid USI code otherwise you will not be able to receive a qualification.

Visit the USI website to create your unique USI code: <http://www.usi.gov.au/create-your-USI/Pages/default.aspx>

2. Have you completed your **AVETMISS questionnaire**? You must complete this accurately and legibly in CAPITALS using permanent ink.

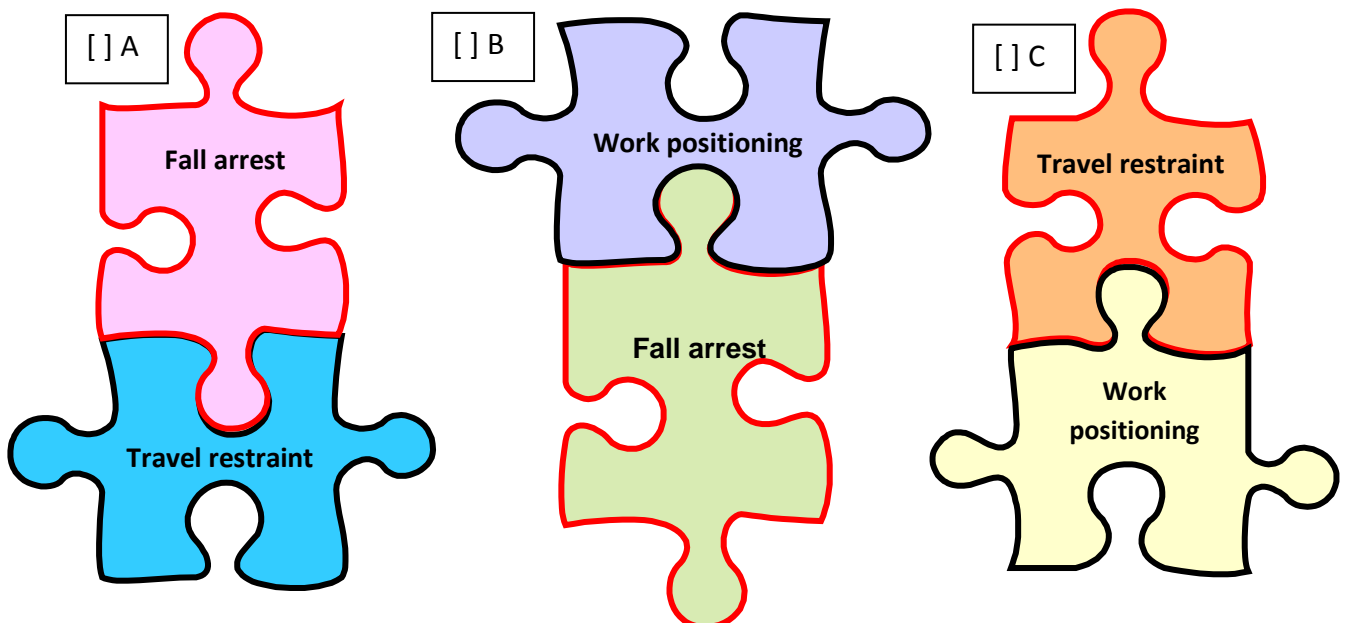
Q1. WHS legislation requires the 'Hierarchy of Controls' to manage risk at all workplaces. Legislation is very specific in the order in which the 'hierarchy of controls' is to be used. Choose the response that you believe is the correct order of the 'hierarchy'.

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C
<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <ol style="list-style-type: none"> 1. Eliminate 2. Substitute 3. Isolate 4. Engineering controls 5. Administrative controls 6. PPE </div> <div style="width: 20%; text-align: center;"> <p>Priority</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <ol style="list-style-type: none"> 1. PPE 2. Isolate 3. Substitute 4. Administrative controls 5. Engineering 6. Eliminate </div> <div style="width: 20%; text-align: center;"> <p>Priority</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <ol style="list-style-type: none"> 1. Eliminate 2. Isolate 3. Substitute 4. Engineering 5. PPE 6. Administrative controls </div> <div style="width: 20%; text-align: center;"> <p>Priority</p> </div> </div>

Q2. WHS legislation is very specific about how to minimise the risk of a fall at a workplace. Choose the response that you believe is the correct order for minimising the risk of a fall at a workplace.

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C
<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <ol style="list-style-type: none"> 1. Travel restraint system 2. Work positioning system 3. Fall-arrest system </div> <div style="width: 20%; text-align: center;"> <p>Priority</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <ol style="list-style-type: none"> 1. Fall-arrest system 2. Work positioning System 3. Travel restraint system </div> <div style="width: 20%; text-align: center;"> <p>Priority</p> </div> </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 70%;"> <ol style="list-style-type: none"> 1. Work positioning system 2. Travel restraint system 3. Fall-arrest system </div> <div style="width: 20%; text-align: center;"> <p>Priority</p> </div> </div>

Q3. This question relates to Q2 above. Two fall protection systems are combined in the industrial rope access method. Choose the diagram you believe is correct.



Q4. Section 78 of the WHS legislation states that fall protection is mandatory when a person is:

(i) in the ***vicinity of an opening*** through which a person could fall; or

(ii) in the ***vicinity of an edge*** over which a person could fall;

What is meant by the term 'vicinity'? In other words, how close can a person approach an opening or an exposed edge without any form of fall protection? Choose the answer you believe is most correct:

- a) Any distance from an edge or opening
- b) 3.0m
- c) 1.0m
- d) 2.4m
- e) 2.0m
- f) It is not defined in the WHS Regulation – but a distance of at least 2.0m (ie a body length) must be maintained and even greater distances if the person could trip and then roll down a slope
- g) None of the above are correct.

Q5. There are several rope access accrediting bodies in the world – which include:

- 1. ARAA
- 2. IRATA
- 3. SPRAT

Each accrediting body uses a 3 level system (level 1, level 2 and level 3). They are all essentially the same.

Briefly summarise the main differences between each level...


LEVEL 1:

LEVEL 2:

LEVEL 3:

Q6. The rope access method requires the use of two (2) ropes. Each rope is designated a purpose and has to be connected to a solid anchorage of a particular strength rating.

Study the photo carefully then answer each question where indicated...



Name of rope ?

Name of rope ?

Want is the *maximum* allowed distance of separation between the ropes?

_____ kN ?

_____ kN ?

What does the symbol 'kN' mean?

Convert kN to kg:
1 kN = _____ kg?

Q7a. Study the photos carefully. In each of the boxes provided, write the name of the particular part of the harness.



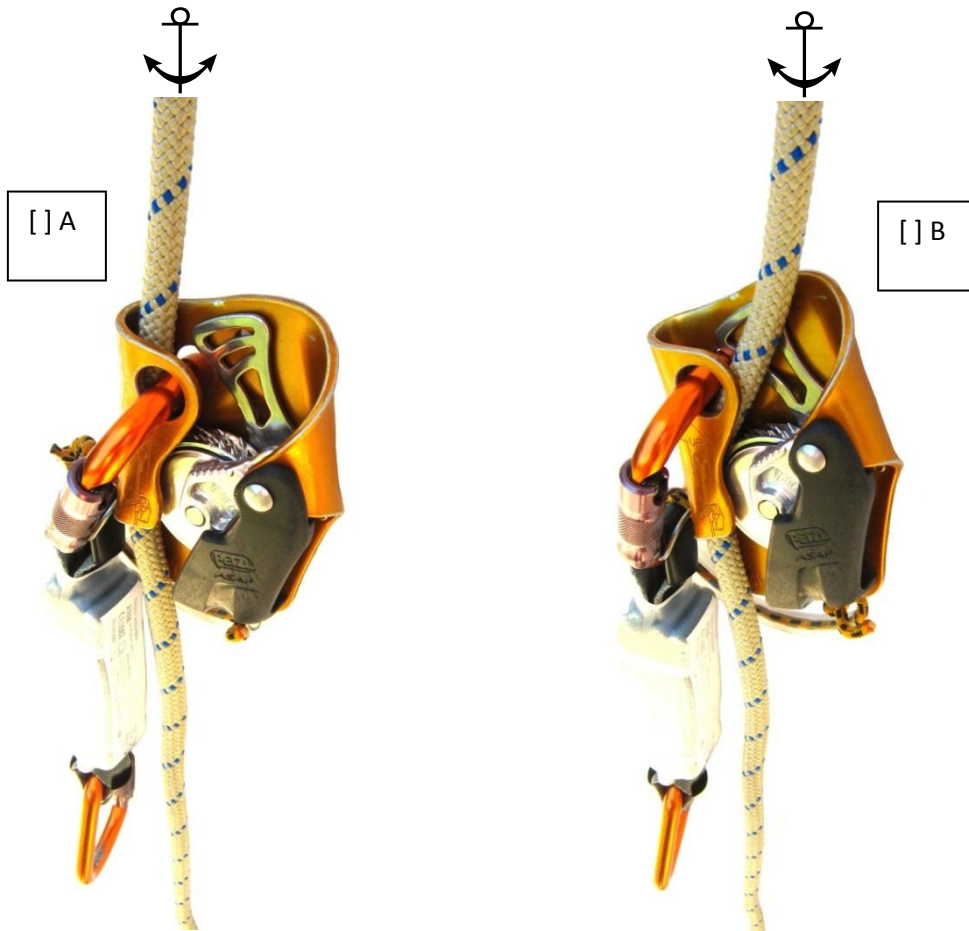
Q7b. What is the maximum theoretical lifespan of a harness?

_____ years

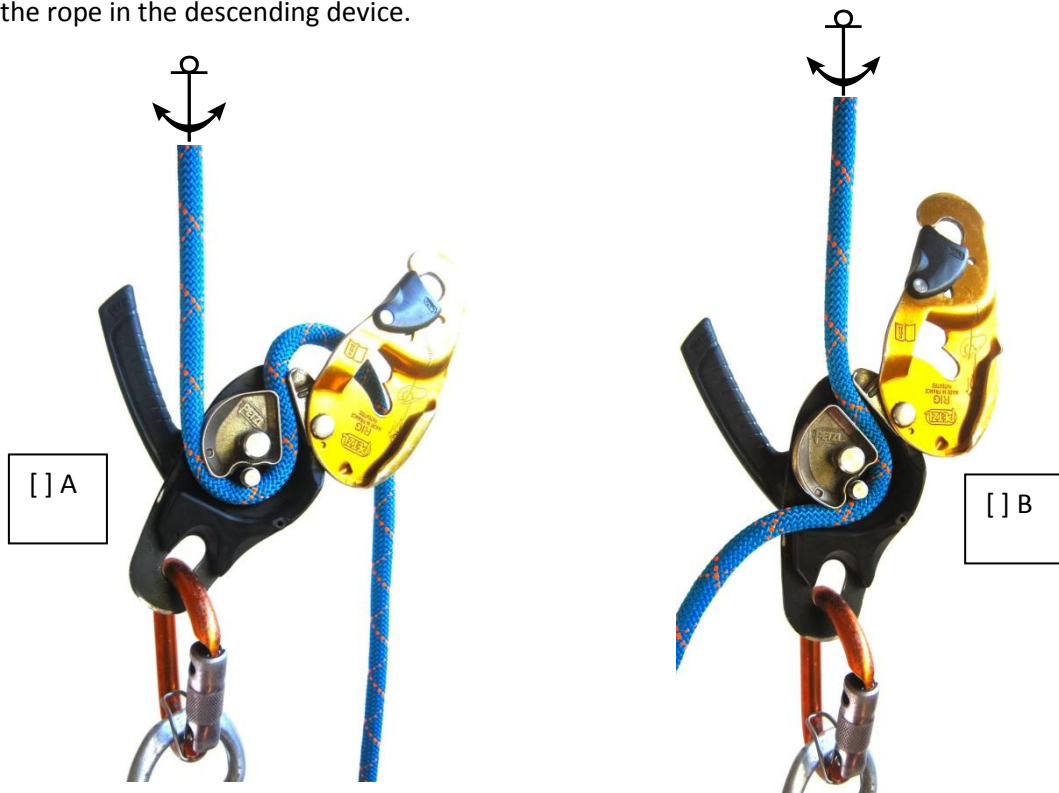
Q8. Study the photos carefully. Choose the photo that indicates the most correct method of **retro-fitting** a Petzl 'Croll' into the front yoke / sternal assembly of a harness:



Q9. Study the photos carefully. Choose the photo you believe indicates the correct way to use the Petzl ASAP fall-arrester.



Q10. Study the photos carefully. Choose the photo you believe indicates the correct way to reeve the rope in the descending device.



Q11 a. Study the photos carefully. Each photo shows a different method of attaching a swing seat (bosuns chair) to a harness.

A



Advantage of this attachment configuration:

Disadvantage of this attachment configuration:

B



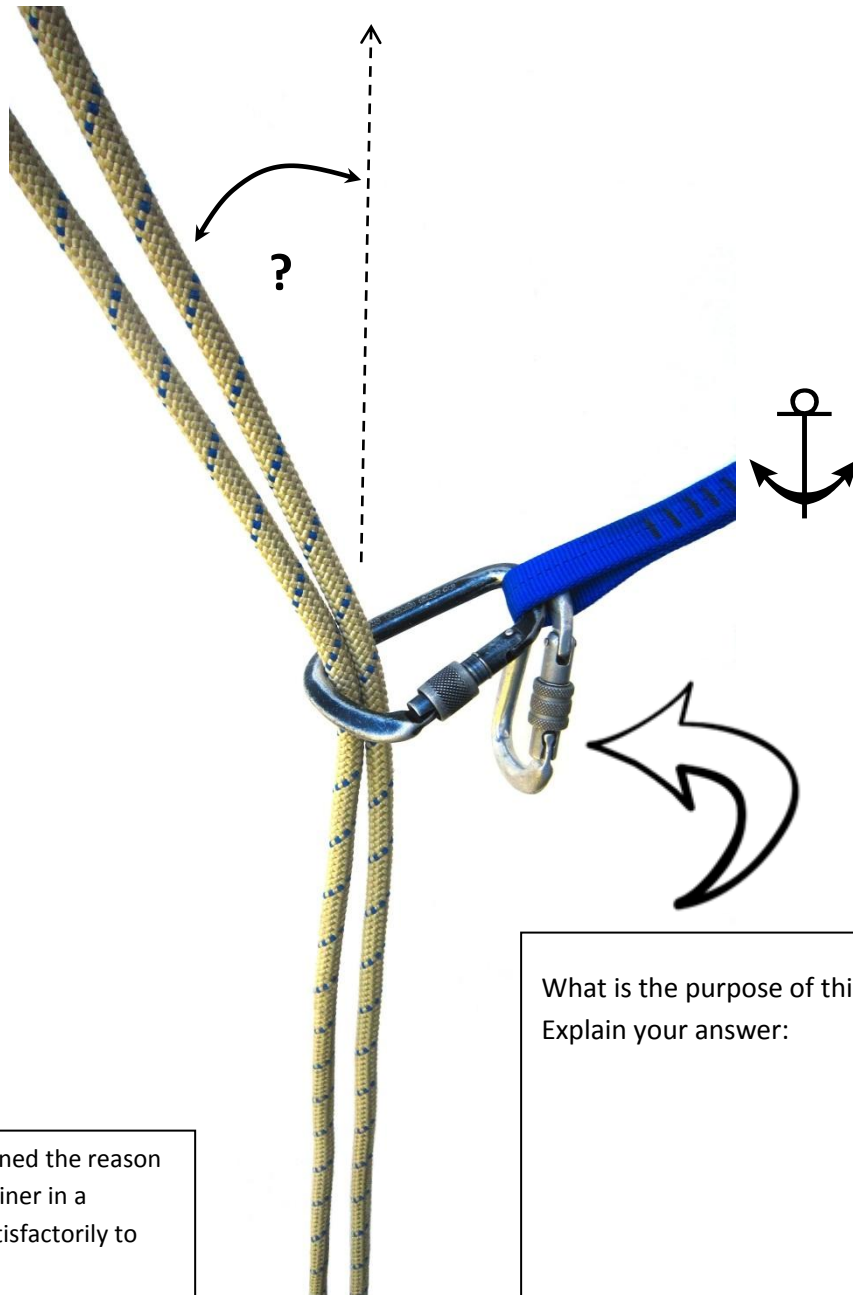
Advantage of this attachment configuration:

Disadvantage of this attachment configuration:

Q11 b. Under what circumstances is a rope access operator required to use a swing seat (bosuns chair)?

Q12. For a level 1 site, what is the maximum permitted deviation angle?

_____ degrees



OR

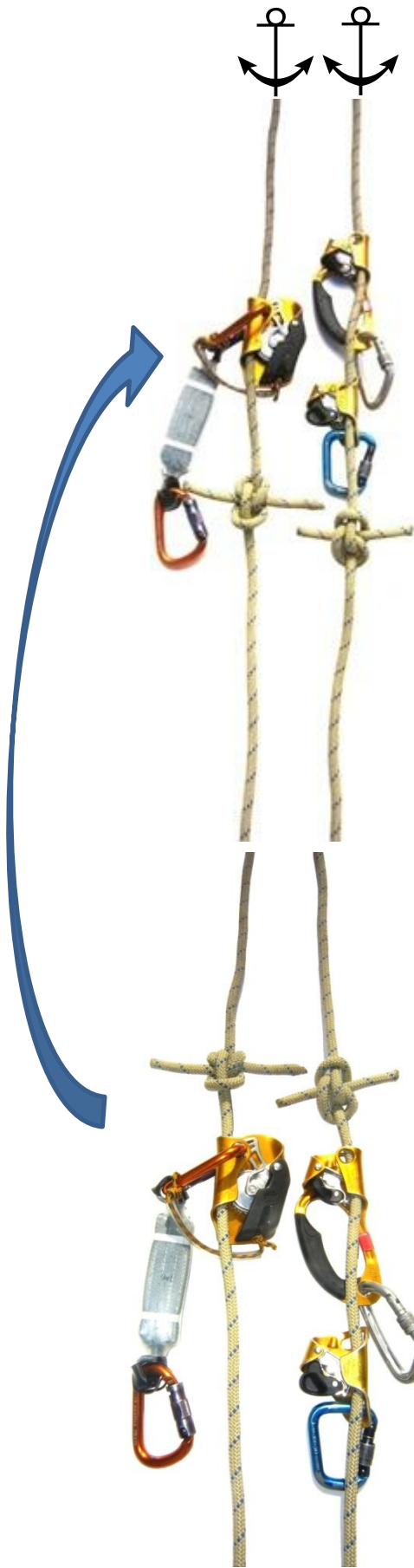
I have orally explained the reason for the extra carabiner in a deviation setup satisfactorily to my instructor.

_____ (instructor initials)

What is the purpose of this extra carabiner?
Explain your answer:

Q13. This question is about performing a fixed knot bypass while ascending.

Note: Assume that you are carrying a Petzl ID device and spare carabiners. You do not have a spare fall-arrester device.



Write down the sequence to bypass the fixed knots.

Note: 2 points of contact must be maintained throughout the bypass procedure.

Write down as many steps as you think you need...

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

OR

I have orally explained this knot bypass procedure satisfactorily to my instructor.

_____ (instructor initials)



Assume you are carrying a Petzl ID device + spare carabiners...

Q14. All rope access accrediting bodies require operators to have a minimum of 2 points of contact at all times. Study the diagrams carefully. Indicate which of the diagrams that do not meet this requirement. There may be more than 1 answer...



Q15. Transition through a deviation – sequence.

Describe the sequence to transit through a deviation...



Write down the sequence to transition through a deviation. Note: 2 points of contact must be maintained throughout the procedure.

Write down as many steps as you think you need...

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

OR

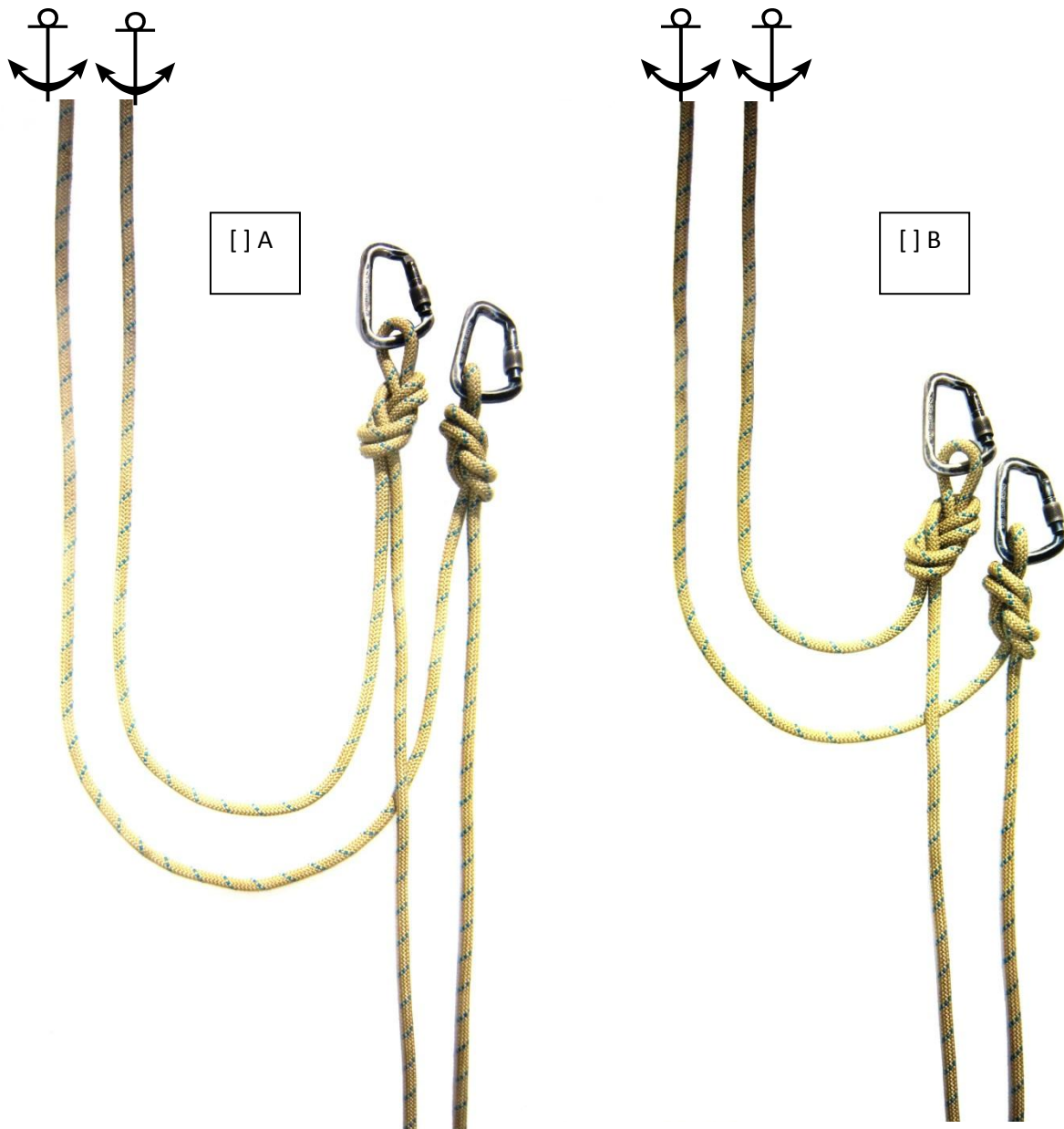
I have orally explained transitioning through a deviation satisfactorily to my instructor.

_____ (instructor initials)

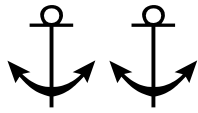


Direction of travel

Q16. Study the photos carefully. Choose the photo you believe indicates the most correct rigging for a rebelay. You will be required to explain your answer to your assessor (including why you thought the other answer was incorrect).



Q17. Describe the sequence to transit through a re-belay / re-anchor...



Write down the sequence to transition through a rebelay. Note: 2 points of contact must be maintained throughout the procedure.

Write down as many steps as you think you need...

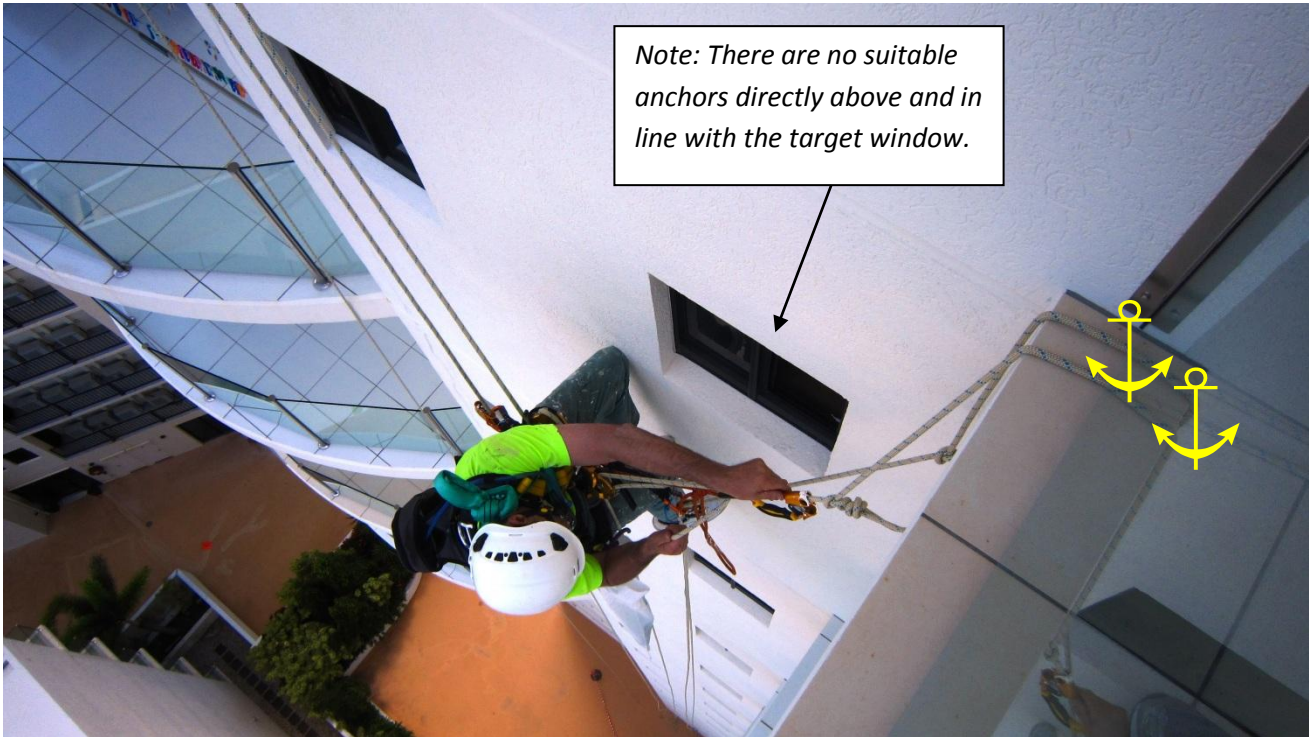
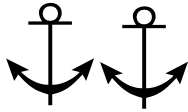
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



OR

I have orally explained transitioning through a rebelay satisfactorily to my instructor.
_____ (instructor initials)

Q18. This question is about mobility and accuracy in reaching the target work position...



Why has the rope access operator rigged 2 rope sets – with one set diagonally off to the left and the other diagonally off to the right?

Explain your answer: _____

OR

I have satisfactorily explained why the rope access operator has rigged two different rope sets to my instructor.

Instructors initials: _____

Q19. If a tear-web energy absorber (shock pack) activates, by how much will it increase in length?
 Answer where indicated.

Tear-web style shock pack energy absorber

Rips apart

By how much will your energy absorber increase in length if it activates?
 _____ m

Can you re-use your energy absorber after it has been activated by a fall?

Yes

No

Q20. Study the photo carefully then answer the questions.

20.1 What is this part and how does it work?

20.2 What is this part?

20.3 What is this part & what is its purpose?

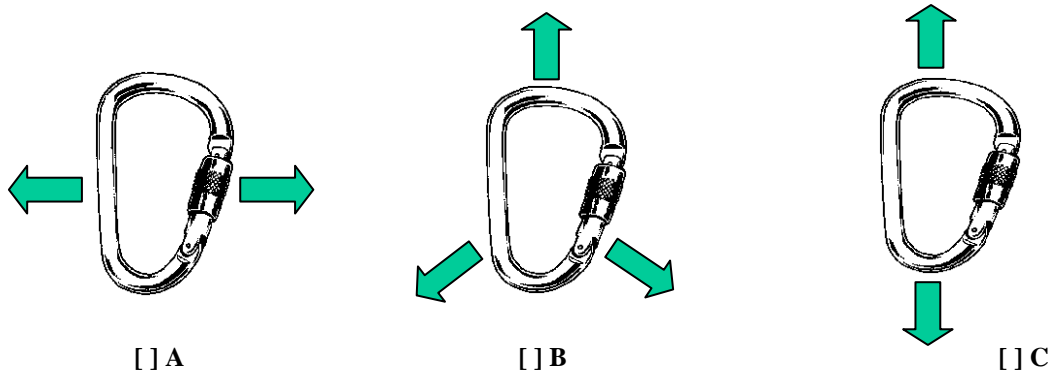
20.4 What is this part?

Q21. The '27' symbol stamped on the spine of carabiner indicates: (choose the most correct answer). Note: Your instructor may ask you to identify and explain other symbols...



- a. The average force that the carabiner will sustain without breaking is 2.7 metric tons
- b. The Safe Working Load (SWL) of the carabiner is 27000 Newtons
- c. The Working Load Limit (WLL) of the carabiner is 27 kilonewtons
- d. The ultimate strength of the carabiner is 27 kN (when loaded along the spine)
- e. None of the above are correct

Q22. Study the diagrams carefully. Which of the diagrams indicates the correct method of loading a carabiner?



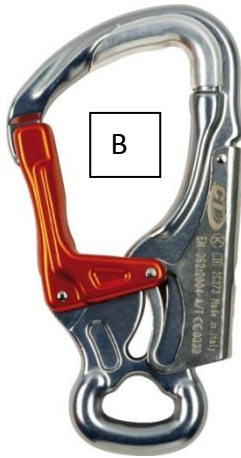
Explain your answer:

Q23. What is the lifespan of a carabiner (ie at what age would you retire it)?

Q24. Study the connectors carefully. Answer the questions where indicated.



A



B



C

A. What **type** of connector is this?

B. What **type** of connector is this?

C. What **type** of connector is this?

Describe an application for connector 'A'

Describe an application for connector 'B'

Describe an application for connector 'C'

OR

I have orally explained different applications for each connector satisfactorily to my instructor.

_____ (instructor initials)

Q25. Study the connectors carefully. Answer the questions where indicated.

A



B



A. What **type** of **locking mechanism** does this connector have?

B. What **type** of **locking mechanism** does this connector have?

Describe at least 1 *advantage* and 1 *disadvantage* for connector 'A'

Advantage: _____

Disadvantage: _____

Describe at least 1 *advantage* and 1 *disadvantage* for connector 'B'

Advantage: _____

Disadvantage: _____

OR

I have orally explained the advantages and disadvantages for each connector satisfactorily to my instructor.

_____ (instructor initials)

Q26. Answer each question about the knots...

A



Name of knot: _____
Application in rope access:
(describe how this knot can be used)...

B



Name of knot: _____
Application in rope access:
(describe how this knot can be used)...

C



Name of knot: _____
Application in rope access:
(describe how this knot can be used)...

D



Name of knot: _____
Application in rope access:
(describe how this knot can be used)...

E

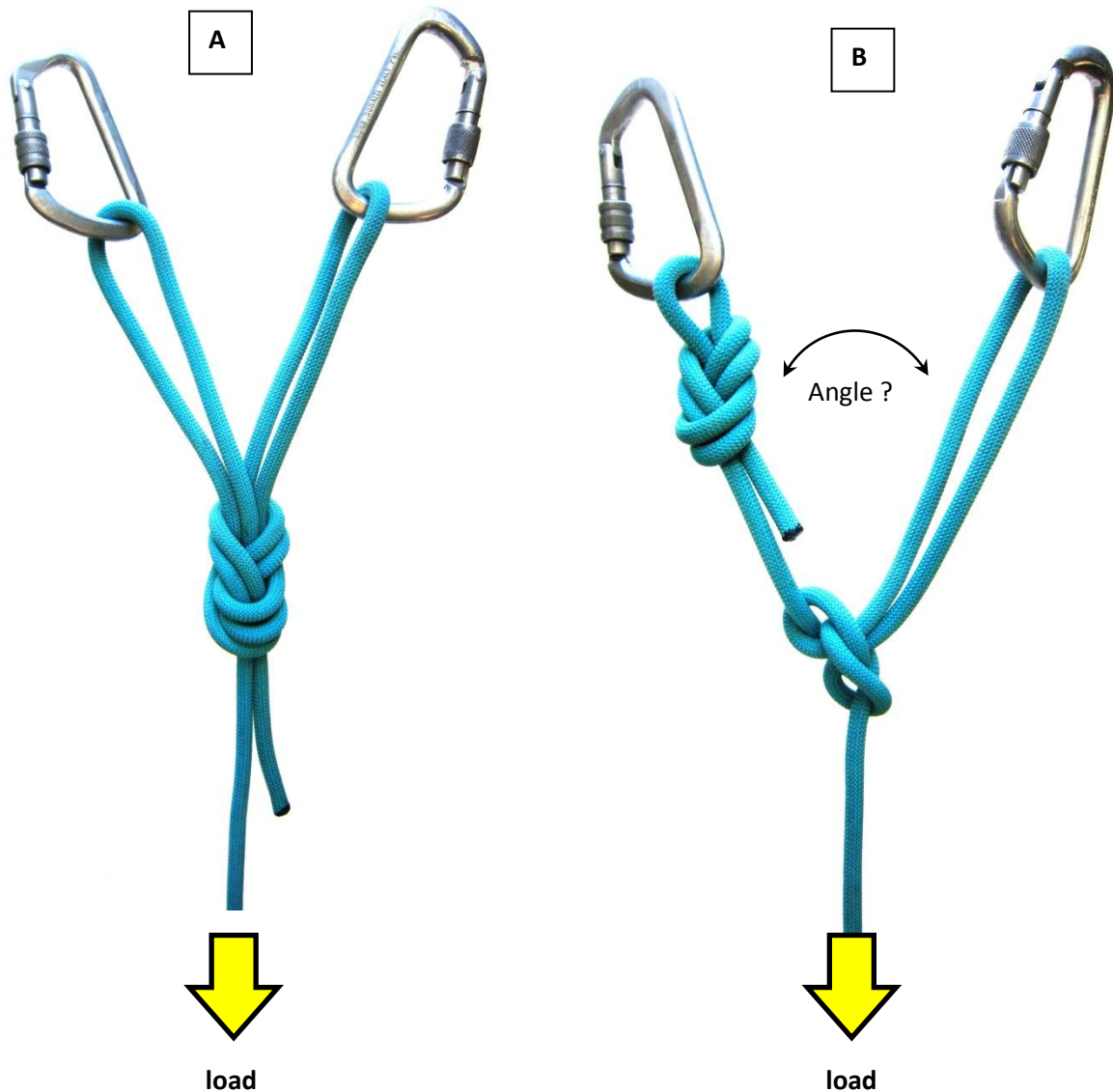


Name of knot: _____
Application in rope access:
(describe how this knot can be used)...

OR

I have orally explained each knot and its application satisfactorily to my instructor.
_____ (instructor initials)

Q27. Study the diagrams then answer each question about the anchor configuration...



Which configuration is a more *efficient* use of available rope? A or B

What is the *optimum* included angle? _____ degrees

What effect can occur if the included angle is set less than the optimum degrees?

Describe your answer: _____

OR

I have orally explained what can occur if the included angle is set less than the 'optimum degrees' satisfactorily to my instructor.

_____ (instructor initials)

Q28. This question is about safety. Before you begin working at height, you need to check your PPE and fall protection system. What does each letter of the following checklist represent?

A _____

B _____

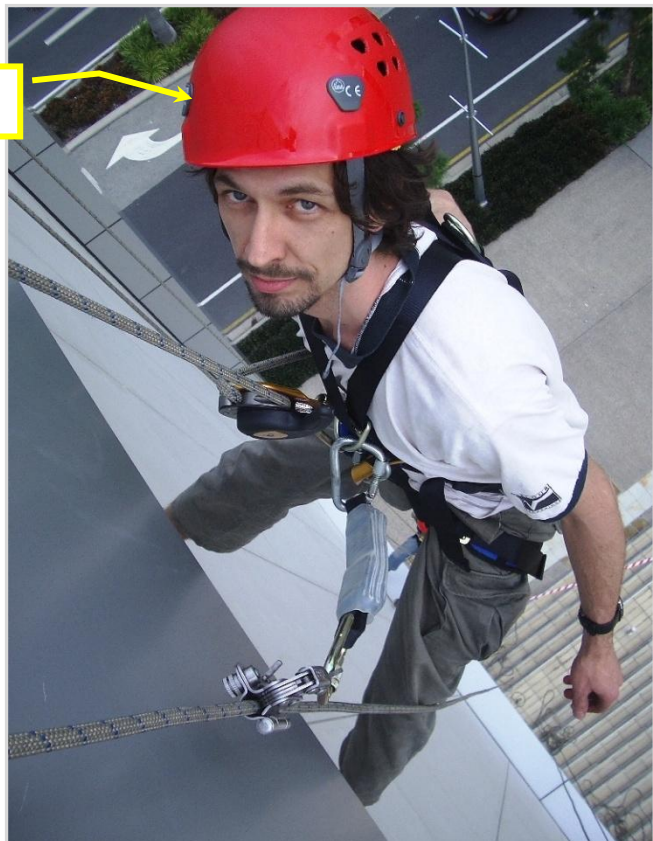
C _____

D _____

E _____

Q29. Study the photo carefully. The rope access operator is using a vented helmet. In what work circumstances/environments is a vented helmet not permitted?

Vented helmet



Explain your answer:

OR

I have orally explained the circumstances under which a vented helmet is not permitted satisfactorily to my instructor.
_____ (instructor initials)

Q30. Attachment of fall-arrest device

According to rope access industry Codes of Practice (COP), what part of the harness is a fall-arrest device permitted to be attached to?

Indicate your answer by drawing a line from the fall-arrest device to the harness.

You may draw more than one line if you think there are 2 or more allowable attachment points.



Q31 Fall-arrest devices (comparison). Study the photos carefully then answer the questions...

A: Goblin



B: ASAP – 'lock'



C: Shunt



D: Backup



E: Red



1. Which of these devices are designed for a **2 person load**? _____
2. Which of these devices do not require a shock absorbing lanyard (shock-pack)? _____
3. Which of these devices are no longer recommended as backup fall-arrest device for rope access?

4. Which of these devices will freely travel up and down the rope *without* user manipulation?

5. Which of these devices could inadvertently release if a load was applied to the rope that the device was attached to?

6. Which of these devices employs a toothed cam to arrest a free-fall? _____

Q32. Anchor testing requirements:

Do permanently installed rope access anchors need to be tested?

Yes No

If you answered yes, how often (frequency) must they be tested? _____



Q33. What are the *differences* between these two descending devices? Compare and contrast the features of each device.



Name of device: _____

List at least 3 features of this device:

- 1.
- 2.
- 3.

Name of device: _____

List at least 3 features of this device:

- 1.
- 2.
- 3.

OR

I have orally explained the key differences and features of each device satisfactorily to my instructor.

_____ (instructor initials)

Q34. Some rope access operators integrate a custom lanyard assembly into their harness – which remains always attached and ready for use. Give reasons why this technique is an advantage for rope access work. List *at least* 3 reasons ...



Reasons:

1. _____
2. _____
3. _____

OR

I have orally explained reasons why a custom lanyard assembly is often integrated in a rope access harness satisfactorily to my instructor.

_____ (instructor initials)

Q35. This question is about synthetic fibre ropes used in rope access applications (eg EN 1891 certified ropes).



Q35.1 What is the maximum theoretical lifespan of a synthetic fibre rope used in rope access?

_____ years

Q35.2 List at least 3 reasons for retiring a rope.

1. _____

2. _____

3. _____

Q35.3 What is the minimum rope diameter permitted by rope access industry codes of practice?

_____ mm

Q35.4 According to industry codes of practice, what is the minimum breaking strength (MBS) for rope used in rope access applications?

_____ kN

Q36. This question is about Safe Work Method Statements (SWMS) and risk management in general.

Your instructor will give you a particular rope access scenario that is relevant for your particular work circumstances.

Working in pairs/groups, sequence your assigned rope access job and identify hazards, risks and the measures you will use to control those risks.

JOB DESCRIPTION: _____

NAME OF COMPANY UNDERTAKING WORK: _____

ABN: _____

DATE OF WORK: _____

SITE: _____

	STEP / ACTION	HAZARDS	RISKS	CONTROLS
1				
2				
3				
4				
5				

Continued next page...

Q36 continued...

	STEP / ACTION	HAZARDS	RISKS	CONTROLS
6				
7				
8				
9				
10				

This SWMS was prepared by:

1. _____ (name of reviewer)
2. _____ (name of reviewer)

Accepted and approved by Company Director or person in control of business or undertaking:

Signature of Director (or PCBU)

Dated

Final score _____

Student statement: *I declare that I completed this exam paper without the assistance of others. My answers represent my own work and not the work of someone else. I realise that I may owe a duty of care to others and that my knowledge and skill may be crucial in rope access work. I understand that failure to diligently apply my training could result in serious injury or death. I further acknowledge and accept that I must comply with WHS legislation (eg Work Health & Safety Act in Qld, Australia) at my workplace and there are severe penalties for non-compliance.*

Student signature: _____

Date: _____