

Fig. 5.1 To stop bleeding

bandaged with the handkerchief or a clean cloth & the person is moved to a hospital immediately.

### Fractures (break in the bone)

Signs of fracture

Affected body part becomes:

- Very painful (severe pain)
- Swells up
- Victim is unable to move it

### First Aid:

- Handle the victim very gently and try to avoid all unnecessary movements.
- Never attempt to bring the bones to normal position.
- Support the affected part with the appropriate support like Splint, piece of wood, padding in the form of folded handkerchief, towel, newspaper or magazine.
- Tie the splint firmly but not too much tight to stop the circulation.
- Call a doctor immediately or take the patient to a hospital.

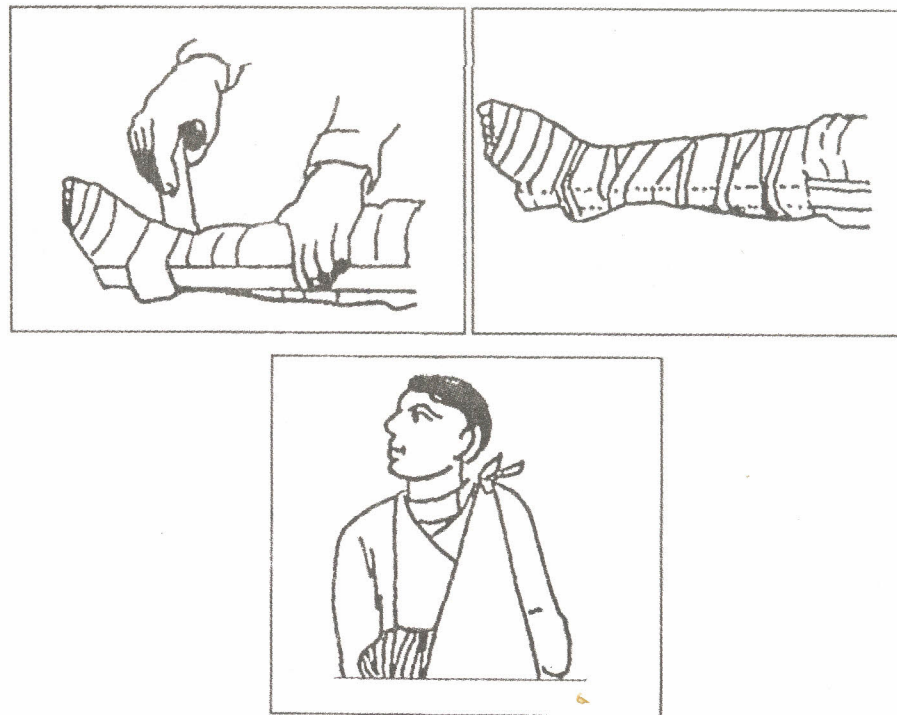


Fig. 5.2

Splints should be long enough so that joints above and below the injured part can't move

### Electrical Shock

#### First Aid:

- Switch off the current or pull out the plug and disconnect the victim from the source of current with the help of wooden stick.
- Never touch the victim before disconnecting, otherwise you may get a shock.
- If the victim is not breathing properly or his heart beat has stop, give artificial respiration and external cardiac massage.
- Check for other injuries like shock or burn.
- Take the victim to a hospital immediately.

#### Points to remember:

- 1) Never touch the victim until the current has been turned off or the victim has been separated from the electrically live wire or object.
- 2) Never touch the victim with wet hands or metallic objects.

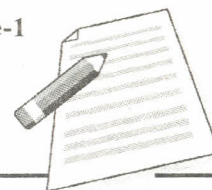


Fig.5.3 Electric shock

**Burns****First Aid:**

- Put the burnt area e.g. fingers, hand, legs under a running cold water.
- Do not apply cotton wool directly over the burnt area.
- Do not apply any greasy substance like cream, lotion etc. on the burnt area.
- Cover the burnt area gently with a bandage or a clean cloth.
- Treat the victim for the shock.
- Take the victim to a hospital immediately.

In case of blisters on the skin, do not try to break it.

**Bites and Stings****A) Snake Bite****First Aid:**

- Tie a bandage, handkerchief or a clean cloth above the bite area so that poison do not spread in the body.
- Do not move the bitten area.
- Gently wash the wound with water.
- Victim of snake bite feels very sleepy so keep him awake.
- Take the victim to a doctor immediately.

**B) Dog Bite****First Aid:**

- Wash the bitten area with soap and water.
- Keep it open.
- Take the victim to the doctor for anti-rabies treatment.



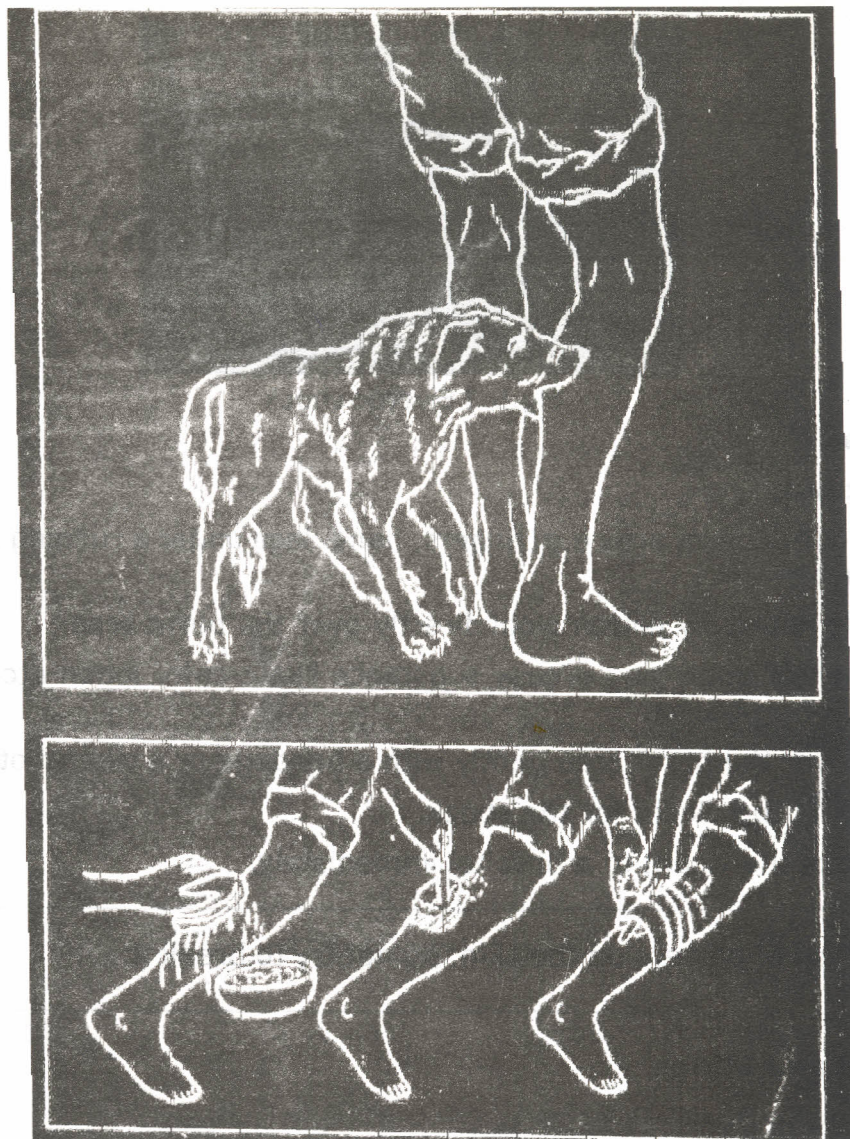


Fig. 5.4 Dog Bite and First Aid

### Swallowing Objects and choking

Children quite often put small objects in their mouth or nose like coins, beads, toy parts, electric parts, small nuts, seeds of plants etc.

#### First Aid:

- Hold the child upside down & pat vigorously on the back.
- In case of grown-ups, stand behind the victim put your arms below the armpit and encircle the abdomen below the navel.
- Join both the hands together and clasp it.





- Press both fists on the abdomen with a quick jerk in the midline.
- If the victim fails to respond send the patient to a hospital for the removal of foreign body.

**Poisoning**

By disinfectants like phenyl, rat poison, kerosene, sleeping pills or poisonous gases like LPG, Smoke from charcoal etc.

**First Aid:**

- Make the victim vomit by the rubbing the back of the throat.
- Make the victim drink plenty of water.
- Take the victim to a hospital immediately.

**INTEXT QUESTIONS 5.2****Fill in the blanks:**

1. In any accident related to the electricity, the first thing to do is to switch off the \_\_\_\_\_.
2. Do not apply any \_\_\_\_\_ substance on the burnt area.
3. For cooling the burnt area, it is advisable to use \_\_\_\_\_.
4. The fractured area can be tied with a \_\_\_\_\_.
5. \_\_\_\_\_ the bleeding part so that blood does not flow out quickly.

**5.5 FIRST AID KIT**

Till now you have learnt to give first aid to the victims of different kind of health emergencies. Different situations require different materials. Let us list out the things which are required to make a First Aid Box, which can be use in case of health emergencies:

1. Bandages - There are 2 types of bandages:
  - (i) Roller Bandage (These are long strips of cloths)
  - (ii) Triangular Bandage
2. Cotton - sterilized cotton for cleaning of wounds.
3. Dettol - To clean wounds.
4. Small scissors - to cut the bandage.
5. Safety pins - for pinning bandages.
6. Burnol - to apply on the burns.

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7. Torch or candle - to be used in dark.
8. Hot water bottle - to give warmth to the patient etc.



Fig. 5.5 First Aid Kit

### 5.6 WHAT YOU HAVE LEARNT

In this lesson we have understood the concept of the First Aid and importance of first aid to save human lives. First aid helps in preventing conditions from worsening. We have learnt important roles of First Aid and First Aid Management on some common conditions. We have also learnt about the First Aid Kit.

- It saves Life.
- Helps in early recovery.
- Prevent worsening of the victim's conditions.
- To reduce pain and sufferings.

The immediate treatment that is given to the victim of an accident or sudden illness before any medical help arrives is called "**First Aid**". Emergency care is required at any time in life and first aid provided at right time not only saves life but also prevents gross damage of essential parts of the body.

Aim of First Aid:



*Notes***Important Rules of First Aid:**

When you are giving first aid to the victim, you are lessening the pain and making him/her comfortable before the arrival of medical help.

For this you have to follow some rules, as follows:

- 1) **Be calm**—Try to be calm so that you can provide proper first aid to the victim.
- 2) **Disperse the crowd**—In case of road accident, try to keep surrounding people away from the victim and loosen his cloths so that he can breathe easily.
- 3) **Move the victim in a suitable safe place**—If the victim has received burns or an electric shock or is choking due to smoke then take him away from the accidental spot.
- 4) **Give artificial respiration**—If the patient is having difficulty in breathing, artificial respiration must be given.
- 5) **Call for a medical help** or take the victim to a hospital immediately.

**5.7 TERMINAL QUESTIONS**

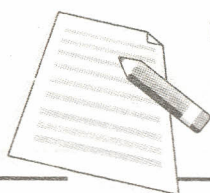
- 1 Write down the qualities of good first aid worker.
- 2 Write a short notes on the first aid treatment in the following situations:
  1. Electric shock
  2. Bleeding
  3. Fracture

**5.8 ANSWER TO INTEXT QUESTIONS****5.1**

1. life
2. calm

**5.2**

1. current
2. greasy
3. cold running water
4. splint
5. Raise

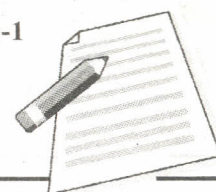


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*Notes***5.9 SUGGESTED ACTIVITY**

- 1) Practice all the procedures in first aid during different type of emergencies along with other school mates.





## YOGA AND EXERCISE

### 6.1 INTRODUCTION

Exercise is necessary for the body since it strengthens the bones and slows down the progress of many diseases. Yogic exercise promotes inner health and harmony; their regular practice helps prevent and cure many common ailments. In this lesson we will discuss the actual meaning and importance of yoga in our daily life.

### 6.2 OBJECTIVES

After reading this lesson you will be able to:

- Understand the meaning and importance of the yoga.
- Explain the precautions and rules of doing yoga.

### 6.3 WHAT IS YOGA

Exercise can be of different types, but yogasanas are the foremost amongst exercises for the muscles and joints.



Fig.6.1 Skipping



Fig.6.2 Yoga



"Yoga is the union of Pran and Apan."

"Yoga is the union of Jivatma and Parmatma."

Yoga is the method by which the restless mind is calmed and energy is directed into constructive channels. Men develop fully- physically, mentally, intellectually and spiritually by means of yoga.

#### 6.4 ASHTANG YOG

According to Patanjali, there are 8 stages of yoga. These are :-

##### 1) YAM - Universal moral commandments or ethical discipline.

It consists of : -

1. Ahinsa (Non violence)
2. Satya (Truth)
3. Asteya (Non-stealing)
4. Brahmacharya (Celibacy)
5. Aparigraha (non hording)

##### 2) NIYAM -

1. Shaucha (Internal cleanliness of body)
2. Santosha (Contentment)
3. Tap
4. Svadhyaya (Study of the self)
5. Ishvara Pranidhana (Dedication to the lord)

##### 3) ASAN

##### 4) PRANAYAM (rhythmic control of breath)

##### 5) PRATYAHAR

##### 6) DHARANA (Concentration)

##### 7) DHYAN (Meditation)

##### 8) SAMADHI

**Note:** The first 4 steps of Ashtang Yog can be practiced by all worldly persons. But the last 4 components can be practiced by Rishi, Munis and Yogis.





## INTEXT QUESTIONS 6.1

1. What is Yoga?

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2. What are the different stages of Ashtang Yog, according to the Patanjali?

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Notes

### 6.5 ASANS

Before we start the practice of yogasans, it is absolutely necessary to follow the principles of YAM and NIYAM and we have to purify our mind and body by regulating our conduct and behavior, also our thoughts and emotions. If we will just keep on doing Asans or simply keep on twisting and turning our body, then we cannot hope much. It will give you only 8-10% benefit. But if we follow YAM and NIYAM and change our habits, way of life, our thoughts and emotions and purify ourselves inside out and then start doing the Asans, then we can hope for at least 80-90% benefits of the yoga.

As many as 84 lakh asans or postures are mentioned in the classics of yoga, however only few asans are commonly used in the day to day practice. Some of them are:-

1. SUKHASAN
2. PADMASAN
3. VAJARASAN
4. SARVANGASAN
5. DHANURASAN
6. SHALABHASAN
7. BHUJANGASAN
8. PAWANMUKTASAN
9. MANDUKASAN
10. SHAVASAN
11. SURYANAMASKAR



## 6.6 ESSENTIALS OF THE YOGA PRACTICE

In order to get full benefit of yoga, it is necessary to understand the following requirements and rules related to its practice:

- 1) Morning time, before breakfast is regarded best for practicing yoga but one can also do it in the evening during the empty stomach.
- 2) In general yogasanas should be practiced before taking meals.
- 3) The body and mind should be in a restful and normal condition at the time of practicing yoga.
- 4) One should do yoga at the same time every day.
- 5) The place of practice should be neat, clean, airy and well ventilated.
- 6) One should practice yoga on the floor, avoid bed.
- 7) Use a carpet or mat on the floor.
- 8) Wear light, loose and cotton cloths.
- 9) Maintain silence while doing yoga, any conversation and listening of music should be avoided.
- 10) Always breathe through the nose while doing asanas.
- 11) Do Yogasanas according to the limits of your body.

## 6.7 PRANAYAM

Pranayam is the yogic art of breathing.

It consists of long, sustained inhalation (puraka), exhalation (rechaka) and retention of breath (Kumbhak).

Purak stimulates the system.

Rechaka throws out the toxins and bad air from the body.

Kumbhaka distributes the vital energy throughout the body.

Thus the purpose of pranayam is to inspire, motivate, regulate and balance the vital force or *prana* inside the body. That is why pranayama is called the soul of yoga.

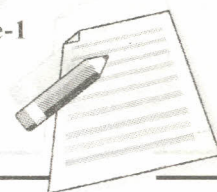
As bathing is necessary for purifying the body, similarly pranayam is essential for purifying the mind.

## 6.8 BENEFITS OF PRANAYAMA

Regular practice of pranayam has following benefits:

1. Pranayam leads to control of the emotions which in turn brings stability, concentration and mental peace.
2. Pranayam keeps the lungs pure by increasing the flow of fresh oxygenated blood.
3. Pranayam purifies *nadis* and remove sluggishness from the body.





4. It increases vigor, vitality, memory and perception.
5. Pranayam is a divine method which cleans the organs, senses, mind, intellect and ego.

### 6.9 ESSENTIALS OF PRANAYAM

Following factors are important while doing pranayam:-

- The best position to practice pranayam is *padmasan*. If for some reason that position is difficult to adopt, it can be done while sitting in any comfortable position like *Sukhasan*.
- One should keep the back, neck and head in a straight line.
- The body and mind should be in its natural relaxed condition.
- Use your right finger and thumb on either side of the nose to control the right and left nostril during inhalation and exhalation.
- One should inhale and exhale slowly and rhythmically.
- The beginner of pranayam should practice inhaling and exhaling only, for a few days, in the ratio of 1:2. For example if inhalation takes 5 seconds, exhalation should be for 10 seconds.
- While practicing Pranayam maintain the ratio of 1:4:2 for inhaling, retention of breath and exhale respectively.

### 6.10 TYPES OF PRANAYAM

According to yogshastra following types of pranayam are beneficial in the treatment of some common disease. These are:-

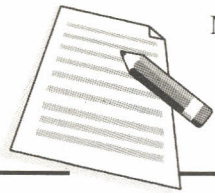
1. Nadishodhan Pranayam
2. Suryabhedhi Pranayam
3. Ujjayi Pranayam
4. Shitkari Pranayam
5. Shitali Pranayam
6. Brahmari Pranayam
7. Bhastrika Pranayam
8. Kapalabhati Pranayam



### INTEXT QUESTIONS 6.2

(A) State True or false:-

1. Pranayam is the yogic art of breathing. ( )
2. While doing pranayam one should keep the back, neck and head in a straight line. ( )



3. While practicing Pranayam maintain the ratio of 1:2:3 for inhaling, retention of breath and exhaling respectively. ( )

### (B) Fill in the Blanks

1. The best position to practice pranayam is \_\_\_\_\_.
2. \_\_\_\_\_ keeps the lungs pure by increasing the flow of fresh blood.
3. The practice, which is used to achieve the powers of your mind is known as \_\_\_\_\_.

## 6.11 MEDITATION

Meditation and Dhyan sadhna is a scientific aspect of Indian spiritual culture, which helps the practitioner to visualize or gain knowledge of minute secrets present inside them. This can be achieved with the power of your mind and subconscious mind. The practice, which is used to achieve the powers of your mind is known as Dhyan Sadhna. *Dhayan* is a pure and free stage of our inner soul. Meditation helps in strengthening the powers and keeps disturbed mind in peaceful condition. It increases the concentration power. Meditation is equally important for everybody.



## 6.12 TERMINAL QUESTIONS

1. Name few commonly used asans in day-to-day life.
2. What do you mean by Pranayam? List the Pranayam.
3. Write the names of any five Asanas.

## 6.13 ANSWER TO INTEXT QUESTIONS

### 6.1

**Ans.1.** Yoga is the method by which the restless mind is calmed and energy is directed into constructive channels.

**Ans.2.** According to patanjli 8 stages of Yog are:-

- 1) YAM
- 2) NIYAM
- 3) ASAN
- 4) PRANAYAM
- 5) PRATYAHAR
- 6) DHARANA
- 7) DHYANA
- 8) SAMADHI





**6.2**

**(A)**

1. True
2. True
3. False

**(B)**

Fill in the blanks:-

- 1 Padmasan
- 2 Pranayam
- 3 Dhyan Sadhna

**SUGGESTED ACTIVITY**

Visit any yoga centre of your locality and observe various asans and pranayam.



## LAB ARRANGEMENT AND SAFETY PRECAUTION

### 7.1 INTRODUCTION

Lab assistants & Technicians should know many important things while working in a pathology laboratory. Clean & neat laboratory facilities are necessary to give good services to the patients. It will help to produce more accurate results. If the technicians know well about do's & don'ts in the lab, he will work effectively which will ultimately lead to keeping good standard of work & giving accurate results. Disinfection in the lab is a very important step for safety of patients as well as for technicians.

In this lesson, we will discuss the details about lab arrangement & lab methodology.

### 7.2 OBJECTIVES

After reading this lesson you will be able to know & understand about:

- laboratory arrangement & set up;
- electric supply;
- water supply;
- norms-behavior of technician;
- various ways of Disinfection in the lab.

### 7.3 LABORATORY ARRANGEMENT AND SET UP

- Clean & good laboratory facilities are necessary to give good services to the patients.
- The lab should be airy & with big windows to get natural light.
- The walls should be painted with white or light colors.





Notes

- Reagent bottles & glassware should be kept in open racks which can be easily picked up.
- The lab should have proper furniture such as working tables, writing tables & chairs etc.
- Laboratory sinks should be washable for glass wears.
- The lab arrangement will depend on available space. In a small laboratory, technicians working table, arrangement for blood collection, writing tables should be arranged in one room.
- In big laboratories there would be separate waiting room for patients, room for blood collection, room for carrying out test.
- The lab should have attached toilet & arrangement for disposal of samples.
- There should be adequate washing facilities.



### INTEXT QUESTIONS 7.1

State true & false.

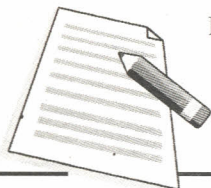
1. The lab room would be airy & with big windows to get natural light. ( )
2. Reagent bottles & glass wear should be kept in open racks which can be easily picked up. ( )

## 7.2 ELECTRICITY SUPPLY

- The electricity supply plays an important role in lab to run the instruments like centrifuge, refrigerator, hot water bath & sterilizer.
- The electric supply would be three phase connection with proper earthing.
- Regular check up of electric instruments for shock help to avoid any accidents.

## 7.3 WATER SUPPLY

- The Laboratory needs water for cleaning & washing of glass wear.
- It would be through tap up to wash basin or sink.
- If there is no tap water available from municipal council, the lab room would be supplied with overhead water supply tank.
- The lab would have proper disposal facilities to dispose samples & chemicals & used water after washing & cleaning.
- Waste water from the laboratory would be collected in soak pit which would be absorbed in the soil.



Notes

**INTEXT QUESTIONS 7.2****Fill in the blanks**

- The lab have instruments like \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.
- The electric connection should have proper \_\_\_\_\_.
- \_\_\_\_\_ of electric instruments for shock will help to avoid any accident.
- The lab would have water supply through tap up to \_\_\_\_\_.
- The laboratory would need water for cleaning & washing of \_\_\_\_\_.
- The lab would have proper \_\_\_\_\_ facilities to dispose samples & chemicals & used water after washing & cleaning.

**7.4 NORMS-BEHAVIOR OF TECHNICIAN**

The lab technicians would to know that what are the duties & behaviour of the Lab Technician-

- Punctuality at workplace is very important.
- Neatness & clean clothes, using the lab coat is also important.
- Arranging the glass wear, needles, chemical bottles at proper place is also very important. Giving proper instructions to the patients while sample collection will help for accurate lab results.
- Wash the hands after completing the test. Bringing eatables in the lab should be strictly avoided.
- Honesty & clean practices while carrying out test is very important.
- If there occurs any mistake by the technicians while carrying out the procedure it should be repeated; do not disclose any confidential information about the patient reports to others.
- Put off gas connection, electric connections & other electric instruments, water taps before closing the lab.

**INTEXT QUESTIONS 7.3****Fill in the blanks**

1. Giving proper instructions to the patients while sample collection will help for \_\_\_\_\_ lab results.
2. Bringing \_\_\_\_\_ in the \_\_\_\_\_ should be strictly avoided.





3. Do not disclose any \_\_\_\_\_ information about the patient reports to others.
4. List out the precautions to be taken before closing the lab
  - 1) \_\_\_\_\_ 2) \_\_\_\_\_
  - 3) \_\_\_\_\_ 4) \_\_\_\_\_

## 7.5 DISINFECTION OF LAB

Various ways of Disinfection -

- Disinfection with boiling water- Needles & blood lancets are disinfected with boiling water of 100°C for 20 minutes. Glass wears, syringes, test tubes, pipettes are also disinfected in this way.
- Heating with spirit lamp -Metal appliances used for bacteriology such as needles, forceps, wire loops are sterilized by heating until red hot with spirit lamp.
- Disinfection with help of pressure cooker- During MPN test the medium is kept in boiling water in the pressure cooker for 20 minutes .
- Disinfection by incineration -The test samples for sputum test are discarded by burning or incineration.
- Use new needle for every new patient.
- All the urine samples should be discarded in the toilet.
- The sputum & blood samples should be mixed with disinfectant solution & then discarded in toilets.
- Wash all the specimen collection bottles with detergent solution & use pressure cooker for sterilization.
- The floor in the lab should be cleaned daily with Dettol solution.
- Any specimen spilled on the table or floor should be wiped first with cotton swab & then clean with spirit.

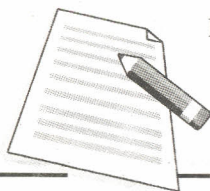


### INTEXT QUESTIONS 7.4

Fill in the blanks

- 1) \_\_\_\_\_ & \_\_\_\_\_ are disinfected with boiling water of 100°C for 20 minutes.
- 2) During \_\_\_\_\_ the medium is kept in boiling water in the pressure cooker for 20 minutes.
- 3) Use \_\_\_\_\_ needle for every new patient.
- 4) Any specimen spilled on the table or floor should be wiped first with cotton swab & then clean with \_\_\_\_\_.

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**7.6 WHAT YOU HAVE LEARNT**

- Clean & neat laboratory facilities are necessary to give good services to the patients & to produce accurate results.
- Arrangements in Big Laboratory- separate waiting room for patients, room for blood collection, room for carrying out test. & attached toilet & arrangement for disposal of samples.
- The electric supply should have proper earthing & regular check up of instruments.
- The water supply is necessary for cleaning & washing.
- Various ways of Disinfection in the lab, would be followed.

**7.7 TERMINAL QUESTIONS**

1. Write an essay on the Lab arrangement.
2. Describe the various ways on Disinfections.

**7.8 ANSWER TO INTEXT QUESTIONS****7.1**

- 1) True 2) True

**7.2**

- 1) centrifuge, refrigerator, hot water bath 2) earthing 3) Regular check up 4) basin 5) glass wear 6) disposal

**7.3**

- 1) accurate 2) eatables, lab 3) confidential 4) Put off gas connection, electric connections & other electric instruments, water taps.

**7.4**

- 1) Needles; blood lancets 2) MPN test 3) New 4) Spirit

**SUGGESTED ACTIVITY**

Visit a pathology laboratory in your town & observe the arrangements & set up in the lab. Take an interview of the technician on, do's & don't of the technician disinfection in the lab.