Private Security

NVEQ Level 2 – Class X

SS206-NQ2012- First Aid Practices (Advanced)

Student's Workbook

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Preface

The National Curriculum Framework, 2005, recommends that children's life at school must be linked to their life outside the school. This principle makes a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home, community and the workplace.

The student workbook on **"First Aid Practices (Advanced)"** is a part of the qualification package developed for the implementation of National Vocational Education Qualification Framework (NVEQF), an initiative of Ministry of Human Resource Development (MHRD), Government of India to set common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, Colleges and Universities. It is envisaged that the NVEQF will promote transparency of qualifications, cross-sectoral learning, student-centred learning and facilitate learner's mobility between different qualifications, thus encouraging lifelong learning.

This student workbook, which forms a part of vocational qualification package for students who have passed Class IX or equivalent examination, was created by a group of experts. The Security Knowledge and Skill Development Council (SKSDC) approved by the National Skill Development Corporation (NSDC) for the Private Security Industry developed the National Occupation Standards (NOS). The National Occupation Standards are a set of competency standards and guidelines endorsed by the representatives of Private Security Industry for recognizing and assessing skills and knowledge needed to perform effectively in the workplace.

The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of National Council of Educational Research and Training (NCERT) in association with SKSDC has developed modular curricula and learning materials (Units) for the vocational qualification package in Private Security sector for NVEQ levels 1 to 4; level 1 is equivalent to Class IX. Based on NOS, occupation related core competencies (knowledge, skills, and abilities) were identified for development of curricula and learning modules (Units).

This student workbook attempts to discourage rote learning and to bring about necessary flexibility in offering of courses, necessary for breaking the sharp boundaries between different subject areas. The workbook attempts to enhance these endeavours by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups and activities requiring

hands-on-experience. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy of Education (1986).

The success of this effort depends on the steps that school Principals and Teachers will take to encourage children to reflect their own learning and to pursue imaginative and on-the-job activities and questions. Participation of learners in skill development exercises and inculcation of values and creativity is possible if we involve children as participants in learning, and not as receiver of information. These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table would be a necessity to maintain the rigour in implementing the activities and the required number of teaching days will have to be increased for teaching and training.

About Your Workbook

This workbook is to assist you with completing the Unit of Competency **SS206-NQ2012: First Aid Practices (Advanced).** You should work through the workbook in the classroom, at the workplace or in your own time under the guidance and supervision of your teacher or trainer. This workbook contains sessions which will help you to acquire relevant knowledge and skills (soft and hard) on various aspects of the unit of competency. Each session is small enough to be easily tackled and digested by you before you move on to the next session. Animated pictures and photographs have been included to bring about visual appeal and to make the text lively and interactive for you. You can also try to create your own illustrations using your imagination or taking the help of your teacher. Let us now see what the sections in the sessions have for you.

Section1: Introduction

This section introduces you to the topic of the Unit. It also tells you what you will learn through the various sessions covered in the Unit.

Section 2: Relevant Knowledge

This section provides you with the relevant information on the topic (s) covered in the session. The knowledge developed through this section will enable you to perform certain activities. You should read through the information to develop an understanding on the various aspects of the topic before you complete the exercise (s).

Section 3: Exercise

Each session has exercises, which you should complete on time. You will perform the activities in the classroom, at home or at the workplace. The activities included in this section will help you to develop necessary knowledge, skills and attitude that you need for becoming competent in performing the tasks at workplace. The activities should be done under the supervision of your teacher or trainer who will guide you in completing the tasks and also provide feedback to you for improving your performance. To achieve this, prepare a timetable in consultation with your teacher or trainer and strictly adhere to the stipulated norms or standards. Do not hesitate to ask your teacher or trainer to explain anything that you do not understand.

Section 4: Assessment

The review questions included in this section will help you to check your progress. You must be able to answer all the questions before you proceed to the next session.

INTRODUCTION

First Aid means providing immediate care in cases when a person will need immediate treatment, treatment for the purpose of preserving life and minimizing the consequences of injury until medical treatment is obtained. It includes self-help and home care if medical assistance is not available or is delayed. It also includes well-selected words of encouragement, evidence of willingness to help, and promotion of confidence by demonstration of competence.

The person giving first aid i.e., the first-aider deals with the whole situation, the injured person, and the injury or illness. He/she knows what not to do as well as what to do and avoids errors that are frequently made by untrained persons. A first aider should, therefore, possess the knowledge that could make the difference between life and death, between temporary and permanent disability, and between rapid recovery and long hospitalization.

First aid training is of value in both preventing and treating sudden illness or accidental injury and in caring for large number of persons caught in a natural disaster. First aid training not only provides you with knowledge and skill to give life support and other emergency care but also helps you to develop safety awareness and habits that promote safety at home, at work, during recreation, and on the streets and highways. First aid training is of particular importance to security personnel in case of accident or emergency, when medical and hospital services are limited or delayed.

In this Unit, you will learn to recognize first aid emergencies and administer basic first aid and Cardio Pulmonary Resuscitation (CPR).

SESSION 1: BASIC FIRST AID

RELEVANT KNOWLEDGE

Basic first aid refers to the initial process of assessing and addressing the needs of someone who has been injured or is in physiological distress due to choking, heart attack, allergic reactions, use of drugs and alcohol or other medical emergencies. Training in basic first aid allows you to quickly determine a person's physical condition and the correct course of treatment. You should always seek professional medical help as soon as possible, even if you are providing first aid to a casualty as a trained first aider.

A,B,Cs of First Aid: The A,B,Cs of first aid refer to the three critical things you need to look for as a first aider. These are as follows:

- **Airway** – Does the person have an unobstructed airway?
- **Breathing** – Is the person breathing?
- **Circulation** – Does the person show a pulse at major pulse points i.e. wrist, carotid artery, or groin?

Avoid moving the casualty: Avoid moving the casualty unless he/she is in immediate danger. Moving a casualty will often make injuries worse, especially in the case of spinal cord injuries.

Call Emergency Services: Call for help or tell someone else to call for help as soon as possible. If you are the only person on the scene, try to establish breathing before calling for help, and do not leave the casualty alone for an extensive amount of time.

Determine responsiveness: If a person is unconscious, try to rouse them by gently shaking and speaking to him/her. If the person remains unresponsive, carefully roll him/her onto his/her back

and open his airway. The two methods that could be adopted for opening the airway are as follows (i) Jaw thrust method, and (ii) Head tilt or chin lift method. Practice the following steps for chin lift method under the supervision of a trained first aider/teacher.

Steps

(a) Kneel at the level of the casualty's shoulders.
(b) Place one of your hands on the casualty's forehead and apply firm, backward pressure with the palm of your hand to tilt the head back.
(c) Place the fingertips of your other hand under the tip of the bony part of the casualty's lower jaw and bring the chin forward.
(d) Lift the chin forward until the upper and lower teeth are almost brought together.
(e) The mouth should not be closed as this may interfere with breathing if the nasal passage are blocked or damaged. If needed, the thumb may be used to depress the casualty's lower lip slightly to keep his mouth open.

Caution

- Do not use chin lift method, if a spinal or neck injury is suspected.
- Do not use the thumb to lift the lower jaw.
- Do not press deeply into the soft tissue under the chin with the fingers as this could close the casualty's airway.
- Do not allow the casualty's mouth to close. The mouth must remain open so that the casualty can breathe air in and out.

Look, listen and feel for signs of breathing: Look for the casualty's chest to rise and fall, listen for sounds of breathing (place your ear near the nose and mouth), and feel for breathe on your cheek.

There could be two situations: (i) casualty is breathing or (ii) he/she is not breathing.

Check the casualty's circulation: Look at the casualty's colour and check the pulse. A pulse is simply the stretching of the arterial walls caused by them filling with the blood at each heartbeat. The four common points for checking pulse are (i) Carotid: Side of the neck, (ii) Femoral: The groin, (iii) Radial: The wrist, (iv) Posterial Tibial: The ankle. If the casualty does not have a pulse, start Cardio Pulmonary Resuscitation (CPR), only if you are trained on the technique. For example, to check the carotid pulse, feel for a pulse on the side of the casualty's neck by placing the tips of first two fingers beside his/her Adam's apple.

(a) Carotid Pulse (Neck): The *carotid pulse* is characterized by a smooth, relatively rapid upstroke and a smooth, more gradual downstroke, interrupted only briefly at the pulse peak. During palpation of the pulse, the examiner uses the tactile or mechanoreceptors in the fingertips to sense movement of the arterial wall associated with the pressure pulse as it passes by the site of palpation. The fingers should be positioned between the larynx and the anterior border of the sternocleidomastoid muscle at the level of the cricoid cartilage. In palpating the pulse, the degree of pressure applied to the artery should be varied until the maximum pulsation is appreciated.

(b) Radial Pulse (Wrist): Place your index and middle fingers together on the wrist, about 1/2 inch on the inside of the joint, in line with the index finger. Once you find a pulse, count the number of beats you feel within one minute period.

Stay with the casualty until help arrives: Try to calm the casualty and the people around him/her until assistance arrives.

If the casualty is breathing, but unconscious, roll him/her onto the side, keeping the head and neck aligned with the body. This will help drain the mouth and prevent the tongue or vomit from blocking the airway.

If the casualty is not breathing, follow these steps to restore breathing in an unconscious casualty:

- Check for a clear airway: Remove any obvious blockage.
- Cover the casualty's mouth with your own.
- Pinch the casualty's nose.
- Attempt to fill casualty's lungs with two slow breaths: If the breaths are blocked, reposition the airway. Make sure the head is tilted slightly back and the tongue is not obstructing it. Try again if breaths are still blocked.

Give 5 quick, forceful abdominal thrusts in the following manner:

- Place a fist just above the belly button and below the breastbone.
- Thrust upward to expel air from the lungs.
- Sweep the mouth to remove any foreign objects.
- Try two slow breaths again.
- Repeat until you are successful in clearing the object from the windpipe.

With open airway, begin **rescue breathing**. There are two types of rescue breathing: (i) Mouth-to-mouth, and (ii) Mouth-to-nose. We will deal with them in detail in another session.

Warnings

- Moving someone with spinal cord damage may increase the likelihood of paralysis or death.
- Do not touch someone who is being shocked by an electrical current. Turn off the power or use a piece of non-conductive material (e.g., dry wood, dry rope, dry clothing) to separate him from the power source before touching him.
- Before touching a casualty or rendering any aid, get consent to treat! Check the laws in your area. Rendering aid without consent may lead to legal action.

Never try and reset a broken or dislocated bone: Unless you are 100% sure of what you are doing, resetting a dislocation or broken bone runs a strong risk of making things worse. Some signs of closed fracture include the following:

- Swelling
- Discoloration
- Deformity
- Unusual body position

Never, ever put yourself in danger!

Treat shock and bleeding

After you have established that the casualty is breathing and has a pulse, your next priority should be to control any bleeding and get him/her out of the shock.

Shock may result from heatstroke, trauma, infection, poisoning, etc. Shock may result in a decrease in blood flow to the brain and important organs.

Types of shocks

- Respiratory (due to asthma, impaired breathing, etc.)
- Hemorrhagic (due to loss of blood)
- Neurogenic (due to loss of ineffective nervous control of blood vessels)
- Psychogenic (due to heatstroke or fainting)
- Metabolic (due to fluid loss or untreated illness)
- Toxic (due to toxic substances in the body)
- Anaphylactic (due to allergic reactions)

Signs of shock

Some of the signs and symptoms of shock would include the following:

- Restlessness and nervousness.
- Fast breathing.
- Nausea and sometimes vomiting.
- Weak pulse.

Treating shock

Treating the shock would include the following:

- Position the casualty on his/her back.
- Raise and support the casualty's legs.
- Reassure the casualty.
- Loosen the tight clothing at the neck, chest and waist.

Types of bleeding

The three types of bleeding that could occur are as follows: (i) **Arterial**: In this case, blood is bright red

and will spurt with each heart beat; (ii) **Venous**: In this case, blood is dark red and flows in a steady stream, and (iii) **Capillary**: In this case, blood oozes out from the wound.

Controlling bleeding

- Bleeding can be treated by applying the sterile field dressing. Dressing should be done immediately to prevent infection. Direct manual pressure may be applied for 5-10 minutes to control bleeding by placing a hand on the dressing and exerting firm pressure for 5 to 10 minutes.

Caution:

- Do not tilt or rotate the casualty's head.
- Do not allow the casualty's mouth to close. The mouth must remain open so that the casualty can breath air in and out.

EXERCISE

Practice Session

Pair up with your classmates or use mannequins to demonstrate basic first aid practices under the strict supervision of your teacher/trainer. Perform the following:

1. Perform A,B,Cs of first aid

2. Perform Jaw Thrust Method as given below:

(a) Kneel at the top of the casualty's head.
(b) Rest your elbows on the surface where casualty is lying.
(c) Place one hand on each side of the casualty's lower jaw at the angle of the jaw, below the ears.

(d) Stabilize the casualty's head with your forearms.
(e) Use the index fingers to push the angles of the vict -im's lower jaw forward.
(f) Use the thumb to retract the patient's lower lip to keep the casualty's mouth open, if necessary.

ASSESSMENT

A. Fill in the blanks

1. A, B, C of first aid stand for a_____, b_____, c_____.
2. Casualty's hear beat can be checked by checking the_____.

B. Multiple Choice Questions

Tick the correct answer

1. Pulse can be checked

(a) At the carotid artery
(b) On the nose
(c) On the palm
(d) None of the above

2. If the casualty is not breathing

(a) Give him mouth to mouth breathing
(b) Do nothing
(c) First take him to hospital
(d) None of the above

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

(a) Differentiated between first aid and medical treatment.
(b) Differentiated between carotid and radial pulse.

Part B

Discussed in class the following:

(a) What is first aid?
(b) What are the safety and precautions to be followed while applying first aid?

Performance standards

The performance standards may include, but not limited to:

Performance standards	**Yes**	**No**
Demonstrate the knowledge to call emergency services		
Check for breathing		
Check for pulse		
Open the airway		

SESSION 2: METHODS OF EVACUATION AND RESCUE

RELEVANT KNOWLEDGE

In certain extreme emergency circumstances it may be necessary to evacuate and rescue a sick or injured person and transport him/her to hospital or a safe place. For handling such a situation, there are a number of procedures and techniques which should be learned. In this session, you will learn about the various techniques which are used for transporting the casualty using various materials and methods.

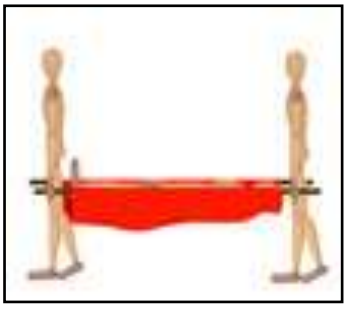
Improvised Pole and Sack Litter

An improvised litter can be made using two poles and heavy fabrics (e.g. jacket) or sacks such as jute sacks. Follow the steps given below to prepare an improvised pole and sack litter:

1. Take two strong branches that will extend by about 1 foot either end of the person to be carried. Ensure that the sharp parts are cut away. It is vital that they are capable of holding the weight of the casualty.

2. Now select some clothing or sack that is strong enough to bear the weight of the casualty.

3. Cut the two corners of the closed end of each sack.



4. Slide the clothing on to the poles with the poles coming through the arms of the garment or sack.

5. Place the next piece of clothing on to the poles in the same way and overlap the first item. Place enough pieces of clothing on to the poles to ensure that the casualty's head and legs will be supported.

Carrying a Survival Bag

It is possible to use the survival bag as a stretcher without damaging it. Lay the bag out and, depending on how many people you have to help with the carry, collect stones large enough for each person to grip. Next, using string or rope, tie the stones at each corner of the bag and at each side in the middle. If stones are not available, items of clothing such as hats, socks or gloves can be used in place. There are definite limitations to this kind of stretcher. The polythene is relatively easy to split, especially on rough ground, and when wet can be extremely slippery. Therefore, care should be taken when picking the stretcher up.

Using Survival bag

If you are using the survival bag/flysheet technique, it will be easier to put the stretcher underneath the casualty before you add the poles. The easiest way for this to be done is to use one of the two methods:

Method 1: Lay the bag/flysheet next to the casualty and gather up approximately half of the fabric on the side closest to her, placing it as close as you can to body. Turn the casualty onto his/her side and place the bundle as close as you can to her body, then and gently roll her bag/sheet out from the sides. You are then ready to add poles.

Method 2: Fold the top and bottom ends of the bag towards the center with one person on each side of the casualty, placing the folded bag/sheet under the hollow. Together, pull the bottom part down toward the casualty's feet and then the other half of the bag/sheet can be pulled up toward his/her head. You can then add the poles.

Stretcher

It may be possible for you to lift the person directly onto the stretcher. Ideally this should be done with a minimum of two people. Bring the stretcher to the casualty and lay it down as close as you can without being in your way. Decide who will take the top half of the person to be lifted.

1. Help a person to sit up and ask him/her to cross or fold his/her arms across the chest.

2. Squatting behind the casualty, slide your hands under his/her arms, taking hold of his/her wrists or lower arms.

3. Ask your partner to squat beside the casualty and pass their arms under his/her thighs, taking hold of the legs.

4. The person at the head end takes control and will determine the timing of the lift. When ready, working together and keeping your backs straight, raise the casualty slowly and move him/her onto the stretcher.

Follow the postures given below to reduce your risk of injury when performing any lift or handling a stretcher:

1. Stand with your feet shoulder-width apart, with one foot slightly in front of the other.
2. Bend at your hips and your knees, not at your back. Keep your back straight but not rigid.
3. Get a secure grip of the stretcher. Raise your head.
4. Use your strongest muscles (in your thighs) to lift, keeping your elbows close to your body.

Human crutch

Moving an injured or ill person can be done by encouraging hi/her by himself/herself, minimizing risk to both. There are a number of dangers inherent in lifting and moving people and the task should not be taken lightly. When you are the only person handling the casualty and the casualty is not seriously injured (for instance a person has sprained an ankle and is having difficulty in walking); the following technique will provide additional support.

1. Stand on the person's injured or affected side, pass his/her arm around the waist and grasp his/her hand or wrist.

2. Place your other arm around his/her waist and grasp his/her clothes, preferably the top of the trousers or a belt.

3. Move off with your inside foot first, walking at the casualty's pace.

Piggy back

Although this is an effective carry, how far you will be physically capable of moving the casualty will depend on his/her size and weight

1. Crouch in front of the casualty with your back toward his/her and ask him/her to put his/her arms over your shoulders.

2. Grasp the casualty's thighs, pull them in toward you and slowly stand up, remembering to keep your back straight.

The Drag

This technique is for extreme emergencies and will be effective only over short distances as it is very labour-intensive. Its key use is in moving people from hazardous areas quickly. There are three types of drag: (i) Neck drag, (ii) Cradle drop drag, and (iii) Pistol belt drag. Let us now practice two of them:

(i) Neck Drag: To perform the neck drag, follow the steps given below:

Step1: Tie the casualty's hands together loosely with soft rope.

Step 2: Face the casualty's head and straddle his hips on your knees.

Step 3: Loop the casualty's arms around your neck.

Step 4: Crawl forward on your hands and knees, dragging the casualty beneath.

(ii) Cradle drop drag: To perform the cradle drop drag, follow the steps given below:

Step 1: Position the casualty on his back.

Step 2: Kneel at the casualty's head.

Step 3: Slide your hands (palms up) under his shoulders and grasp the clothing under his armpits.

Step 4: Partially rise so as to pull the casualty to a semi-sitting position.

Step 5: Bring your elbows together and use both forearms to support the head.

Step 6: Rise to a stopped position and walk backward, dragging the casualty.

Two-hand Seat Carry

It is far easier for two people to control and move someone. The two-handed carries can only be used with conscious people because they require the person being carried to have some control over his/her body and give some assistance to the rescuers. However, hand carry techniques do have their limitations and require a little practice.

The steps for two-hand carry are as follows:

Step 1: Crouch down, facing each other on either side of the injured person.

Step 2: Cross over your arms behind the casualty and grab hold of her waistband or belt.

Step 3: Pass your other hands under the casualty's knees and grasp each other's wrists.

Step 4: Bring your hands toward the middle of the casualty's thighs.

Step 5: Get in close to the injured person and stand up slowly. You are now ready to move off.

Four-hand Seat Carry

For four hand seat carry, perform the following steps:

Step1: With the person to be carried standing close to you, first hold your left wrist with your right hand, and ask your carrying partner to do the same.

Step 2: Now, link hands, taking hold of your partner's right wrist. This should form a square. This forms the seat for carrying.

Step 3: Allow the casualty gently sit back onto your hands and get him/her to place her hands around your shoulders.

Step 5: Move forward lifting the casualty.

EXERCISE

Practice Session

Practice the following techniques:

1. Carrying a stretcher
2. Two handed seat carry
3. Four handed seat carry

ASSESSMENT

Short Answer Questions

1. Write about the postures that you should follow to reduce your risk of injury when performing any lift or handling a stretcher.

_____
_____
_____
_____
_____
_____
_____

2. Name three types of drag.

_____
_____
_____
_____
_____
_____
_____

3. Write the procedure of four-hand seat carry.

_____
_____
_____
_____
_____
_____
_____

CHECKLIST OF ASSESSMENT ACTIVITY

Use the following checklist to see if you have met all the requirements for assessment activity**.**

Part A

(a) Differentiated between two and four hand seat carry.

Part B

Discussed in class the following:

(a) Why is it important to learn about the various techniques of carrying a casualty?

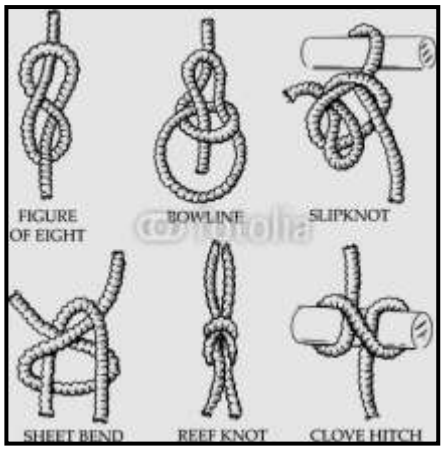
Performance standards

The performance standards may include, but not limited to:

Performance standards	**Yes**	**No**
Demonstrate two hand seat carry		
Demonstrate four hand seat carry		

SESSION 3: COMMON KNOTS USED IN EVACUATION

RELEVANT KNOWLEDGE

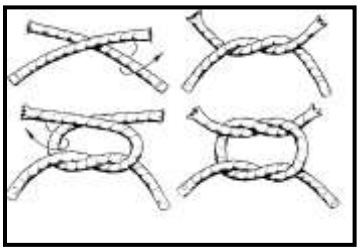


Ropes and knots are very important part of life saving and rescuing methods for evacuating the casualty from the scene of emergency or accident. Therefore, it is necessary to understand the proper method of tying knots. All knots have a purpose and it is just as important to understand what that purpose is, and when the knot is used.

Today, despite technology, knots are still as necessary as ever. In sports, such as sailing, climbing, and in other activities, such as fire fighting, fishing, truck driving and even surgery, the ability to tie the right knot is essential. Although there are many types of knots, in this session we will learn to tie some of the common knots used for emergency evacuation.

Reef knot

It is the most common knot used to tie together two working ends of the rope.



Step 1: Take an end of rope in each hand and lay the left hand end over the right.

Step 2: Then, using your right hand, take the end from the left down behind the other rope and up to the front again.

Step 3: Point the ends inwards again, this time the right hand one over the other one, then take it down behind it and up to the front through the loop which has now been formed.

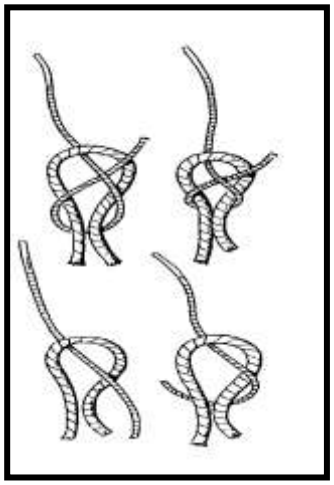
Step 4: Pull the knot tight. This knot is often remembered by, 'left over right and right over left'.

Sheet bend

The 'sheet' is the sailor's name for a rope. The sheet bend is used to tie together two ropes of different types or unequal thicknesses. To tie a sheep bend, follow the following simple steps:

Step 1:Form a bight (double rope) with a larger diameter rope.

Step 2: Insert the second thinner rope under and then over the end of the first rope.



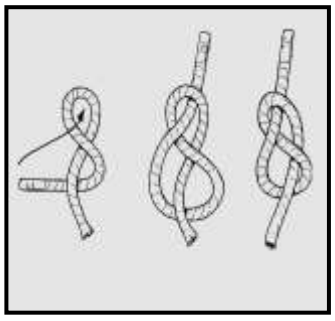
Step 3: Take the end of the second rope and bring it under the bight.

Step 4: Bring the end over the bight, putting it under its own standing part.

Step 5: Pull on the both standing parts to set the knots.

Make sure that the two ends are on the same side of the knot. If the ropes are of very different thickness, take the working end round the bight and under itself twice to form a double sheet bend.

Figure of eight



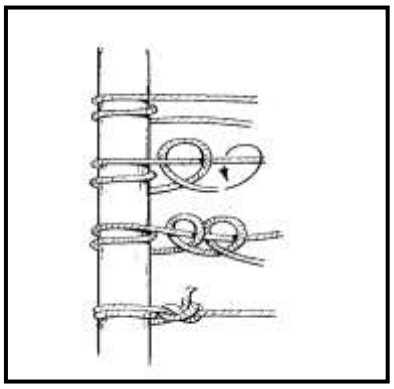
This is a 'stopper knot' that is unlikely to jam or pull loose. It is also used, when doubled, to tie a loop in a rope.

Step 1: Form a loop in the end of a rope.

Step 2: Take the working end behind the standing part and back over itself into the open loop.

Step 3: Finish by pulling both sides of the knot tight. If the knot is correct, it will look like a ‘figure of eight'.

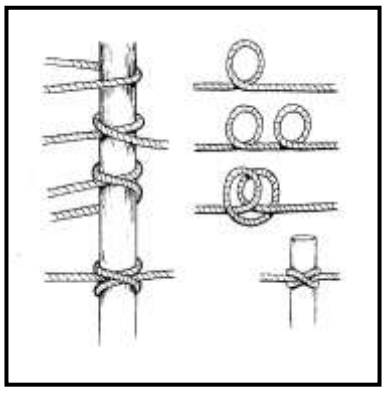
Round turn and two half-hitches



This is a long name for a simple hitch used to attach a rope to a pole, post, spar, tree, and so on. It is a composite knot formed from two simple knots.

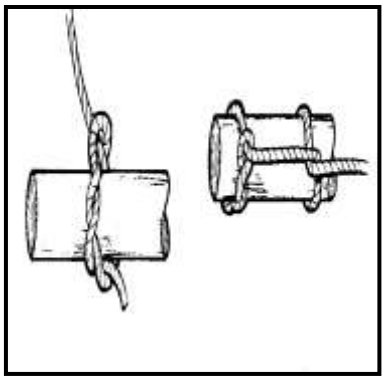
Step 1: Pass the end round the post once.
Step 2: Pass around a second time.
Step 3: Form a half-hitch by taking the working end around the standing part forming a crossed loop.
Step 4: Repeat to form a second half-hitch. These should be tied in the same direction and tightened up against the post to ensure that the round turn doesn't slip.
Step4: Pull this tight to complete the knot.

Clove hitch



The clove hitch is another method of 'hitching' a rope to a post. Not as secure as the round turn and two half-hitches, it is often used to begin other hitches and lashings. There are many ways to tie a clove hitch. However, common method is as follows:

Step 1: Begin with a round turn around the object and cross over.
Step 2: Make another turn.
Step 3: Pass the end under the second turn and pull though and tighten. Thus the two ends of the rope should be laid next to each other under the diagonal but running in opposite directions. The clove hitch looks like a 'N'.



Timber hitch

The timber hitch is a temporary knot used to drag, tow or lift a log or pole.

Step 1: Turn the working end round the standing part and then wrap it around itself at least four or five times.
Step 2: A half-hitch can be tied in the standing part further up the log or pole to add some security.
Step 3: The log is dragged by pulling the standing end.

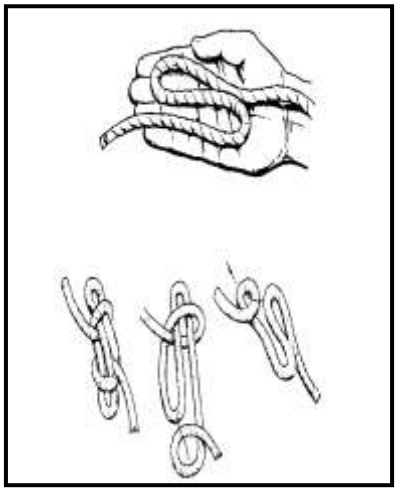
Highwayman's hitch

It is also known as Fireman's hitch. It is ideal for tying a rope to an object when you need a quick release. Pulled on the standing end it holds fast and when pulled on the working end it comes free. Follow these simple steps to tie a highwayman's hitch:

Step 1: Start by passing a bight (a doubled rope) around the object.
Step 2: Take the main part of the rope and push a bight through the first bight.
Step 3: Take the end of the rope and push a bight through the second bight.
Step 4: Tighten the knot.

Sheepshank

This knot is used to shorten a rope, or to bridge a damaged length, without cutting the rope. If the knot is used to take up a piece of damaged rope, the damaged area must be positioned in the centre of the knot to avoid subjecting to any strain. Follow these simple steps to tie a sheepshank:



Step 1: Form three loops at the point in the rope ('S' shape) where the shortening will be required.
Step 2: Pull the indicated points of the middle loop through the two outer loops.
Step 3: Slowly pull on the two main parts of the rope, making sure that the knot retains its shape and form.
Step 4: Tighten the knot into its final form. The sheepshank should be kept in tension. If loosened it may well come undone.

Bowline

The bowline is used to form a non-slip loop in the end of a rope. It was traditionally the climbers' waist knot before harnesses were used. It is used for pulling someone out of the water or to safely bring down people from the upper levels to the ground.

1. Start by making a loop and pass the end up through the loop.
2. Pass the end around the main line.
3. Pass the end back down through the loop.
4. Pull the end tight to close the knot. If tied correctly, the loop should not slip.

EXERCISE

Practice Session

1. Practice tying the following knots under the supervision of your teacher/trainer:
2.

S.No.	Knots
1	Reef Knot
2	Sheet Band
3	Figure of eight
4	Round turn and two half hitches
5	Clove hitch
6	Timber Hitch
7	Highwayman's hitch
8	Sheepshank
9	Bowline

ASSESSMENT

Fill in the blanks

1. _____is also known as stopper knot.
2. The _____ is another method of 'hitching' a rope to a post.
3. The _____ is a temporary knot used to drag, tow or lift a log or pole.
4. _____is used to tie a boat.
5. The_____ is used to form a non-slip loop in the end of a rope.

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you have met all the requirements for assessment activity:

Part A

(a) Differentiated between different types of knots

Part B

Discussed in class the following:

(a) What are the uses of differed types of knots in rescue and first aid?

Part C

Performance standards

The performance standards may include, but not limited to:

Performance criteria	**Yes**	**No**
Tie reef knot		
Tie sheet bend knot		
Tie bowline		
Tie clove hitch		
Tie highwayman's hitch		

SESSION 4: IDENTIFYING PARTS OF HUMAN BODY

RELEVANT KNOWLEDGE

Anatomy is the study of the structure of the body. Functions include digestion, respiration, circulation, and reproduction. Physiology is the study of the functions of the body.

The human body is an amazing living machine with hundreds of parts that, for the most part, work together to flawlessly perform countless tasks. Although a complex system, the human anatomy breaks down into a number of individual processes or systems, each of which has a specific function. The combination of these systems adds up to form the complete anatomy of the human body.

It is useful for a first aider to have a basic awareness of the major systems and their functions. Knowledge of human anatomy will assist you in a first aid diagnosis and will also provide a firm basis for the care and treatment of a casualty.

Human Skeleton

The human anatomy is held upright by bones, without which people would be shapeless structures. On an average, there are 206 bones in the adult human body, most of which are connected to other bones. An infant may have 350 bones, some of which fuses during the development of the body.

Nervous system

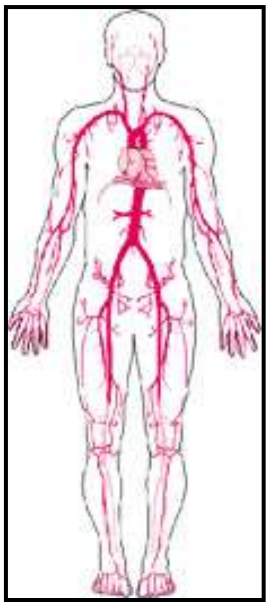
The nervous system is considered in two main parts, the central nervous system and the peripheral nervous system.

The central nervous system comprises the brain and spinal cord. The brain controls all functions of the body and is the most complex of all body systems. The brain regulates all body functions, including the respiratory and cardiovascular systems. The spinal cord delivers the signals to all parts of the body.

The motor and sensory nerves, which involve movement, are known as the peripheral nervous system and these are directed by the brain. Some peripheral nerves function without conscious thought and these are known as autonomic nerves. Breathing is a function attributable to these nerves.

The cardiovascular system

This system involves the heart, blood vessels and blood. The heart is the pump that drives the blood around the body.



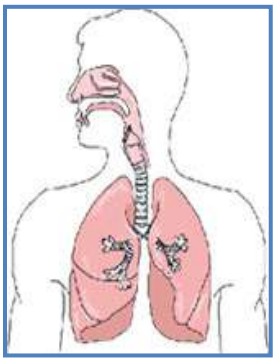
The body's main vessels are arteries, which take the blood from the heart and veins, which return the blood to the heart.

There are smaller blood vessels such as arterioles, venules and capillaries, most of which are located at the body’s extremities and usually close to the skin.

Blood is the medium that transports oxygen, from the respiratory system to the body’s cells. Blood also transports sugars, chemicals, proteins, hormones and many other substances around the body for use and elimination.

As the heart pumps blood, a pulse beat can be felt at various locations in the body and each pulse beat corresponds to one heartbeat. The heart rate of the average adult at rest is between 60 to 100 beats per minute, depending on age, medical conditions and general fitness.

The respiratory system



This system is composed of the airway (mouth, nose, trachea, larynx, bronchi and bronchioles) and the lungs (including the small air sacs called alveoli).

The respiratory system provides oxygen to the blood and takes away the waste product called carbon dioxide.

Oxygen is extracted from air inhaled through the airway and goes into the blood stream through the membranes of the lungs. For the first aider, maintaining a casualty's airway is of primary importance.

The musculoskeletal system

This system involves the bones, ligaments, tendons and muscles that support the body, protect the internal organs and enable movement.

Most muscles used for movement work by contracting and relaxing in conjunction with a bone.

The action of raising your leg involves contracting several muscles, creating an opposing force in the leg and causing it to move upwards.

Some muscles, such as the diaphragm that makes the lungs expand and contract, do not need bones, but functions attached to large masses of tissue.

The digestive system

This system includes the oesophagus, stomach and intestines. Fluid and solids are passed through the oesophagus to the stomach where they are processed for further digestion. They are then absorbed into the body through the membranes of the intestines.

Some organs, such as the liver and pancreas, are considered accessories to the digestive system as they help process food into various chemical substances used by the body.

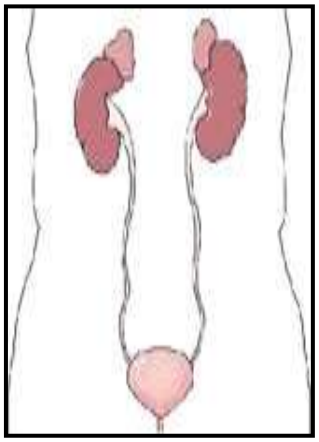
The endocrine system

This system involves those organs and glands that secrete chemicals in the form of hormones to stimulate and activate the body's functions.

The pancreas for example, controls a variety of important functions by releasing insulin and influencing the body's metabolic process.

The urinary system

This important system flushes waste products suspended in fluid from the body. It includes the kidneys, bladder and urinary tract and plays a vital role in keeping the body healthy.



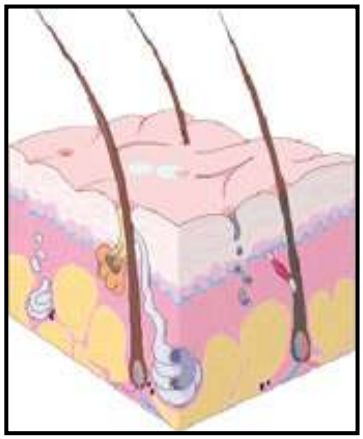
Should the urinary system fail (especially the kidneys), then the affected person requires external assistance to get rid of the waste products by 'flushing' the blood. This is called haemodialysis or, more commonly, 'dialysis'.

The reproductive system

This is linked to the body's endocrine system, through the female's ovaries and the male's testes. These are known as the gonads or 'sex glands'.

The female reproductive system consists of the ovaries, which produce the human egg, and the uterus (or womb), where the fertilised egg is lodged for growth and the vagina.

The male reproductive system is composed of the testes, which produce sperm, the seminal vesicle that provides the fluid medium for the sperm and the penis.



The integumentary system

This is the system that includes skin, hair, fingernails and toenails. Their pigmentation (colour) and growth are linked to the endocrine system.

The skin is the body's largest organ and plays an important role in protecting the body from infections. The skin's other functions include acting as a shield against injury and keeping body fluids in. The skin is made from tough, elastic fibres which have the ability to stretch without tearing easily.

The lymphatic system

The lymphatic system is a slow moving system where toxins such as venom tend to accumulate after a bite has occurred.

This system provides lymphatic fluid that drains from the body's tissues, which is important as a 'flushing' mechanism. Most toxins and infections absorbed or injected into the tissues are collected by the lymphatic system and 'strained' through lymph nodes in the armpits, neck and groin. The lymphatic fluid eventually drains into the blood stream

EXERCISE

Practice Session

Visit a biological laboratory to study the following parts of human body. Prepare a chart showing the parts of human body.

- Nervous system
- Cardiovascular system
- Respiratory system

- Musculoskeletal system
- Digestive system
- Urinary system
- Reproductive system

ASSESSMENT

A. Fill in the blanks

1. _____is the study of the structure of the body.
2. Nervous system is divided in two parts _____ and_____.
3. Blood is the medium that transports _____, from the respiratory system to the body's cells
4. the respiratory system provides oxygen to the blood and takes away the waste product called.
5. _____ is to support the body, protect the internal organs and enable movement.
6. _____system involves those organs and glands that secrete chemicals in the form of hormones to stimulate and activate the body's functions.

B. Multiple Choice Questions

Tick the correct answer

1. On an average, adult human body contain
   (a) 236 bones
   (b) 206 bones
   (c) 204 bones
   (d) 197 bones

2. Digestive system include
   (a) Esophagus
   (b) Stomach
   (c) Intestines
   (d) All of the above

3. Endocrine system Pulse can be checked
   (a) At the carotid artery
   (b) On the nose
   (c) On the palm
   (d) None of the above

4. Integumentary system is the system that include
   (a) Skin
   (b) Hair
   (c) Nails
   (d) All of the above

5. If the casualty is not breathing
   (a) Give him mouth to mouth breathing
   (b) Do nothing
   (c) First take him to hospital
   (d) None of the above

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

(a) Differentiated between different parts of human body.

Part B

Discussed in class the following:

(a) What are the different parts of human body?
(b) What are the role and functions of parts of human body.

Part C

Performance standards

The performance standards may include, but not limited to:

Performance standards	**Yes**	**No**
Identify various parts of human body		

SESSION 5: ADMINISTERING CARDIO PULMONARY RESUSCITATION

RELEVANT KNOWLEDGE

The heart is a muscle that pumps blood around the body, which it does with the help of the thick-walled and muscular arteries and the other vessels of the circulatory system. The heart is controlled by regular electrical impulses. Like all other muscles, the heart needs its own blood supply and this is provided by the coronary (heart) arteries.

When this blood supply fails to run smoothly, the body starts to experience problems such as angina pectoris (angina) and heart attack. Either of these may lead to the heart stopping (cardiac arrest).

Angina

Throughout life, the arteries are clogging up with fatty deposits. As these fatty deposits cause the coronary and other arteries to become narrower, it becomes increasingly difficult for blood to flow around the body. The clogged coronary arteries can just about supply blood to the heart when it is pumping at a normal rate but when the heart rate speeds up the arteries cannot cope with the demand. This leads to an angina attack, a frightening, severe, crushing chest pain that acts as a warning to the casualty to calm down or to rest.

Treatment

1. Make the casualty sit down comfortably and reassure him/her. This reduces the demands being placed on the heart.

2. Angina sufferers may have medicine that will help relieve an attack.

3. Call an ambulance if the pain does not appear to ease or if the casualty is not a known angina sufferer.

Heart Attack

If a coronary artery becomes completely blocked, the area of the heart being supplied by that particular blood vessel will be starved of oxygen and will eventually die. This blockage may be caused by a clot, a condition often referred to as a coronary thrombosis.

The development of advanced cardiac care in hospital and good-post hospital care means that the heart attack patients have a good chance of making a full recovery. This is important information to remember when you are reassuring somebody having a heart attack.

Signs and symptoms of a heart

These signs and symptoms are generally the same as those of angina the patient may initially suffer an angina attack that becomes a heart attack. The key difference is that heart attacks do not always follow physical exertion. While angina sufferers will recover from their attack on resting, heart attack patients do not tend to improve without medical treatment.

Treatment

1. Move the casualty into a semi-sitting position, head and shoulders supported and knees bent, as this is generally the best position to breathe in.
2. Reassure the casualty and do not let her move, as this will place an extra strain on the heart.
3. Call for an ambulance as soon as possible because the casualty needs hospital care.

4. If the casualty has angina medication, let her take this. If you have an ordinary aspirin, give her one to chew (without water).
5. Keep a continual check on the breathing and pulse and be prepared to resuscitate if necessary

STROKE

A stroke occurs when a blood clot or bleeding cuts off the blood supply, and therefore the oxygen, to the part of the brain. The affected area of the brain will eventually die. The effect of a stroke depends on how much of the brain is affected and where the clot or bleeding is. Different parts of the brain control different functions, so a clot in the part of the brain that controls speech, for example, will result in slurred or confused speech. Often the signs will be confined to one side of the body.

Effects of the stroke

If the bleeding or clot is in one of the larger blood vessels supplying a large area of the brain, then the stroke will often be immediately fatal.

If a person has had a stroke and is still conscious, help her to lie down with her head and shoulders raised. Speak in a reassuring voice and seek medical help. Simple tests can be performed at home to assess whether or not a person has suffered a minor stroke. A minor stroke may cause weakness on one side of the body or loss of sensation.

Treatment

Monitor airway and breathing and be prepared to resuscitate if necessary. Place the person in the recovery position if he/she becomes unconscious. If conscious, help him/her lie down with the head and shoulders slightly raised. Provide support and

reassurance. The person will often be disoriented and may be speaking nonsense if the speech center is affected. Equally, may hear what you are saying but not understand it. Speak in a reassuring tone with confidence. Call an ambulance. Wipe any dribbling away from the side of the face and prepare for the person to vomit.

Signs and symptoms

Any combination of the following may be present:

- The sufferer may have a history of smaller strokes over previous years, or may have been feeling unwell for some days with no known cause headache.
- Blurred vision, partial loss of sight, or seeing flashing lights.
- Confusion and disorientation, often mistaken for drunkenness.
- Signs of paralysis or weakness, often only down one side of the body.
- Difficulty in speaking; drooping mouth or smile.
- Dribbling from one side of the mouth.
- Loss of consciousness.
- Sometimes the pulse will be full and throbbing, the person breathes noisy, and the skin flushed.

Cardiopulmonary Resuscitation

Cardiopulmonary resuscitation or CPR is an emergency life-support procedure. CPR is a combination of compression and breathing. It includes artificial and manual procedures. Both these procedures are applied

to prevent irreversible brain damage or death in the case of cardiac arrest. They should be performed only by someone trained in the technique after making sure that the casualty's heart has stopped or respiration has ceased.

The first step is to check if a casualty's pulse has stopped and then to check the pulse rate. If no pulse can be felt the rescuer can assume that the casualty's heart has stopped and start CPR at once if he is properly trained. If untrained in CPR one should seek emergency medical help as soon as possible. Those who are performing the CPR may shout out to someone nearby to call for medical help.

Artificial Respiration

The first step in CPR is to give artificial respiration. Artificial respiration is a lifesaving method used to restore breathing to a person whose breathing has stopped. If breathing has stopped, the casualty will soon become unconscious. There will be no chest movement, and the skin will be pale or a slightly bluish colour. When breathing stops there is no oxygenation of the blood and irreversible brain damage or death may occur in as little as three to six minutes. Therefore, it is important to start artificial respiration as soon as possible and continue until medical help arrives. If breathing restarts and becomes regular, the casualty should be observed continuously until medical help arrives.

The most common and efficient method of artificial respiration is mouth-to-mouth resuscitation.

Mouth-to-Mouth Resuscitation

Perform mouth-to-mouth resuscitation on a mannequin (dummy) under the supervision of a first aid trainer.

- **Assess the responsiveness of the patient** by gently shaking the casualty and shouting "Are you OK"? Ask someone nearby to call for medical help.
- **Open the Airway**: One very important step in the resuscitation process is to immediately open the airway. Quite often the tongue may block the passage of air into the air passages. To open the airway, one hand must be placed on the casualty's forehead and firm, backward pressure with the palm is applied to tilt the head back. If there is a suspicion of neck injury, the head should not be moved unless it is absolutely necessary to open the airway. Place the fingers of the other hand just under the chin and lift to bring the chin forward. If there is material like vomitus or any foreign body that appears to block the air passages it must be removed.
- **Ascertain whether the patient is breathing:** With the airway open, look at the chest for signs of breathing. Put your ear next to the nose and mouth and listen for breathing. Feel for the flow of air. If there is no breathing, begin artificial respiration.
- **Mouth-to-Mouth Resuscitation**: To perform mouth-to-mouth resuscitation, follow these simple steps:

    1. Place one hand on the casualty's forehead to pinch the casualty's nose closed. Ensure that your breathing is regular.

    2. Seal the casualty’s nostrils with thumb and index finger of upper hand. Take a deep breath and place your mouth tightly over the casualty's mouth (to avoid transmission of viruses and bacteria, place your disposable airway bag over your mouth and over the casualty’s mouth. You may also place a thin handkerchief on your mouth. However, do not use a very thick cloth, as it may be difficult to blow through it.

3. Exhale hard into the casualty's mouth. Breath twice, each inhalation one to 11/2 seconds. Blow until the casualty's chest rises. Listen for air being passively exhaled. Check carotid pulse.

4. If you dealing with an adult, stop for five seconds and then repeat steps 1-3 giving only one breath.

5. Repeat the process until the casualty begins breathing.

External Cardiac Massage: The aim of external cardiac massage is to cause the heart to pump blood to the other parts of the body. It should be started simultaneously with artificial respiration in a casualty whose heart has stopped beating (as made out by an absent pulse in the neck or groin). The rescuer should place the heel of the palm of one hand parallel to and over the lower part of the casualty's sternum (breastbone), 1 to 1.5 inches from its tip. The rescuer puts the other hand on top of the first and brings the shoulders directly over the sternum. The rescuer's fingers should not touch the casualty's chest.

Keeping the arms straight, the rescuer pushes down forcefully on the sternum. This action, called *external cardiac compression*, results in blood flow from the heart to other parts of the body. The rescuer alternately applies and releases the pressure at a rate of about 60 compressions per minute. Each time after 15 compressions, the rescuer gives the casualty artificial respiration (three or four breaths). The ratio of 15 cardiac compressions to 3 or 4 breaths is commonly followed.

If the casualty is a small child, then the rescuer must use only one hand for the cardiac compression. For infants, the pressure is exerted using the index and middle fingers at the middle of the sternum. In all cases, the compressions must be accompanied by artificial respiration. Treatment should continue until medical help arrives.

To perform the chest compression, follow these simple steps:

Step 1: Prepare for chest compressions.
Step 2: Find notch at the bottom of the breastbone. Place the heel of upper hand two finger-widths above the lower hand.
Step 3: Begin compressions. Place lower hand on upper hand and interface fingers and give 15 compressions within nine to eleven seconds.
Step 4: Ventilate twice. Repeat procedure of 15 compressions and two ventilation's each four times. Check carotid for five seconds.

CPR is best performed by two trained persons. One should administer external cardiac compression, and the other should provide artificial respiration. The rescuers should position themselves on opposite sides of the casualty so they can switch roles easily if either becomes fatigued.

Practice session

Using a mannequin (dummy) perform Cardio Pulmonary Resuscitation (CPR). Record your observations below.

EXERCISE

Step 1:_____

Step 2: _____

Step 3:_____

Step 4: _____

ASSESSMENT

A. Fill in the blanks

1. CPR stands for Cardio _____ Resuscitation.
2. CPR is an emergency life support procedure applied to prevent irreversible brain damage or death in the case of _____.
3. The aim of external cardiac massage is to cause the _____ to pump blood to the other parts of the body

B. Multiple Choice Questions

Tick the correct answer

1. Artificial respiration is a

(a) Life saving method
(b) Normal breathing process
(c) Energy giving process
(d) None of the above.

2. If breathing has stopped

(a) Casualty will become unconscious
(b) No chest movement.
(c) Skin will become pale/bluish colour
(d) All of the above

3. The first aider alternately applies and releases the pressure at a rate of about

(a) 50 compressions per minute
(b) 60 compressions per minute
(c) 65 compressions per minute
(d) None of the above

4. CPR is best performed by _____trained persons effectively

(a) 2 trained persons
(b) 3 trained persons
(c) 4 trained persons
(d) 1 trained persons

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

(a) Differentiated between stroke and heart attack.

Part B

Discussed in class the following:

(a) What are the signs and symptoms of angina and heart attack?

Part C

Performance standards

The performance standards may include, but not limited to:

Performance standards	**Yes**	**No**
Perform mouth-to-mouth resuscitation on a mannequin (dummy)		

SUGGESTED READING

WEBSITES

- http://www.medindia.net
- http://medical.tpub.com/10669-c/css/10669-c_140.htm
- http://en.wikipedia.org/wiki/First_aid
- http://en.wikipedia.org/wiki/First_aid
- http://en.wikipedia.org/wiki/First_aid_kit
- http://kidshealth.org/parent/firstaid_safe/
- http://www.medindia.net/patients/firstaid.asp
- http://www.nlm.nih.gov/medlineplus/firstaid.html
- http://www.ehow.com/how_7690979_teach-basic-first-aid-kids.html