Multiple Choice (Select all that are correct)

1 ad  If a device is rated for 22 kN, which of the following loads is it rated to hold safely?
   a) 4,000 pounds
   b) 5,500 pounds
   c) 6,000 pounds
   d) 3,000 pounds
   e) 7,000 pounds

2 bd  Select the rope diameters used by MRT for technical rescue work.
   a) 5/16” (8 mm)
   b) 1/2” (12.5 mm).
   c) 5/8” (16 mm)
   d) 7/16” (11 mm)
   e) 3/4” (19 mm)

3 abcd Which of the following are TRUE regarding highline tensioning?
   a) A highline is pretensioned at 6:1 using one person pulling on the haul line using arms only
   b) A highline is tensioned at 18:1 when loaded when using 1/2” rope as a Track Line
   c) A Track line is tensioned when the load is mid-span
   d) A highline is tensioned at 12:1 when loaded when using a 7/16” rope as a Track Line
   e) A highline is tensioned at 15:1 when loaded when using a 7/16” rope as a Track Line

4 abde Which of the following are advantages of a rope bag?
   a) A rope bag can easily identify the enclosed rope.
   b) A rope bag keeps the rope ready to deploy
   c) A rope bag can identify the manufacturer of the rope.
   d) A rope bag keeps the rope clean during storage
   e) A rope bag allows for easy deployment of the rope without tangles or knots.

5 abcd Which of the following are TRUE of a single-rope system?
   a) A single-rope system must have two points of contact at all times.
   b) A single-rope system may be employed when there is not a rope available for a belay
   c) Anchors for a single-rope system must be bomb-proof
   d) A single-rope system has no backup
   e) A single-rope system can only carry half the load of a double-rope system.
6  acde Which of the following statements are TRUE regarding the Static System Safety factor (SSSF)
a) A system with a 10:1 Static System Safety factor (SSSF) is a system capable of sustaining a force ten times the expected load.
b) 7/16” ropes, in conjunction with other components, provide a 15:1 Static System Safety factor (SSSF)
c) A system with a 15:1 Static System Safety factor (SSSF) is a system capable of sustaining a force fifteen times the expected load.
d) 1/2” ropes, in conjunction with other components, are used to provide a 15:1 Static System Safety factor (SSSF)
e) 7/16” ropes, in conjunction with other components, provide a 10:1 Static System Safety factor (SSSF)

7  abcd Which of the following are TRUE statements.
a) All participants on an incident are “Safety Officers” and can stop an operation at any time if they have a safety concern, it is the Safety Officer’s job to evaluate that concern and make a final judgment.
b) The Safety Officer is the only person allowed to move in and out of the chain of command and issue orders to resources not directly his subordinate.
c) The Safety Officer is an entirely separate person, one that must be very well qualified in all the technical aspects in use on the incident.
d) For smaller incidents the role of Safety Officer can taken on by the Incident Commander.
e) The Safety Officer may delegate the responsibilities of his role to any member. That member is expected to report back to the Safety Officer before an “All Clear” is given.

8  abce Which of the following are TRUE statements regarding suitable natural anchors.
a) Anchors should be placed as low to the ground as possible to reduce leverage.
b) Live plants, rather than dead plants, should be used as anchors.
c) Natural anchors should be carefully studied and evaluated for stability and strength before use.
d) Deciduous (leaf-bearing) trees should never be used for anchors when pine trees are available due to the very shallow root system on a deciduous tree.
e) Anchors materials should be protected from sharp edges on rock.

9  abce A device that may be used by a rescuer or climber to perform a controlled descent on a rope.
a) ATC
b) Figure-8
c) Carabiner with Italian hitch
d) SLCD
e) Brake bar rack

10  b Which of the following knots would be used as a braking device?
a) Brake knot
b) Triple-wrap prusik
c) Interlocking bowlines
d) Double fisherman
e) Double sheetbend

11  ad Which of the following knots would be used to tie into a rope for roped travel on steep snow or ice?
a) Butterfly knot
b) Girth hitch
c) Double fisherman
d) figure-8 on a bight
e) Square knot

12  ace Select the TRUE statements regarding carabiners.
a) Do not load carabiners from more than 2 directions.
b) Carabiners with a NFPA Rating of “P” are for Personal Use.
c) Carabiners with a NFPA Rating “G” may be used for general rescue work.
d) Carabiners with a NFPA Rating of “L” are to be attached to the load.
e) Carabiners with a NFPA Rating of “L” are for Personal Use.

13  b Select the types of rope used By MRT for Technical Rescue.
a) Double Braid Nylon
b) Kernmantle
c) Braided Rope
d) Spectra® 12-Strand
e) Spectra® Double Braid

14  abc Which of the following are TRUE regarding dynamic ropes.
a) Dynamic ropes have a lower impact force on the body of a climber than static ropes.
b) Dynamic ropes achieve lower impact forces on the body of a climber by stretching under the forces of the fall.
c) Using dynamic ropes will result in a climbers’ fall being stopped less abruptly, and less impact force will be experienced by the falling climber, the belayer and the anchor system.
d) All modern rock climbing dynamic ropes are rated for the number of climbs they can be used for before being retired.
e) Modern dynamic ropes have a kevlar core and a carbon-fiber sheath.
15 abcde Which of the following are advantages of having standardized systems?
   a) Each member of the team knows what equipment to expect to see when a system is built
   b) Each member of the team knows the proper placement of a system
   c) It is more cost effective to buy equipment in bulk than to buy individual components to several systems.
   d) Having standardized systems increases the probability that someone will spot an error
   e) Standardized systems are easier to teach new members

16 abd Select the TRUE statements regarding duties of an edge tender
   a) Edge tenders are responsible for placement and management of edge protection.
   b) Edge tenders must assist the litter attendant in making the edge transition with the litter
   c) Edge tenders may have the secondary role as incident commander
   d) Edge tenders may need to rappel to place additional edge protection.
   e) Edge tenders may be used to reset the rope grab on a haul system

17 ace Select the TRUE statements regarding duties of an edge tender
   a) Edge tenders must be tethered to prevent falls.
   b) Edge tenders must assist the haul team when the attendant and stokes are being raised.
   c) Edge tenders must take care not to dislodge falling objects.
   d) Edge tenders may have the secondary role of litter attendant.
   e) Edge tenders are responsible for relaying communications between rescue team and system’s team.

18 a The amount that a rope stretches at a specific load. Reported as a percentage of the rope’s strength
   a) Elongation
   b) Modulus of Elasticity
   c) Spring Constant
   d) Joules
   e) Kinetic Energy

19 bde Which of the following are components of British Columbia Council of Technical Rescue (BCCTR) belay competence drop test criteria?
   a) 272 kg mass
   b) 200 kg mass
   c) a fall on 1 meter of 12.7 mm rope
   d) a fall on 3 meters of 11.1 mm rope.
   e) a fall of 1 meter

20 ae Which of the following knots require a safety backup knot
   a) Figure -8 on a bight
   b) Butterfly knot
   c) Girth hitch
   d) Clove hitch
   e) Figure-8 follow through

21 cde Which of the following would NOT be carried in your survival kit
   a) Fire starting material
   b) Shelter (Tube tent or garbage bags)
   c) Thermos
   d) Camp stove
   e) Snow shovel

22 bd When packaging a patient in a litter, what are the acceptable knots to use to secure the webbing to the litter?
   a) Girth hitch
   b) Round-turn and two half-hitches
   c) Butterfly knot
   d) Clove hitch
   e) Water knot

23 abd Which of the following are components of British Columbia Council of Technical Rescue (BCCTR) belay competence drop test criteria?
   a) a 2-person, 440 pound load
   b) no more than 1 meter of additional load travel distance
   c) no more than 1.5 meter of additional load travel distance
   d) no more than a 15 kN peak force to the system components
   e) no more than a 12 kN peak force to the system components

24 abce Which of the following are major geological features defining mountain terrain
   a) Gorge
   b) Canyon
   c) Saddle
   d) Scree
   e) Couloir
Which of the following are TRUE statements regarding suitable natural anchors.
a) Large boulders, with proper edge protection, and trees can be used as natural anchors.
b) All natural anchors, regardless of size, should have a pre-tensioned back-tie

c) If trees are used as natural anchors, the trunk must be at least eight times the diameter of the rope
d) Live plants, rather than dead plants, should be used as anchors.
e) In rocky terrain, trees usually have a shallow root system. This can be checked by pushing or tugging on the tree to see how well it is rooted.

Which of the following are TRUE statements regarding edge protection
a) Materials used for edge protection must be constructed of natural materials rather than synthetic materials
b) Materials used for edge protection should protect the rope from abrasion and sharp bends.
c) Materials used for edge protection should protect the surface to prevent loose material from being dislodged.
d) Materials used for edge protection should keep the rope clean.
e) Materials used for edge protection should reduce friction.

Which of the following are components of a Kootenay High line system
a) Messenger Line
b) Figure-8 Descender
c) Track line tensioning system
d) Independent Rappel Belay
e) Attendant/Patient attachment

Which of the following are TRUE statements regarding suitable natural anchors.
a) Natural anchors should be carefully studied and evaluated for stability and strength before use
b) Anchors should be placed as low to the ground as possible to reduce leverage.
c) Talus and scree fields are an indicator that the rock in the area is not solid.
d) If trees are used as natural anchors, the trunk must be at least eight times the diameter of the rope
e) In rocky terrain, trees usually have a shallow root system. This can be checked by pushing or tugging on the tree to see how well it is rooted.

Select the TRUE statements
a) Non-locking carabiners are acceptable in rescue systems, provided they are installed with the gates opposite and opposed.
b) Systems should not be constructed with nylon connecting to nylon, but rather, nylon to metal and metal to nylon.
c) Edge protection should be used at any point where a rope passes over a potentially sharp edge.
d) A Gibbs, a Rescuscender or a prusik are all acceptable rope-grab devices.
e) The force a person can apply to a rope with one hand has been shown experimentally to be approximately 50 pounds.

What are possible uses for a rope bag.
a) Once a rope has been deployed, a rope bag may be used to hold member water bottles and submerged in a stream to cool the water.
b) A rope bag allows a team member to easily throw the rope over the edge without having to worry about the rope snagging in the rocks.
c) Once a rope has been deployed, a rope bag can be used for extra edge protection.
d) Once a rope has been deployed, a rope bag can be used prevent having to lay equipment in the dirt.
e) Once a rope has been deployed, a rope bag can be used to hold personal gear.

Select the uses for the Kootenay KNOT-Passing pulley.
a) Provides the ability to pass a knot through the system.
b) May be used as a carriage on a high line.
c) May be used as a high strength tie-off.
d) May be used as edge protection.
e) May be used as a rope grab if the locking pins are installed.

Which are mechanical devices that slides upward when put on a fixed rope but catches when weight is put on it, allowing a load to move in one direction.
a) Rescuscender
b) Microcender
c) Pulley
d) Ascender
e) Prusik

Which of the following are disadvantages of a single-rope rescue system:
a) Rescue operators can make mistakes.
b) Falling rocks and sharp edges can sever a single-rope system, which has no backup.
c) The single-rope system does not take rope failure into consideration, requiring two points of contact at all times.
d) In a single-rope system, the rope becomes a single point of failure.
e) In a single-rope system, the attendant must manage the patient while providing a self-belay during raising and lowering.
34  bde  Which of the following are components of a Kootenay High line system
a)  Self-Belay device
b)  Tensioning System.
c)  Petzl Ascender
d)  Static Anchor.
e)  Kootenay Pulley

35  abcd  Which of the following statements are TRUE regarding carabiners?
a)  Some carabiners are built heavier and stronger to meet multipurpose demands.
b)  Some carabiners are lightweight, less strong and designed for special use.
c)  Carabiners are designed, tested and manufactured to ensure adequate strength for their intended use.
d)  Any carabiner can break and/or open accidentally if used improperly.
e)  All carabiners have a locking mechanism on the gate.

36  abce  Which of the following should always be carried in your survival kit
a)  Sparking device
b)  Knife
c)  Water purification method
d)  1" Tubular webbing
e)  Parachute cord

37  ab  Climbing protection that rely on moving parts for their function, typically with springs, would be which of the following?.
a)  Spring-loaded camming devices
b)  sliding wedges
c)  Tri-cam
d)  Tube chocks.
e)  Gri-Gri

38  abce  Which of the following are TRUE regarding safety checks?
a)  Standardized systems increase the possibility of someone catching an error, because everyone knows what to expect and where to expect it.
b)  The speed of safety checks is increased when standardized systems are used.
c)  The time it takes to do a safety check is small in comparison to the value of correcting an error.
d)  Once a member has been trained to the level of Rescue Member, that member can serve as Safety Officer, and is no longer required to have a second set of eyes check their equipment or systems.
e)  Each component should be touched to assure all components are checked. If you cannot reach it, point at it.

39  abcde  Which are advantages of steel carabiners over aluminum carabiners?
a)  Steel carabiners do not transfer oxidation to the rope.
b)  Steel carabiners are more durable and wear-resistant than aluminum.
c)  Steel carabiners will far outlast their aluminum counterparts.
d)  Steel carabiners are typically stronger than aluminum carabiners.
e)  Steel carabiners are rated for rescue loads whereas aluminum carabiners are typically rated for single rescuer loads.

40  abcd  Which of the following are components of a Kootenay High line system
a)  Tag Line Hangers
b)  Track Line
c)  Lowering System
d)  Tag Line
e)  Fulcrum Line

41  ade  Which of the following knots can be used to secure the end of a rope while maintaining the full strength of the rope?
a)  Tensionless hitch
b)  Clove hitch
c)  Water knot
d)  High-strength tie-off
e)  Triple-wrap prusik

42  bce  Select the statements that describe the use of an anchor plate.
a)  The anchor plate may take the place of the Kootenay pulley
b)  The anchor plate can be used as a collection point when rigging multi-point anchor systems.
c)  The anchor plate can be used as part of the RPM to organize equipment when switching from raise to lower.
d)  The anchor plate can be used as a break bar rack.
e)  The anchor plate can be used as a connection point for the legs of a litter harness.

43  cde  Which of the following are TRUE statements?
a)  The Dynamic System Safety Factor (DSSF) is the ratio of the expected load compared to the weakest component.
b)  The Static System Safety Factor (SSSF) is the safety factor of a system in motion that considers the additional forces of friction and the haul team.
c)  A Safe Working Load (SWL) is the point beyond which permanent structural change to the component will occur.
d)  A Shock Load is an uncontrolled dynamic load applied to the system.
e)  An Impact Force is the force sustained by the rescuer as a fall is arrested.
Which of the following are TRUE statements regarding suitable natural anchors.

a) The larger the boulder, the more stable it will be.
b) Large bushes can be used as a natural anchor, preferably as part of a larger Load Distributing Anchor system.
c) Wet ground can reduce the strength of a natural anchor.
d) If no other suitable anchor is available, route a rope around the bases of several bushes.
e) All natural anchors, regardless of size, should have a pre-tensioned back-tie.

Which of the following are TRUE statements.

a) The Safety Officer is responsible for the safety of the team as a whole.
b) The Safety Officer must be very well qualified in all the technical aspects in use on the incident.
c) All participants on an incident are "Safety Officers" and can stop an operation at any time if they have a safety concern.
d) The Safety Officer is an assigned person who does not participate in an operation.
e) All incidents will have a designated Safety Officer.

Which of the following are TRUE statements?

a) The Static System Safety Factor (SSSF) is the ratio of the expected load compared to the weakest component.
b) The Dynamic System Safety Factor (DSSF) is the safety factor of a system in motion that considers the additional forces of friction and the haul team.
c) A Safe Working Load (SWL) is the point beyond which permanent structural change to the component will occur.
d) A Shock Load is an uncontrolled dynamic load applied to the system.
e) An Impact Force is the force sustained by the rescuer as a fall is arrested.

Which of the following are TRUE statements?

a) The Static System Safety Factor (SSSF) is the safety factor of the system when forces are being applied to the system.
b) The Dynamic System Safety Factor (DSSF) is the safety factor of a system in motion that considers the additional forces of friction and the haul team.
c) A Safe Working Load (SWL) of a component is the same as the Static System Safety Factor (SSSF) of the component.
d) A Shock Load is an uncontrolled dynamic load applied to the system.
e) An Impact Force is the force sustained by the rescuer as a fall is arrested.

If a rope has a mean breaking strength (MBS) of 1,000 pounds and the load applied to it is 1,000 pounds, which of the following statements are TRUE.

a) The system has a 1:1 Static System Safety Factor (SSSF)
b) There is no margin of safety in the system.
c) Any force in addition to the 1,000 pound load could cause system failure.
d) The ratio of the strength of the rope to the load applied is expressed as 1:1.
e) The component safety factor of the rope is 1:1.

Which of the following are passive protection devices.

a) Tube chock
b) Wedge
c) Cam
d) Stopper
e) Nut

Select the TRUE statements regarding methods that may be used to increase lifting power.

a) Use of a change of direction pulley which allows the haul team to pull in a more advantageous direction.
b) Use of a windlass or winch.
c) Use of a vehicle tow for non-live loads.
d) Using additional manpower on the haul line.
e) Constructing a pulley system that increases the mechanical advantage.
Multiple Choice (Select the single best answer)

51  d  Which of the following knots are used to join two lengths of rescue rope?
   a) Water knot
   b) Interlocking Figure-8
   c) Interlocking bowlines
   d) Double fisherman
   e) Double sheetbend

52  d  A system has one pulley and it is attached directly to the anchor. You are trying to raise a rescue load of 2 kN. What is the force applied to the anchor?
   a) 1 kN
   b) 2 kN
   c) 3 kN
   d) 4 kN
   e) 0 kN

53  a  A system has two pulley set up as a “Z-rig”. You are trying to raise a rescue load of 3.0 kN. What is the theoretical force that must be applied to the system?
   a) 1.0 kN
   b) 2.5 kN
   c) 3.0 kN
   d) 4.0 kN
   e) 5.0 kN

54  c  Each member of the Mountain Rescue Team is required to possess PPE which includes a self-belay device consisting of a Microcender and an adjustable daisy chain. What is the breaking strength of the Microcender?
   a) 15.5 kN
   b) 30.0 kN
   c) 15.5 kN
   d) 22.2 kN
   e) 6.6 kN

55  d  When building a two point anchor, you discover the angle between the two legs of the anchor to be 90-degrees. If the load is 100 pounds, the force on each of the two legs is:
   a) 180 pounds
   b) 200 pounds
   c) 55 Pounds
   d) 71 pounds
   e) 135 pounds

56  a  A 7 mm prusik cord has a mean breaking strength (MBS) of approximately:
   a) 2,100 pounds
   b) 6,600 pounds
   c) 1,200 pounds
   d) 600 pounds
   e) 1,100 pounds

57  a  When using a pulley as a directional, if the load is 100 pounds, and the redirection angle is 0-degrees, the force on the anchor securing the pulley will be:
   a) 200 pounds
   b) 80 pounds
   c) 100 pounds
   d) 1200 pounds
   e) 180 pounds

58  c  When using a pulley as a directional, if the load is 100 pounds, and the redirection angle is 120-degrees, the force on the anchor securing the pulley will be:
   a) 200 pounds
   b) 80 pounds
   c) 100 pounds
   d) 1200 pounds
   e) 180 pounds

59  c  One kiloNewton (kN) is equivalent to:
   a) 21 lbf (or rounded to 20 lbf)
   b) 200 kilograms (or rounded to 200 kg)
   c) 224.809 lbf (or rounded to 225 lbf)
   d) 2224.809 lbf (or rounded to 2225 lbf)
   e) 2224.809 kilograms (or rounded to 2225 kg)
Each member of the Mountain Rescue Team is required to possess PPE which includes a self-belay device consisting of a Microcender and an adjustable daisy chain. What is the breaking strength of the adjustable daisy chain?

a) 22.2 kN  
b) 6.6 kN  
c) 2.2 kN  
d) 15.5 kN  
e) 30.0 kN

When using a pulley as a directional, if the load is 100 pounds, and the redirection angle is 90-degrees, the force on the anchor securing the pulley will be:

a) 272 pounds  
b) 141 pounds  
c) 190 pounds  
d) 10 pounds  
e) 180 pounds

When building a two point anchor, you discover the angle between the two legs of the anchor to be 175-degrees. If the load is 100 pounds, the force on each of the two legs is:

a) 275 pounds  
b) 1100 pounds  
c) 175 Pounds  
d) 75 pounds  
e) 900 pounds

A 1/2" Static rescue rope has a mean breaking strength (MBS) of approximately:

a) 30 kN  
b) 22 kN  
c) 12 kN  
d) 40 kN  
e) 6 kN

A 7/16" dynamic climbing rope has a mean breaking strength (MBS) of approximately:

a) 30 kN  
b) 22 kN  
c) 12 kN  
d) 40 kN  
e) 6 kN

A 7/16" Static rescue rope has a mean breaking strength (MBS) of approximately:

a) 30 kN  
b) 22 kN  
c) 12 kN  
d) 40 kN  
e) 6 kN

If a device is rated for 2 kN, how much weight is it safely rated to hold?

a) 4,000 pounds  
b) 200 pounds  
c) 225 pounds  
d) 440 pounds  
e) 500 pounds

A 8 mm prusik cord has a mean breaking strength (MBS) of approximately:

a) 4,200 pounds  
b) 3,100 pounds  
c) 2,200 pounds  
d) 1,200 pounds  
e) 600 pounds

A Petzl ascender has a mean breaking strength (MBS) of approximately:

a) 6,000 pounds  
b) 2,000 pounds  
c) 10,000 pounds  
d) 4,500 pounds  
e) 1,000 pounds

A Sit Harness belay loop has a mean breaking strength (MBS) of approximately:

a) 6,000 pounds  
b) 2,000 pounds  
c) 10,000 pounds  
d) 4,500 pounds  
e) 1,000 pounds
70 c An aluminum brake bar rack has a mean breaking strength (MBS) of approximately:
   a) 6,000 pounds
   b) 4,200 pounds
   c) 10,000 pounds
   d) 15,000 pounds
   e) 1,000 pounds

71 d A 6 mm prusik cord has a mean breaking strength (MBS) of approximately:
   a) 600 pounds
   b) 6,000 pounds
   c) 4,200 pounds
   d) 1,500 pounds
   e) 1,000 pounds

72 c A 1" climbing spec tubular webbing has a mean breaking strength (MBS) of approximately:
   a) 8,400 pounds
   b) 6,000 pounds
   c) 4,200 pounds
   d) 1,500 pounds
   e) 1,000 pounds

73 d A 1" mil spec tubular webbing has a mean breaking strength (MBS) of approximately:
   a) 8,400 pounds
   b) 6,000 pounds
   c) 4,200 pounds
   d) 4,000 pounds
   e) 1,000 pounds

74 a A 1/2" Static rescue rope has a mean breaking strength (MBS) of approximately:
   a) 9,000 pounds
   b) 6,000 pounds
   c) 4,200 pounds
   d) 12,000 pounds
   e) 1,000 pounds

75 b A 7/16" Static rescue rope has a mean breaking strength (MBS) of approximately:
   a) 9,000 pounds
   b) 6,700 pounds
   c) 4,200 pounds
   d) 12,000 pounds
   e) 1,000 pounds

76 a A steel screw-gate carabiner rated at 40 kN has a mean breaking strength (MBS) of approximately:
   a) 9,000 pounds
   b) 6,000 pounds
   c) 4,200 pounds
   d) 12,000 pounds
   e) 1,000 pounds

77 b An aluminum Figure-8 descender manufactured by CMC has a mean breaking strength of approximately:
   a) 9,000 – 9,500 pounds
   b) 10,000 – 10,500 pounds
   c) 4,000 - 5,000 pounds
   d) 12,000 – 13,000 pounds
   e) 1,000 – 2,000 pounds

78 b An aluminum screw-gate carabiner rated at 30 kN has a mean breaking strength (MBS) of approximately:
   a) 9,000 pounds
   b) 6,000 pounds
   c) 4,200 pounds
   d) 12,000 pounds
   e) 1,000 pounds

79 a Which of the following are TRUE regarding carabiner use?
   a) A carabiner should always have the load aligned with the long axis.
   b) A carabiner with an open or unlocked gate is safe as long as the load remains aligned with the long axis.
   c) When locking the gate of a screw-gate carabiner, make certain that you screw the gate closed as tight as possible.
   d) A carabiner with the load on the short axis is safe as long as the gate is locked
   e) A screw-gate carabiner is preferred over an auto-locking carabiner because screw-gates are always stronger.
80  a  Which of the following is NOT considered MRT required Personal Protective Equipment (PPE)
   a) A GPS
   b) An approved sit harness.
   c) A helmet certified to protect from falling objects.
   d) Rappel gloves with a leather palm.
   e) A chest harness or full body harness.

81  c  Which of the following is NOT considered MRT required Personal Protective Equipment (PPE)
   a) A sturdy uniform.
   b) Eye protection.
   c) A Cook pot with lid
   d) Ear protection
   e) A hydration system or other supply of water.

82  e  What is the term for any piece of climbing protection that does not have moving parts. Examples include chocks, stoppers, nuts or any other wedge-shaped pieces that fit into cracks, as well as hexentrics and tricams that are rotated to fit tightly into cracks and holes.
   a) Abject Protection
   b) Tacit Protection
   c) Placid Protection
   d) Dormant Protection
   e) Passive Protection

83  a  The damaging effect on rope and other equipment caused by friction on rough surfaces.
   a) Abrasion
   b) scratching
   c) detrition
   d) Corrosion
   e) excoriation

84  b  The term used on the Mountain Rescue Team, meaning to descend a cliff, or other height, by lowering oneself on a fixed rope, with feet against the surface. A friction device is placed on the rope, to descend slowly with control
   a) abseil
   b) Rappel
   c) Down rope
   d) Slack
   e) Descent

85  e  Any device used to secure a climbing rope to rock, snow or ice to prevent a climber from falling any significant distance.
   a) Accessory
   b) Safety
   c) safeguard
   d) Security
   e) Protection

86  d  Which of the following is NOT considered MRT required Personal Protective Equipment (PPE)
   a) Additional nutritional food.
   b) Insect repellent.
   c) Sunscreen.
   d) Tactical Vest
   e) A personal first aid kit.

87  e  Friction created when a climbing rope passes through multiple pieces of protection, especially if they are not in a straight line up the route. Can pull a lead climber off balance.
   a) Adduction
   b) Coefficient of friction
   c) Encumbrance
   d) Loading
   e) Drag

88  d  A numerical system for rating the difficulty of walks, hikes, and climbs in the United States. The rock climbing (5.x) portion of the scale is the most common climb grading system used in the US. The scale runs from 5.0 to 5.15b
   a) Adjectival Grading System
   b) UIAA Grading System
   c) Eubanks Grading System
   d) Yosemite Decimal System
   e) Saxon Grading System
89  a Which of the following is the most correct?
   a) Any angle in an anchor system will increase the forces applied to an anchor.
   b) An angle greater than 90-degrees in an anchor system will increase the forces applied to an anchor to double the
      force applied to the system.
   c) All angles in an anchor system should be between 90-degrees and 120-degrees
   d) An angle of 120-degrees will apply a force on the anchors that is 12 times the load.
   e) In a distributed anchor system, it is preferred that there are no angles between the legs of the anchors.

90  b The term that refers to the direction toward which a slope faces.
   a) Azimuth
   b) Aspect
   c) Poleward or equatorward
   d) Alignment
   e) Elevation

91  e Refers to a variety of techniques used in climbing to exert friction on a climbing rope so that a falling climber does not
    fall very far. The friction is typically applied by a companion at the other end of the rope.
   a) Baldt anchor technique
   b) Tether
   c) Grapple
   d) Drogue
   e) Belay

92  c The rescuer stationed at the edge to assist the litter tender. This rescuer should be capable of rappelling and
    ascending their belay line.
   a) Belayer
   b) Rappeller
   c) Edge Attendant
   d) Main Line attendant
   e) Litter Tender Assistant

93  b A technique where both the lead climber and the second are moving at the same time, with the lead climber placing
    protection and the second cleaning.
   a) belaying move technique
   b) running belay technique
   c) anchoring 'n belaying technique
   d) running climber technique
   e) off piste

94  b Which of the following knots are used to join two pieces of webbing?
   a) Butterfly knot
   b) Water knot
   c) Double fisherman
   d) Munter hitch
   e) Girth hitch

95  e A climbing aid having a rigid frame, two axles supported parallel to each other by the rigid frame, two pairs of cams
    pivotally mounted one pair per axle, and spring members mounted on the axles, which act to urge each cam into
    its extended position.
   a) Camber
   b) Ice screw
   c) Aperture support
   d) Spring loaded pivot
   e) Cam

96  d A carabiner hole is located at the "bottom" of some rescue pulleys. Most commonly it is seen on a double pulley where
    the center plate has been extended.
   a) Center plate hole
   b) Center sheave
   c) Sheave
   d) Becket
   e) Swivel

97  d Which of the following is a FALSE statement?
   a) Class 1 terrain involves hiking on a trail.
   b) Class 2 terrain involves hiking cross-country or across easy boulder fields where route finding is necessary.
   c) Class 3 terrain involves the use of hands, but is not hard enough to warrant a rope (scrambling).
   d) Class 4 terrain involves steep terrain and requires a roped belay and rock pro such as cams and stoppers.
   e) Class 5 terrain involves technical moves and requires protective hardware.
b  Which of the following is a FALSE statement?
   a) Class 1 terrain involves nothing more than simple hiking.
   b) Class 2 terrain involves simple scrambling, with possible occasional use of the hands. A rope must be carried.
   c) Class 3 terrain involves scrambling where a rope might be carried.
   d) Class 4 terrain involves simple climbing where a rope is often used
   e) Class 5 terrain involves technical climbing skills, the use of a rope, belay and protection.

a  Which of the following is a FALSE statement?
   a) Class 1 terrain involves walking on a relatively steep trail with considerable chance of injury.
   b) Class 2 terrain involves a simple trail that might have a slight incline. You may have to use your hands to balance while scrambling up rocks.
   c) Class 3 terrain involves using your hands and feet to find balance along parts of the trail while scrambling up rocks. There may be exposed terrain during the hike, though a fall should not prove fatal.
   d) Class 4 terrain involves climbing up steep terrain, and even though the route will have some natural protection, a fall could prove fatal.
   e) Class 5 terrain involves rock and aid climbing. Protection and gear recommended for these climbs as a fall will prove fatal.

Which of the following is a FALSE statement?
   a) Class 1 terrain involves walking with a low chance of injury
   b) Class 2 terrain involves simple scrambling, with the possibility of occasional use of the hands. Little potential danger is encountered.
   c) Class 3: Scrambling with increased exposure. A rope can be carried but is usually not required. Falls are always fatal.
   d) Class 4 terrain involves climbing, with exposure. A rope is often used. Natural protection can be easily found. Falls may well be fatal.
   e) Class 5 terrain involves rock and aid climbing. Protection and gear recommended for these climbs as a fall will prove fatal.

What is the correct spelling of the D-shaped device with which you build systems?
   a) crabenar
   b) crabiner
   c) careniner
   d) carabiner
   e) carabena

Which of the following is FALSE regarding carabiners?
   a) Cross-loading a carabiner along its minor axis (gate to spine) should always be avoided, as carabiner strength in this direction is usually less than half its major axis strength
   b) A carabiner with its gate open can fail at less than half its major axis strength. Always avoid situations where the gate could open accidentally
   c) Gate opening and closing should be quick and easy. Be sure the gate and any locking mechanism close freely and completely by periodically applying a drop of 3-in-1 oil or WD-40.
   d) Carabiners loaded over an edge (a potential problem when placing protection in horizontal cracks) can break at a very low load.
   e) Carabiners are designed to be loaded along their major axis (end to end) with the gate closed. Loading the carabiner in any other manner will reduce its strength to the point where it may fail under normal rescue loads

Loop of nylon webbing used to attach the climbing rope to protection or to make anchors. Can be tied (homemade) or sewn (bar-tacked commercially).
   a) Daisy chains
   b) Loops
   c) Runners
   d) Straps
   e) Wraps

A six-sided passive protection that either wedges or rotates into place in a crack.
   a) Decacentric
   b) Hexacentric
   c) Heptacentric
   d) Pentacentric
   e) Hexentric

Which of the following knots can be easily adjusted to take up slack in the standing end of a rope or webbing?
   a) Double fisherman
   b) Water knot
   c) Clove hitch
   d) Munter hitch
   e) Square knot
106 c Which of the following knots is used to tie into a climbing harness?
   a) Double fisherman
   b) Girth hitch
   c) Figure-8 follow through
   d) Square knot
   e) Rewoven figure-8 knot

107 c Forces applied within a system when the load is not moving, is known as:
   a) Dynamic Load
   b) System Load
   c) Static Load
   d) System Load
   e) Working Load

108 e A climbing move in which downward pressure is applied with the hands to a ledge, lifting the body high enough to get the feet on that same ledge. Usually used when no handholds are available.
   a) Dyno
   b) Aerate
   c) Breech
   d) Spume
   e) Mantle

109 d A means of protecting software components within a rope rescue system from the potentially harmful effects of exposed sharp or abrasive edges
   a) Edge assurance
   b) Edge tending
   c) Edge leverage
   d) Edge protection
   e) Software abrasion protection

110 e Which of the following is FALSE regarding fall factors
   a) Fall factors range between 0.0 and 2.0
   b) A fall factor of 2.0 is generated when a climber falls twice the distance of the rope in service.
   c) Climbers should establish a solid placement as soon as possible after starting a new lead.
   d) A lead climber should always space the protection to avoid potential falls that are excessively long.
   e) A fall factor of 1.0 is generated when a climber falls half the distance of the rope in service.

111 b When attaching the main line and belay line to the spider straps of the litter, which is the knot to use in accordance with current MRT standards?
   a) Figure-8 on a bight
   b) Butterfly knot
   c) Inline Figure-8
   d) Figure-8 follow-through
   e) Figure-8

112 b This particular type of anchor system divides the load weight over two or more anchor points. Depending on which direction the load is pulling away from the anchor will determine how much that particular anchor will support.
   a) Hauling System
   b) Load Sharing Anchor
   c) Load Distributing Anchor
   d) Bomber Anchor
   e) Main Load Anchor

113 e Climbing technique that uses counter-pressure of hands pulling and feet pushing, typically to climb an offset crack or a flake. The technique refers to the body position of leaning backwards and to one side with arms straight and feet shuffling up the wall.
   a) Heave round
   b) A reculons
   c) Renitent
   d) Burbling
   e) Lie-Back

114 e A system has one pulley and it is attached directly to the system anchor. You are trying to raise a rescue load of 2 kN. What is the Mechanical Advantage provided by the pulley?
   a) Infinite MA is possible
   b) 2:1 MA
   c) 3:1 MA
   d) 4:1 MA
   e) No MA
115  b Any internal angle in a rope rescue system that results in an amplification of force applied to the system.
   a) Internal rigging angle
   b) Critical angle
   c) Force angle
   d) Force amplification angle
   e) Internal angle

116  e Those forces created by moving loads as well as those caused by the sudden cessation of that movement
   a) Kinetic Forces
   b) Potential Energy Forces
   c) Newtonian Load
   d) Gaussian Load
   e) Dynamic Load

117  a Strong, light fiber used in climbing cord for its high tensile strength and resistance to cutting.
   a) Kevlar®
   b) Nomex®
   c) Technora®
   d) Spectra®
   e) Polyethylene®

118  d Nylon, Kevlar® or Spectra® are sold in a range of diameters, typically smaller than those of climbing ropes. Used for a
    variety of things including slings, anchors, prusiks, and emergency tie-offs.
   a) Lacing
   b) Parachute cord
   c) Rigging Grab
   d) Accessory Cord
   e) Halyard

119  e A technique used by rescuers to rappel to a patient, attach a strap, thus connecting both the patient and the rescue into
    one system, and then lowering themselves to the ground or other area of safety, is known as.
   a) Lower Off
   b) Rappel and Lower
   c) Connect and Lower
   d) Strap Lower
   e) Pick Off

120  e A long (typically 16-foot) section of 6mm Spectra® cord tied into a multi-purpose anchor sling. This cord is useful for
    making three-point, equalized anchors.
   a) Magnicord
   b) Gargantulette
   c) ropelette
   d) Magnilette
   e) Cordelette

121  c This particular type of anchor system spreads the load over two or more anchor points in approximately equal amounts
   a) Main Load Anchor
   b) Load Sharing Anchor
   c) Load Distributing Anchor
   d) Hauling System
   e) Bomber Anchor

122  d A molecular-weight polyethylene developed by Allied-Signal. It is the strongest fiber ever produced, at 10 times
    stronger than steel by weight and twice as strong as Kevlar®.
   a) Nomex®
   b) Technora®
   c) Kevlar-2®
   d) Spectra®
   e) Polyethylene®

123  d A pulley or pulleys between the pulley system and the load to be raised, is known as:
   a) Non-system pulley
   b) Ganged pulley
   c) Ratchet pulley
   d) Directional pulley
   e) Compound pulley

124  e Spring-loaded opening on a carabiner. Can be straight or bent, locking or non-locking.
   a) Offset “D” Opening
   b) Single action
   c) Double action
   d) Hinge
   e) Gate
125 a The act of inserting a piece of protection into an opening in the rock, in which a piece of the protection fits.
   a) Placement
   b) Position
   c) Set
   d) Attachment
   e) Attach

126 c A climbing move in which counter-pressure is applied to the underside of a rock flake or slab by pulling up on it, while pushing down on the feet.
   a) Pullup
   b) Counter pressure
   c) Undercling
   d) Slab move
   e) Push-Pull

127 e Which of the following is NOT considered MRT required Personal Protective Equipment (PPE)
   a) Rappel gloves with a leather palm.
   b) Boots with ankle support.
   c) A headlamp or small flashlight.
   d) A self-belay device
   e) Waterproof matches

128 a Energy-saving technique where unweighted (uphill) leg is rested between each forward step, sometimes by "locking" knee of rear leg.
   a) Rest Step
   b) Walking rest gait
   c) Steep ascent step
   d) Walking reflex
   e) Lock step

129 b The act of extending the pulley system "throw or stroke" after the pulley system is collapsed, is known as:
   a) Rethrow
   b) Reset
   c) Extend
   d) Throw out
   e) Set

130 e The length of a climb that can be protected by 1 rope length. The length of the climb is led by the lead climber and cleaned by the second (or follower)
   a) Rope length
   b) Gravitate
   c) Span
   d) Parsecs
   e) Pitch

131 b A device used to grasp a life safety rope for the purpose of supporting loads, is known as:
   a) Rope Support Device
   b) Rope Grab Device
   c) Rigging Grab
   d) Lock Off
   e) Rope Haul Device

132 b A means of safely traveling up a fixed line with the use of one or more ascent devices
   a) Shinnie
   b) Ascending
   c) Inch-worm
   d) Foot grip
   e) descend

133 e Describes a crack with nonparallel sides that diverge upward or inward.
   a) Splayed
   b) Beveled
   c) Canted
   d) Slanted
   e) Flared

134 a What is the correct acronym referring to the qualities of a good anchor, which take in account the following: Equalized, No Extension, Redundant, Solid.
   a) SRENE
   b) ENERS
   c) ESNER
   d) SREEN
   e) NEERS
135  a  Technique in which the hands and/or feet are pressed in opposition far out to each side, as in a dihedral or wide chimney.
   a) Stemming
   b) Dihedraling
   c) Opposition
   d) Branching
   e) Double push

136  d  Climbing technique in which the sole of the shoe, plus proper weight over the feet, provides traction for moving upward.
   a) Sticking
   b) Traction
   c) Smudging
   d) Smearing
   e) Flecking

137  c  To stop using a piece of climbing gear (for climbing) due to age or damage.
   a) Surplus
   b) Survey
   c) Retire
   d) Remove
   e) Withdraw

138  c  Which of the following is a FALSE statement.
   a) The Safety Officer is responsible for scene safety.
   b) The Safety Officer is responsible for the safety of the team as a whole.
   c) The Safety Officer is responsible for assigning a team member to check all anchors and systems.
   d) Any incident will have a designated Safety Officer.
   e) For smaller incidents the Safety Officer role can be taken on by the Incident Commander.

139  d  Which of the following is a FALSE statement?
   a) The Static System Safety Factor (SSSF) is the safety factor of the system when all components are considered.
   b) The Dynamic System Safety Factor (DSSF) is the safety factor of a system in motion that considers the additional forces of friction and the haul team.
   c) A Safe Working Load (SWL) is the point beyond which permanent structural change to the component will occur.
   d) A Shock Load is the point beyond which permanent structural change to the component will occur.
   e) An Impact Force is the force sustained by the rescuer as a fall is arrested.

140  a  The principle of moving only one hand or foot at a time, leaving the other three on the rock for balance, as in a tripod.
   a) Three-point suspension
   b) Leg-Hand stabilization
   c) Tripod stabilization
   d) Crabbing
   e) Framing

141  c  The available distance a hauler or haulers can run out, or the space that they have to stand and pull, is known as:
   a) Top side
   b) Haul area
   c) Haul field
   d) Work area
   e) Flat area

142  a  A section of a route on a rock wall or cliff face that requires progress in a horizontal direction.
   a) Traverse
   b) Cross bite
   c) Transverse
   d) Crossway
   e) Oblique

143  e  Which of the following knots would be used to attach tag lines to a litter?
   a) Water knot
   b) Butterfly knot
   c) Bowline
   d) Double fisherman
   e) Girth hitch

144  b  To wedge a body part into a crack on a rock climb in order to put weight on it and move upward. Includes fingers, hands and feet.
   a) Mantle
   b) Jam
   c) Counter Pressure
   d) Stem
   e) Rest step
True or False

145  F  Passing the knot on a raising system, a LRH is not needed on the second system built to pass the knot.
146  F  Two non-locking carabiners in a "gates opposite and opposed" configuration should never be used as a substitute for locking carabiners in a rescue situation.
147  F  Using a tandem prusik belay it is not important to use a LRH, there is never any tension on the belay.
148  F  A double-rope system provides twice the strength of a single-rope system.
149  F  A reeving system utilizes the Tag Line Lowering System as a Lowering System for the reeve line.
150  F  A reeving system utilizes the Tag Line Raising System as a Raising System for the reeve line.
151  F  A rigging plate is rated at a breaking strength of 9,000 pounds. The rescue load is 600 pounds. The rigging plate is attached to a bomb proof anchor. It is acceptable to attach both the main line and the belay line to the rigging plate.
152  F  A rope with a kernmantle construction has a sheath that carries approximately 80% of the load, and a core that carries approximately 20% of the load.
153  F  A Track Line functions as the Belay Line for the high line system.
154  F  Ideally, the focal point for the belay should be 10 meters from the edge, and the focal point for the main line anchor should be 3 meters from the edge.
155  F  If building a highline system with a single 1/2" rope as main line the maximum allowable force on any anchor would be 6kN.
156  F  The BCCTR belay competence drop test criteria is: The worst case fall of a rescue-sized load of a 272 kg mass falling 1 meter onto 3 meters of 11.1 mm rope, with no more than 1 meter of additional travel distance, and no more than a 13 kN peak force.
157  F  A Bomb Proof Anchor is an anchor, or anchor point, so strong that there is no question in anyone's mind that it will support up to a 6 kN load.
158  F  Safety checks reduce risk, but must be balanced with the urgency of the situation.
159  F  Static 1/2" rope has a mean Breaking Strength (MBS) of at least 15,000 pounds (66 kN).
160  F  Systems built by Rescue Members do NOT require safety checks, but all systems built by Support Members and Trainee Members must be checked.
161  F  The stiffer the rope, the less the abrasion resistance.
162  F  There are three classifications of rope used in rescue work: static, dynamic and bungee.
163  F  When determining the DSSF it is important to have the same ratio as the SSSF, 10 to 1.
164  F  When doing a change over on a rescue system from a lower to a raise the Belay should always change first.
165  F  When switching from a lowering system to a raising system it is necessary to extend the load release hitch to redistribute the load back on to the break bar rack.
166  F  When using a pulley as a directional, ideally the angle will be less than 120-degrees.
167  F  When using a pulley as a directional, the angle should always be less than 90-degrees.
168  F  When using a pulley as a directional, the greater the angle, the greater will be the force applied to the anchor securing the pulley.
169  F  You are building a 9:1 MA with a 3:1 acting on a 3:1, 5 pulleys are needed.
170  F  A double-rope system provides the ability to balance the rescue load between two ropes.
171  F  A kiloNewton is a metric unit of pressure.
172  F  When a team of rescuers is transporting a patient over steep, uneven terrain, a litter wheel should be used to support the litter.
173  T  Pear shaped carabiners are oversized, offset-D carabiners. They allow more equipment to be attached to the carabiner, and are also the best carabiner to use with a munter hitch.
A fall factor is a ratio of the length of the fall to the length of the rope fallen on.

A Norwegian Reeve consists of a single reeving line, whereas an English Reeve consists of two reeving lines.

A reeving system must have a separate Reeving Line Lowering System.

A reeving system must have a separate Reeving Line Raising System.

A Sit Harness belay loop has a mean breaking strength (MBS) of at least 22 kN.

A Tag Line functions as a Belay Line for the highline system.

A Track Line functions as the Main Line for the highline system.

All surfaces of a carabiner should be free of cracks, sharp edges, corrosion, burrs, or excessive wear.

Attaching a litter tender tie-in strap from the litter rail to the rescuer's harness has the potential of taking the entire litter team down if one member loses their footing.

Dynamic 7/16" rope has a mean Breaking Strength (MBS) of at least 5,000 pounds (22 kN).

Even though you are on a slope considered low angle, conditions may still require a main line tie-in.

It is an MRT requirement that each member have a buddy check their personal gear and any rigging they have set up.

Low angle rescues typically utilize only a Main line.

Oval carabiners tend to be weak because the load is centered and the gate shares the same load as the spine.

Pear shaped carabiners have slightly less strength than Modified "D" carabiners, but pear shaped carabiners have a larger gate opening which facilitates connection to tied harnesses.

Static 1/2" rope rated at 40 kN has a mean Breaking Strength (MBS) of at least 8,990 pounds.

Static 7/16" rope rated at 30 kN has a mean Breaking Strength (MBS) of at least 6,700 pounds.

The kN rating on gear is a measure of the force that can be safely applied to the gear.

The speed of a safety check is increased when standardized systems are used.

When a fall is caught by a rope passing through an unlocked carabiner, vibrations in the rope may cause "gate lash" or "gate chatter", where the gate momentarily opens.

When a team of rescuers is transporting a patient over relatively even terrain or trails, a litter wheel should be used.

Ideally, the focal point for the belay should be 3 meters from the edge, and the focal point for the main line anchor should be at 10 meters from the edge.

When a team of rescuers is transporting a patient over uneven terrain, tag lines should be used to support the litter.

When using a pulley as a directional, ideally the angle will be greater than 120-degrees.

When using a pulley as a directional, the angle should never be less than 90-degrees.

When using a pulley as a directional, the greater the angle, the less will be the force applied to the anchor securing the pulley.

You should touch each component and each knot in a system when doing a safety check.

The BCCTR belay competence drop test criteria is: The worst case fall of a rescue-sized load of a 200 kg mass falling 1 meter onto 3 meters of 11.1 mm rope, with no more than 1 meter of additional travel distance, and no more than a 15 kN peak force.

All members of the Mountain Rescue Team must possess a Figure-8 descender with ears.