GOVERNMENT OF TAMIL NADU

HIGHER SECONDARY FIRST YEAR

VOCATIONAL EDUCATION

NURSING

THEORY & PRACTICAL

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Department of School Education

Untouchability is Inhuman and a Crime

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CONTENT

NURSING VOCATIONAL THEORY

NURSING VOCATIONAL PRACTICAL

RX251W

E-book

RX5RPT

Assessment

B190_11_NUR_EM

DIGI links

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How to use the book?

Introduction	Student would be motivated and focus attention to the subject matter.
Learning Objectives: 	List out all the major topics and provide students with a clear purpose to focus their learning efforts.
Case Study	Life experiences and indepth understanding of the concept given.
Do you Know? 	Gives additional related information for broader understanding.
Activity: 	Given to elicit critical thinking , creative thinking and application in day to day activities.
QR Code 	Enhance long term memory through Audio Visual learning.
ICT Corner	References to the relevant website for enhanced information.
Conclusion	An outline map of the entire information given in gist.
Glossary 	Detailed meaning in English and Tamil for new terms.
References/ Website Links	Basic raw materials used for the birth and development of the text.

CAREER GUIDANCE

PROFESSIONAL COURSE

- Auxiliary Nurse Midwife (ANM)
- Diploma in Nursing (GNM)
- Post Basic B.Sc., Nursing
- M.Sc., Nursing
- M.phil / Ph.D Nursing

PG DIPLOMA COURSES (One Year)

- Cardio-Thoracic Nursing
- Critical Care Nursing
- Neonatal Nursing
- Neuro Science Nursing

UG DEGREE COURSES

- B.Sc., Computer Science
- B.Sc., Clinical Nutrition and Dietetics
- B.Sc., Home Science
- B.Sc., Human Development
- B.Sc., Botany
- B.Sc., Zoology
- B.Sc., Speech Therapists and Audiologists
- B.Sc., Physician Assistant
  B.Sc., Radiology and Imaging Technology
- B.Sc., Nuclear Medicine Technology
- B.Sc., Cardiac Technology
- B.Sc., Radiotherapy Technology
- B.Sc., Dialysis Technology
- B.Sc., Respiratory Therapy
- B.Sc., Cardio Pulmonary Perfusion Technology
- B.Sc., Operation Theatre & Anaesthesia Technology
- B.Sc., Accident and Emergency care Technology
- B.Sc., Degree in Medical Laboratory Technology

CERTIFICATE COURSE (One Year)

- Medical Transcription
- Dark Room Assistant
- Dental Assistant
- ECG Technician
- Lab Technician
- OT Technician
- X – Ray Technician
- Dental Hygienist
- Dental Surgery Assistant
- I.C.U Technician
- Nursing Care Assistant
- Radiology Assistant
- Operation Theatre Technology
- Ophthalmic Assistant
- Wellness Management Assistant
- Geriatrics Assistant
- Blood Transfusion Assistant
- New Born and Infant Care Assistant
- Multipurpose Health Worker
- Yoga & Naturopathy
- Medical Representative Training
- ECG Assistant

DIPLOMA COURSE (Two Years)

- Diploma in Radiography
- Diploma in Optometrists
- Diploma in Health Care and Hospital Management
- Diploma in Occupational Therapy
- Diploma in Orthotic and Prosthetic
- Diploma in Medical Lab Technician
- Diploma in ECG Technician
- Diploma in Cardiology Technician
- Diploma in Cathlab Technician
- Diploma in Perfusion Technician
- Diploma in Anaesthesia Technician
- Diploma in Dialysis Technician
- Diploma in Medical Imaging Technician
- Diploma in Respiratory Therapy Technician
- Diploma in Medical Sterilization Management and OT Technician

M.Phil & Ph.D

- Above mentioned all the courses with master degree

PG DEGREE COURSES

All the PG courses available for the UG Disciplines

Unit 1

NURSE AND NURSING AS A PROFESSION

RXB13J

LEARNING OBJECTIVES

At the end of this chapter, the students will be able to,

1. Gain knowledge about history of nursing.
2. Know about the concept of health, illness and about hospital.
3. Nursing and the scope of nursing.
4. Know about a nurse, the qualities of a nurse, the functions of a nurse, fundamental rules of nurse and the nurses pledge.

1.1 INTRODUCTION

நோய்நாடி நோய்முதல் நாடி அதுதணிக்கும்
வாய்நாடி வாய்ப்பச் செயல்

Meaning

Let the physician enquire into the (nature of the) disease, its cause and its method of cure and treat it faithfully according to medical rule

Thiruvalluvar

In the past most individuals and societies viewed good health or wellness as the opposite or absence of disease.

Health is highly desirable state for all human being. Health is an individual perception; it has many meaning and views differently to different people (It differs from person to person).

Wellness is the condition in which an individual functions at an optimal level.

Proverbs on Health

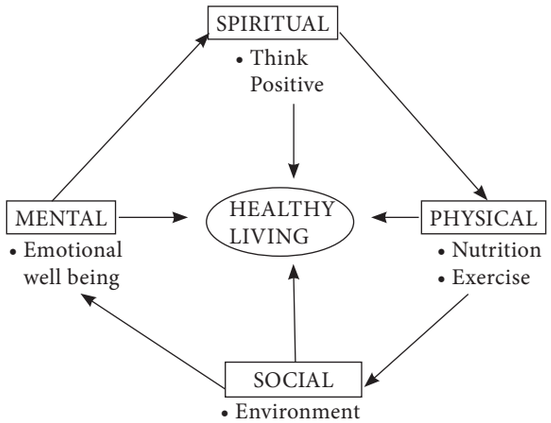
Early to bed and early to rise makes a man
- healthy
- wealthy and
- wise

1.2 DEFINITION OF HEALTH

Defining health is a difficult task. There are many definitions of health offered from time to time. Some of the commonly referred definition are as follows.

"Health is a state of complete
- Physical
- Mental
- Social and
- Spiritual

Well-being, not merely the absence of disease or infirmity" -WHO



Health and illness are defined according to individual perception. Health often includes conditions previously considered to be illness.

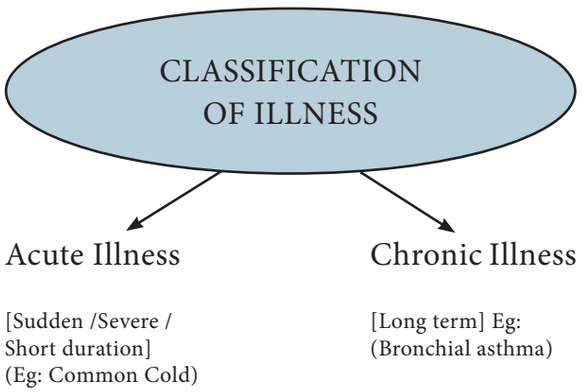
> "Health is the condition of being sound body, mind or spirit. Especially freedom from physical disease or pain"
>
> -Webster's Dictionary

For example: A person with epilepsy who has learned to control seizures with medication and who functions at home and work (office) may no longer consider himself or herself ill.

1.3 ILLNESS

Illness is an inability of an individuals' adaptive response to maintain physical and emotional balances that subsequently result in an impairment of functional abilities.

> **Proverb**
> **"Health is not Valued till Sickness Comes"**
> **"Health is Wealth."**



Travis's Illness – Wellness Continuum Model signifies that wellness is a process never a static state.

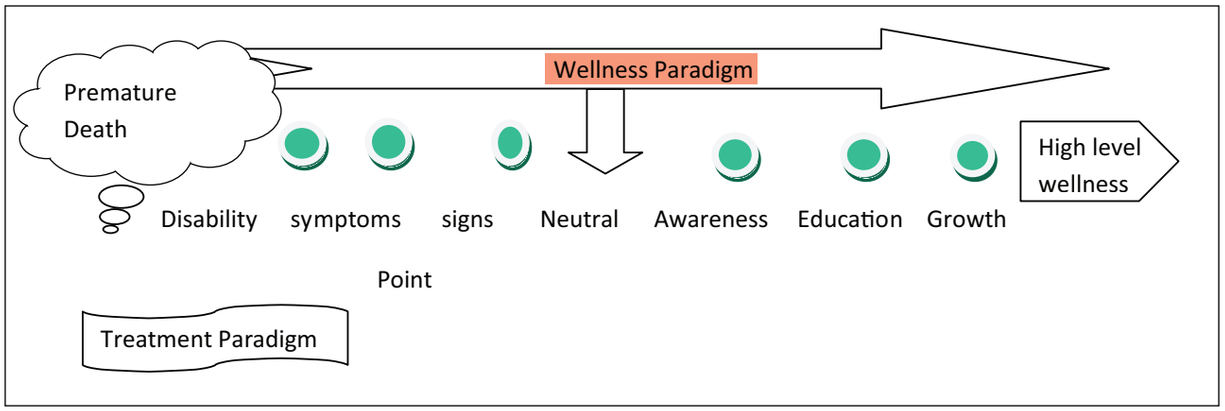
RXEMRG

1.4 HOSPITAL

Definition of Hospital

Hospital means an Institution in which

- Sick/injured are treated.



- Healthy persons are helped to promote and maintain an optimum level of well being
- Prevent diseases.

The word "HOSPITAL" derived from
- **LATIN WORD – Hospitalis – For a guest**
- **FRENCH WORD – "Hospes" – A host / A guest**

1.4.1 Types of Hospital

- Government Hospitals
- Railway Hospitals
- Military Hospitals
- Christian Mission Hospitals
- ESI (Employee state Insurance) Hospitals
- Private /Company Hospital/ Corporate Hospitals
- Voluntary Health Agencies

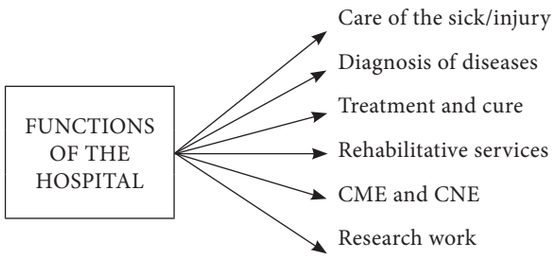
A Hospital bed is a parked taxi with the meter running.....
..£..$...¥....€....₹.

GOVERNMENT MEDICAL CARE SERVICES

MULTI SUPER SPECIALITY HOSPITALS	TN GOVT MULTI SPECIALITY HOSPITAL, CHENNAI
GENERAL HOSPITALS ↑	MADRAS MEDICAL COLLEGE
DISTRICT HOSPITALS ↑	VELLORE ADUKAMPARI HOSPITAL
TALUK BLOCK HOSPITALS ↑	WALAJAH TALUK HOSPITAL
PRIMARY HEALTH CENTRE ↑	LALAPET PHC
REFERRAL MOBILE CLINICS ↑	RBSK-PROG
HOME CARE VILLAGES /TOWNS ↑	VILLAGE ANM VISITS VANAPADI VILLAGE

1.4.2 Functions of the Hospital

The main aim of a hospital is patient care & comfort



Hospitals are the only place where the result "Positive" can bring both pleasant and unpleasant feelings of patient.

STUDENT ACTIVITIES

Find out the types of hospitals in and around your location and know about their services to the community.

1.5 NURSE AND NURSING

Definition of a Nurse

Nurse is a person who has specially qualified knowledge, cleverness and devotedness to the patient waited upon.

Quotes
God found some of the strongest women and made them nurses.
"Nurses are the Heart of Health Care Team"
-Donna Wilk

Definition of Nursing

Nursing is the process of recognizing, understanding and meeting the health needs of any person or society and is based upon a constantly changing body of scientific knowledge.

1.5.1 Qualities of a Nurse

• **Cleanliness**	Clean, neat & Tidy
• **Resourcefulness**	Uses her wisdom / knowledge
• **Willingness to learn**	Coordinates with health team
• **Poise**	Control of her emotions, mental thoughts and actions
• **Loyalty & Honesty**	Her relationship with clients
• **Courage**	Ready to meet any problem with courage
• **A caring Attitude**	A sense of spiritual love
• **Self Discipline**	She needs to be a self disciplined person
• **Willingness & Self Sacrifice**	These two qualities are complimentary to each other. She sacrifices her time, comfort and material benefits
• **Love**	Adds qualities like mercy, kindness, gentleness, patience and understanding

Quotes

"If I am to care for people in hospital I really must know every aspect of their treatment and to understand their suffering"

-Princes Diana

Princess of Wales

1.5.2 Functions of nurse

FUNCTIONS OF NURSE	CARE GIVER	The nurse provides direct care to patients
	COUNSELLOR	The nurse assists patients to make decisions
	TEACHER	The nurse teaches formal informal intentional or incidental
	ADVOCATE	A nurse speaks up for a acts on behalf of patient
	RESOURCE PERSON	A nurse provides skilled intervention and information

1.5.3 Fundamental Rules for Nursing

- The nurse should wear the uniform and respect it
- Be obedient and show proper respect to her superiors (Head nurses)
- Always be neat and clean in appearance
- Be disciplined in use of time, cleanliness and order
- Maintain good relationship with health team
- Have respect for the spiritual belief of the patient
- Do not take any gift or money from the patients
- The nurse should maintain confidence of patients

1.5.4 The vital aspects of nursing which the sub-commitee on code of ethics revised

FIVE MAJOR ASPECTS		
NURSES	The profession	• Role of a nurse - as a leader active participator • For setting up and carrying out standards of – practice - education
	People	• Nursing care • Values , customs and religious belief must be respected. • Maintain confidence
	Co-workers	• Maintain cooperation and work with the member of the health team.
	Practice	• Best care possible at all times. • Maintain high standards of practice
	Society	• For positive promotion of health. • Initiating and supporting action to meet the health and social needs.

Quotes

Aathichudi - explains many qualities a nurse should possess;

With your health and wealth do best to others.

கிழமைப்பட வாழ்

Let others feel you are trust worthy and good.

தக்கோள் எனத் திரி

Be honest and truthful.

நேர்பட ஒழுகு

–Avvaiyar.

1.6 SCOPE OF NURSING

<table>
<tr><td>Independent Nurse Practitioner</td><td colspan="2">Post Doctoral Degree in Nursing</td><td>Nurse Researcher
• Investigates Nursing problems to improve care
• Expand the scope of Nursing.</td></tr>
<tr><td></td><td colspan="2">Phd in Nursing(5 years)
MPhil in Nursing (2 years).</td><td>Nurse Administrators
• In Education
• In Hospital Services</td></tr>
<tr><td>Diploma Certification Programme
• Critical care Nurse practioners.
• OT Nursing
• Cardio Thoracic Nursing
• Family Nurse practioner.</td><td colspan="2">MSc. in Nursing (2 years)</td><td>Nurse Educator
• Works in Schools of Nursing
• Provides Educational Programmes for Student Nurses.
• Nursing Service.</td></tr>
<tr><td rowspan="2"></td><td>Post Basic BSc (2 years)</td><td rowspan="2">B Sc in nursing (4 years)</td><td rowspan="2">Clinical Nurse specialist
• Patient Care
• Clinical Educator
• Nurse Practitioners
• Nurse Midwives
• Nurse Anaesthetists
• Nurse Researcher</td></tr>
<tr><td>Diploma in Nursing and Midwifery (3 years) (DGNM)</td></tr>
<tr><td>Auxillary Nurse Midwifery (2 years)</td><td colspan="2">Higher Secondary Students</td><td>• Home Visit</td></tr>
</table>

Eligiblity for jobs in Abroad (Foreign Country)
Competitive exams
(CGFNS, NCLEX)-USA
(Prometric, gulf countries (IELTS)

25% Of Seats for GNM (General Nursing) – TN Government is allotted for **HS VOCATIONAL NURSING** students only.

1.7 HISTORY OF NURSING

- Early Christian Era
- Middle Ages
- The Dawn of Modern Nursing

STUDENT'S ACTIVITY

Browse and find out the best Nursing Colleges in Tamil Nadu

AIM HIGH AND SUCCEED

EARLY CHRISTIAN ERA

Nursing in pre-Christian times, religious beliefs had great influence on the caring for the sick and suffering.

Christianity believed that one should render services with love to humanity without any reward. It was equal to one's sincere love to God. This principle

was absorbed in nursing and helped to improve the status of a nurse. Some of the examples of such women are as follows.

PHOEBA	• First Deaconesses, Intelligent and Educated • Best Nursing Care for the Sick in Their Homes • Compared as "Modern Public Health Nurse"
FABIOLA	• Daughter of a great Roman Noble • Converted her palace into a hospital – 'First Christian Hospital in Rome' • She collected the poor and sick, cared them all by herself 
PAULA	• She devoted herself for the service of the sick • She built hospitals and monastery in Bethlehem for strangers, pilgrims, travellers and for the sick
MARCELLA	• She lead a group of women and indulged them in works of charity

MIDDLE AGES

Monks and Nuns dedicated to the cause of human suffering worked as doctors and nurses. Late in the 12th & 13th centuries nursing became differentiated from medicine and surgery

THE DAWN OF MODERN NURSING

From the late 1700s through 1853, the manner in which the sick were cared, remained unchanged. In Europe, the dawn of Nursing was underway.

The Deaconess Institute of Kaiserswerth, Germany, was established in 1836 by pastor Theodore Fliedner, to train the Deaconesses to care for the sick, and to create provision of social influence throughout the world.

QUOTES

"I attribute my success to this:-
I never gave or took an excuse"

-Florence Nightingale

1.8 MORDERN NURSING

Miss Florence Nightingale known for her devotion to the services of the poor and the

sick, and for the great deeds for humanity and to raise the status of nursing profession.

Florence Nightingale was born in a wealthy English family on 12th May 1820. She had a great desire to become a nurse. She was dissatisfied with the daily routine lifestyle of the upper class woman. She had classical education which provided her with an understanding of circumstances of the world in which she lived.

She became aware of the inadequate care being provided in hospitals. She accompanied her mother to visit the ill at hospitals. She visited hospitals in England and Europe.

She recognized that nurses required

- Knowledge
- Training and
- Discipline

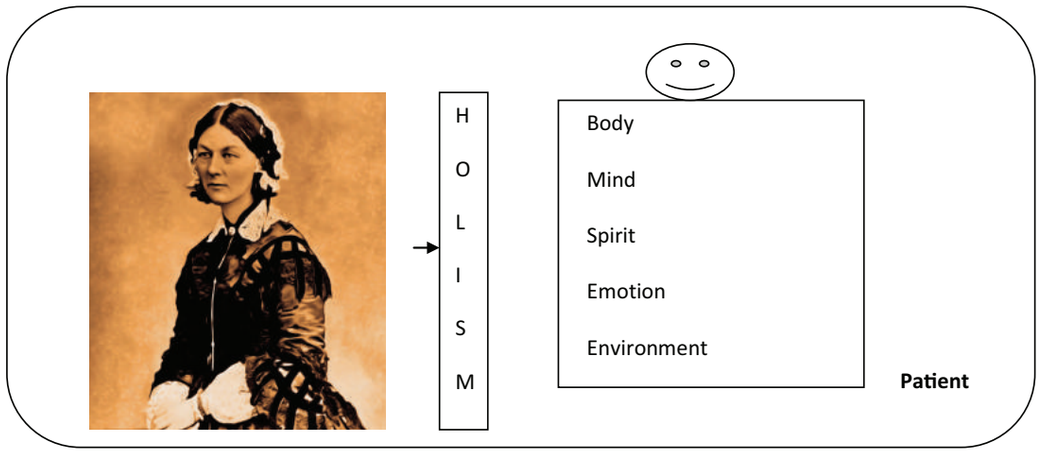
Nightingale was admitted to the training programme at the Nursing school at Kaiserwerth in 1850. After her training, in 1853 she was appointed as superintendent of the Institution for The Care of the Sick Gentlewomen in London.

She had an opportunity to give her best service to the wounded soldiers in the Crimean War in 1854. She attended thousands of wounded and dying soldiers. For which she was rightly known as "The lady with the lamp"

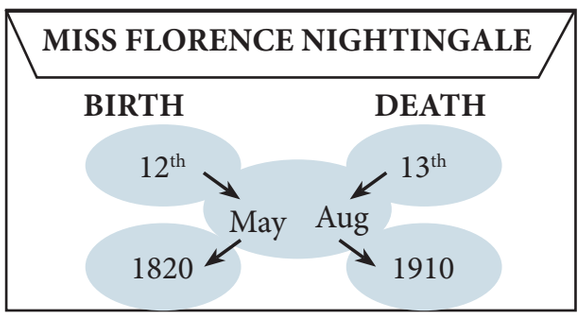
Miss Nightingale introduced enormous improvements in military hospitals. She also founded the first training school for nurses – St. Thomas Hospital, London, 1860. She shared her ideas about nursing and nursing education.

Miss Nightingale was the first to mention Holism (Treating the whole patient) in Nursing.

Nightingale was the founder of modern nursing education. She planned a complete public health programme. Despite her ill health she worked for the development of nursing services without taking sufficient rest.



She died peacefully in her sleep at the age of 90 (13th Aug 1910)



In recognition of her meritorious help to mankind. She was offered the "ORDER OF MERIT" in 1907. She was the first lady recipient for such an honour.

Award

"The Order of Merit is an order of merit recognizing distinguished service in the armed forces, science, art, literature or for the promotion of culture".

1.9 FLORENCE NIGHTINGALE PLEDGE

Mrs. Lystra E.Gretter in 1893 composed a modified Hippocratic Oath nursed, as a token of esteem founder of modern Nursing, Miss. Florence Nightingale.

The President confers "Florence Nightingale Awards" to 35 Nurses across the Country on International Nurses Day "12th May" every year.

"I solemnly pledge myself before God and in presence of the assembly, to practice my profession with dedication"

"I will serve mankind with love and compassion, recognizing their dignity and rights irrespective of colour, caste, creed, religion and nationality"

"I will endeavour to maintain up-to-date knowledge and skill to uphold standard of nursing care to individual, family and community in all settings and in all aspects of holistic care as a members of the health care team"

"I will hold in confidence personal matters of my clients committed to my care and help them to develop confidence in care rendered by me"

"I will refrain from any activity that will harm my personal and professional dignity as a nurse"

"I will actively support my profession and strive towards its advancement"

"I will fulfill my responsibilities as a citizen and encourage change towards better health"

Florence Nightingale Award is given by Government every year on May 12th - Nurses Day

CGFNS	-	Commission on Graduates of Foreign Nursing Schools
NCLEX	-	National Council Licensure Examination
IELTS	-	International English language test system

Do You Know?

Gulf Countries are:

Bahrain.
Kuwait.
Oman.
Qatar.
Saudi Arabia
United Arab Emirates.

CONCLUSION

Topics such as definition of health, illness, hospital and its functions, nurse and nursing, history of nursing,the qualities of a nurse, functions of a nurse,the nurses pledge were discussed.

RXNIT4

EVALUATION

I. Choose the correct answers (1 mark)

1. The word 'Hospital' derived from the French word
   a. Hospitals b. Hopes
   c. Hospes d. None of the above.
2. The first Christian Hospital in Rome, was the palace of
   a. Fabiola b. Paula
   c. Phoeba d. Marcella.
3. The founder of modern nursing is
   a. Fabiola b. Paula
   c. Phoeba d. Nightingale.
4. Miss.Florence Nightingale was born on
   a. 12th May 1821 b. 12th May 1820
   c. 13th May 1820 d. 13th May 1910
5. 'The Florence Nightingale Pledge' was composed by
   a. Miss. Florence Nightingale
   b. Theodore fliedner
   c. Hippocratis
   d. Mrs. Lystra. E. Gretter.

II. Write short answers (3 marks)

1. Define health according to W.H.O.
2. Define illness.
3. Classification of illness.
4. What are the types of hospitals?
5. Define-Nurse
6. Define-Nursing.

III. Write short notes (5 marks)

1. Health illness continuum.
2. What are the functions of a hospital?
3. What are the functions of a Nurse?
4. Explain the five major vital aspects of Nursing revised by the sub-committee on code of Ethics.
5. History of Nursing – Early Christian Era.

IV. Write an essay for the following questions (10 marks)

1. Qualities of a Nurse.
2. Fundamental rules for nursing.
3. Write about Miss. Florence Nightingale.
4. Florence Nightingale Pledge.

A-Z GLOSSARY

Ethics –(நெறிமுறைகள்) - Moral Principles of groups.

Profession –(தொழில்) - Occupation involves prolonged training and a formal qualification.

Infirmity – (நலிந்த தளர்ந்த நிலை) - physical or mental weakness.

REFERENCE BOOKS

1. Professional Adjustments and Ethics for Nurses in India.-Mrs.Ann.J.Zwemer.
2. A New Textbook for Nurses in India. Vol 1 & 2 CMAI: South India Branch.

INTERNET LINKS

- **https://lpntornbridge.org/nursing-history**
- **https://en.wikipedia.org/wiki/History_of_nursing**
- **https://www.britannica.com/topic/nursing**
- **https://www.jblearning.com/samples/0763752258/52258_ch01_roux.pdf**
- **https://www.news-medical.net/health/History-of-Nursing.aspx**

Unit 2

ANATOMY AND PHYSIOLOGY

RXTS6U

LEARNING OBJECTIVES

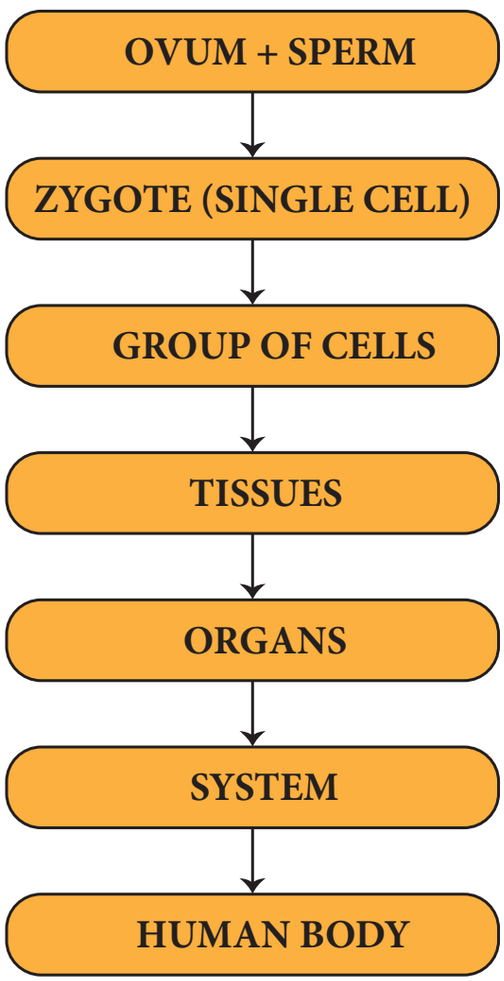
At the end of this chapter, the students will be able to,

1. Identify various tissues, organs, systems of the human body.
2. Gain knowledge about the anatomy of various organs and the functions of them.
3. Gain knowledge about the sense organs and its functions.
4. Conduct an exhibition on anatomy and physiology with charts, models and working models.

2.1 INTRODUCTION

Human body is a developed multicellular organism. It consists of billions of cells. Tissues are formed from many cells eg. Muscles and bones etc., the body develops from a single cell fertilized egg cell. (zygote) This cell multiplies rapidly and forms a group of cells.

Different tissues of the body are developed from the multiplication of cells. Each tissue has special function to carry out in the body. These tissues are grouped together to form organs. An organ is a group of tissues arranged in a special manner to carry out a special task eg. Stomach, the heart, the kidney, bones, muscles and nerves etc., these organs are grouped together to make up a system. A system is a group of organs which together carryout one of the essential functions of the body eg. Digestive system, respiratory system etc.,



2.1 (a) Definition

Anatomy - A study of the structure of the body.
Physiology - A study of the functions of the body.

2.1 (b) Anatomical Positions

When a person standing upright with the head facing forward, arms by the sides and the palms of the hands facing forward and feet together is said to be anatomical position.

The body is wonderfully made, like a complex perfect machine. Each part is specially constructed to carry out its own function, and to work as a whole with other parts.

2.2 CELL BODY AS A WHOLE

All living things, including the human body, are made up of living cells. Cell is the structural and functional unit of human body. Just as many kinds of materials used in the construction of a large building, in the same way different kinds of cells are found in the formation of body.

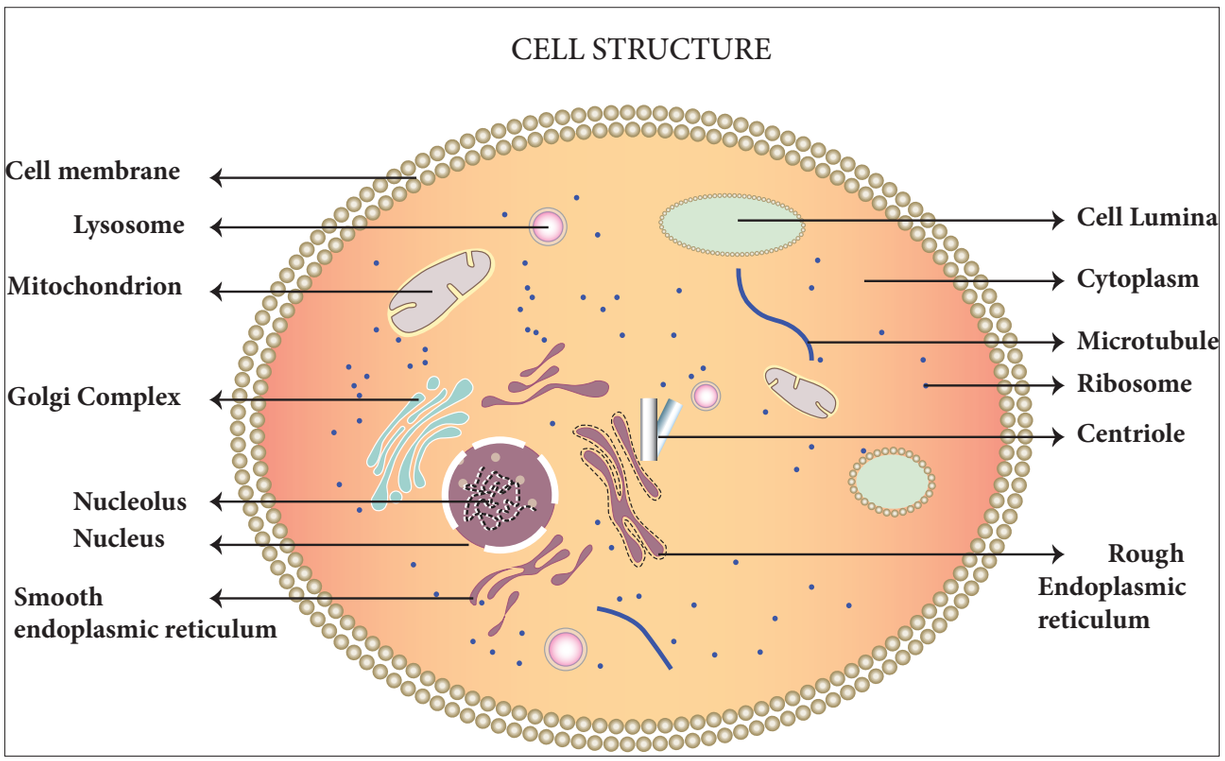
STRUCTURE OF A CELL

A cell has the following parts

- Cell membrane – the outer covering
- Protoplasm – main substance of the cell
- Nucleus – which controls activities of the cell.

FUNCTIONS OF THE CELL

Digestion – intake of nutrients
Excretion – elimination of waste
Respiration – taking in oxygen, and breathing out carbon dioxide
Growth and repair – increases the size of the cells and replacement of worn out cell.



Reproduction – cells reproduce by two ways either mitosis or meiosis.

TISSUES

There are five basic tissues, which makeup the organs of the body.

1. Epithelial tissue:
   It covers the internal and external surfaces of organs.
2. Nervous tissue
   It consists of neuron and dendrites with conducts nerve impulses.
3. Connective tissue:
   It supports and binds together all the other tissues.
4. Muscular tissue
   This tissue has the power of contraction which causes movement.
5. Sclerous tissue
   It is a special type of connective tissue mainly for skeletal system.

ORGANS

Tissues are joined in larger units called organs eg. Heart, lung, brain etc.,

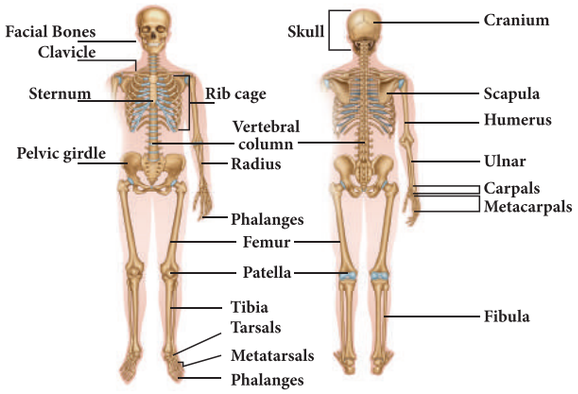
SYSTEM

System is a group of organs, which together carry out one of the essential functions of the body. There are nine systems listed below.

GLAND

A gland is a secretary organ, which function as a separate organ. There are two basic types of gland.

1. Endocrine gland – they pour their secretion directly into the blood stream eg. Thyroid, Adrenals etc.,
2. Exocrine gland – these discharge their secretions through ducts eg. Liver, pancreas etc.,



Skeletal System

S.No	Systems of the body	Functions
1.	Skeletal system	Support, movement and protection
2.	Muscular system	Movements and productions of organs
3.	Nervous system	Control of body activities
4.	Circulatory system	Transport food, oxygen and waste products etc.,
5.	Respiratory system	Taking in oxygen and giving out carbon-di-oxide.
6.	Digestive system	Taking in food, breaking it down into nutrients for absorption into body cells.
7.	Excretory system	Removal of waste matter from the body
8.	Endocrine system	Production of hormones which influence the activity of cells
9.	Reproductive system	Enables new individuals to be born

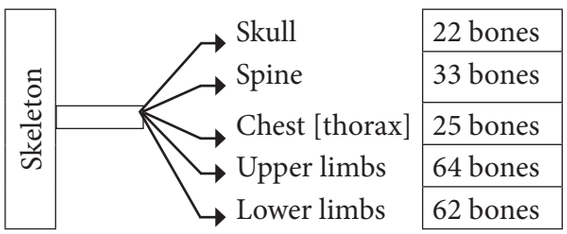
The longest bone in human body – Femur

The Shortest bone in human body-Stapes (middle ear)

2.3 SKELETAL SYSTEM

The skeleton is composed of 206 separate bones in an adult. The cartilages and ligaments are used to unite the bones at the joint.

2.3.1 Parts of Skeleton and Bones



2.3.1 Types of the Bones

1. Long bones: These are in the arms and legs.
2. Flat bones: these includes the ribs, shoulder blades, and bones of the cranium.
3. Irregular bones: These bones are seen in face and spine.
4. Short bones: These bones are seen in wrist and ankle.

Ligaments are made up of strong fibrous tissue and they hold bones together at the joints.

Cartilage is a strong plain tissue like hard rubber is attached to some bones.

STUDENT'S ACTIVITY

To identify the types of bone. For e.g. Femur bone

FUNCTIONS OF THE SKELETON

1. Support and gives shape to the body
2. Protect internal organs
3. Movement with the help of muscles
4. Forms blood cells

2.3. 2 Skull

The skull consists of two parts:

1. The cranium in which the brain is well protected.
2. The bones of the face.

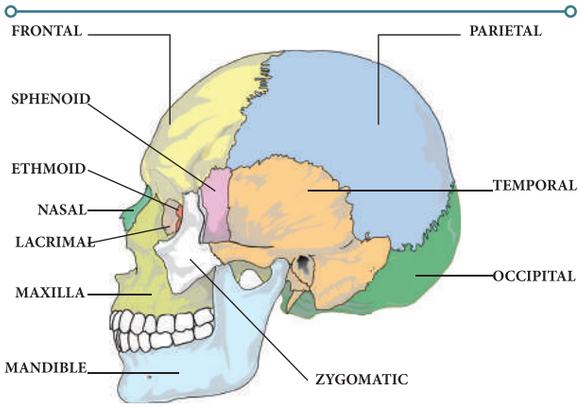
CRANIUM

The Cranium is made up of eight bones as follows:

Frontal bone:	which forms the forehead and helps to protect eyes
Parietal bone:	one at each side of the top of the skull joined into the middle
Temporal bone:	One on each side below the parietal bones. These protect the inner parts of the ears
Occipital bone	This forms the back of the head and part of the base of the skull
One sphenoid	A hat shaped bone, which also forms part of the base of the skull
Ethmoid	Which forms the roof of the nose and in between the eyes

FACIAL BONES

The face has the following 14 bones



DO YOU KNOW? The only movable joint in the skull is lower mandible.

Two nasal bones – which form the bridge of the nose.

Two lacrimal bones -near the eyes it is very thin and small.

Two cheek bones.

Two upper jaw bones.

Two palate bones – which join with the upper jaw bones in forming the hard palate.

Mandible bone – It is horse shoe shaped are forms the lower jaw.

Two curled bone, one in each side of wall of the nose.

Vomer bone – which rests on the palate and helps to form the nasal septum.

SKULL BONE

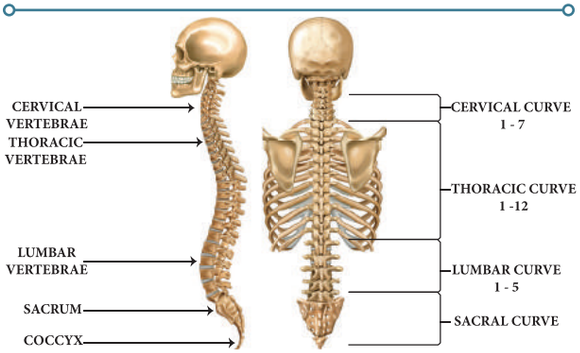
2.3.3 Vertebral Column

Spine or backbone is the central part of the skeleton. It supports the head and encloses the spinal cord. It consists of 33 irregular bones called "vertebrae".

DO YOU KNOW? Human beings are the only living things which sleep on their back.

PARTS OF THE VERTEBRAL COLUMN ARE AS FOLLOWS

- Cervical vertebrae is in the neck region. The first two bones called atlas and axis which are important for nodding and turning the head.
- 12 dorsal or thoracic vertebrae at the back of the chest. The ribs are joined to these vertebrae.
- 5 lumbar vertebrae are in the waist region.
- 5 sacral vertebrae are fused together to form the sacrum. It is a triangular shaped bone with a hollow anteriorly. The sacrum helps to form the pelvis.
- 4 small vertebrae in the tail region are fused to form a small triangular bone called as coccyx (tailbone).



FUNCTIONS OF THE VERTEBRAL COLUMN

- Movement of the body.
- Support the head and the organs of the thorax and abdomen.
- Protection for the spinal cord.
- Balance the erect position.

2.3.4 Thorax

Thorax or chest is formed by the sternum (breast bone) and costal cartilages in front, ribs at the sides and the 12 dorsal vertebral bones at the back.

The sternum is a flat bone, shaped like a dagger pointing downwards. The tip consists of a cartilage known as the xiphi sternum. The upper part, like the handle is joined to the two collar bones. The costal cartilages are joined to the sides of the sternum and to the true ribs.

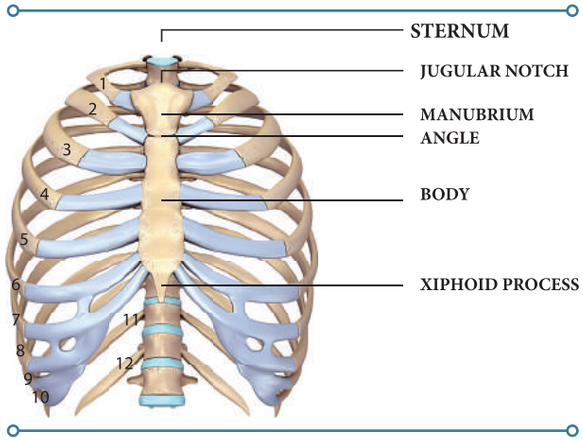
The ribs are twelve pairs of the long curved bones. The upper seven pairs are called true ribs. These are attached to the sternum by its costal cartilages.

The next five parts of the ribs are called false ribs because they are joined their cartilages to those of the ribs above and not directly to the sternum. The last two pars are not connected at all and are called floating ribs.

FUNCTIONS OF THE THORAX

1. Protection for the heart, lungs, liver, stomach, and spleen.
2. Support for the bones of the shoulder girdle and for the breast.
3. Important in respiration.

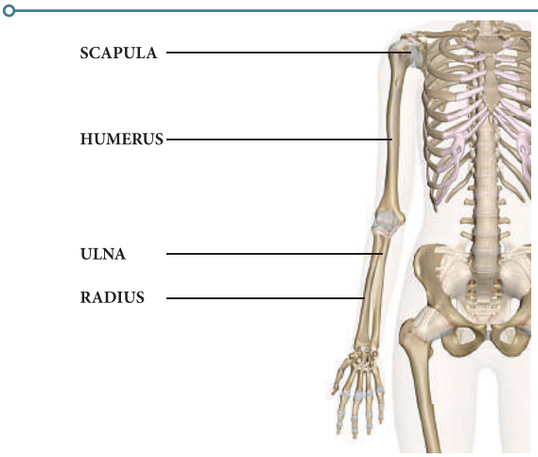
STERNUM AND RIBS

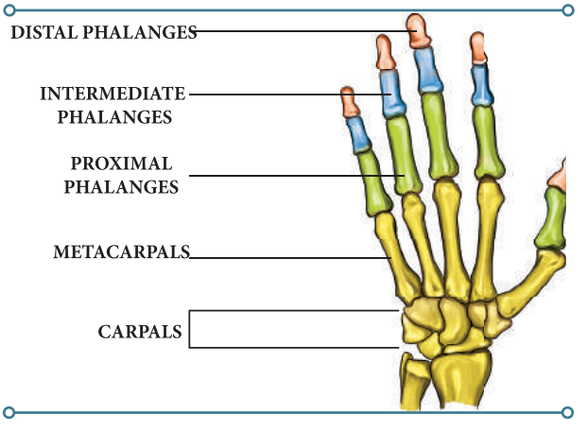


BONES OF THE LIMBS

2.3.5 Bones of the Upper Limb

- Each upper limb consists of thirty bones.
- One collar bone.
- Shoulder girdle.
- One humerus – the bone of the upper arm.
- One radius – the outer bone of the fore arm.
- One ulna – the inner bone of the fore arm.
- Eight carpal bones of the wrist.
- Fourteen phalanges of the fingers.





2.3.6 Bones of the lower limb

Each lower limb consists of 31 bones.

- Innominate bone – 1
- Femur bone – 1
- Patella – 1
- Tibia – 1
- Fibula – 1
- Tarsal bones – 7
- Metatarsal bones – 5
- Phalanges – 14

Innominate bone or hip bone:

The hip bone is an irregular flat bone, which has 3 parts – Ilium, ischium and pubis.

Femur bone (thigh bone:) It is the largest and strongest bone in the body.

Patella kneecap: It is a small bone at the front of the knee joint.

Tibia: Tibia is the long bone on the inner side of the lower leg.

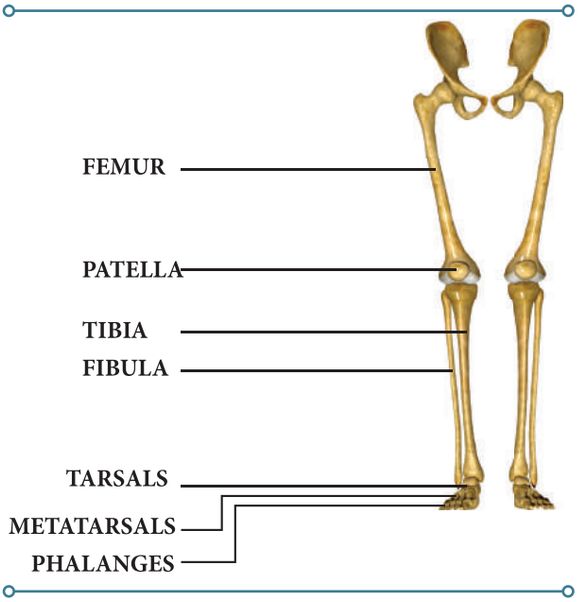
Fibula: Fibula is a long thin bone on the outer side of the leg.

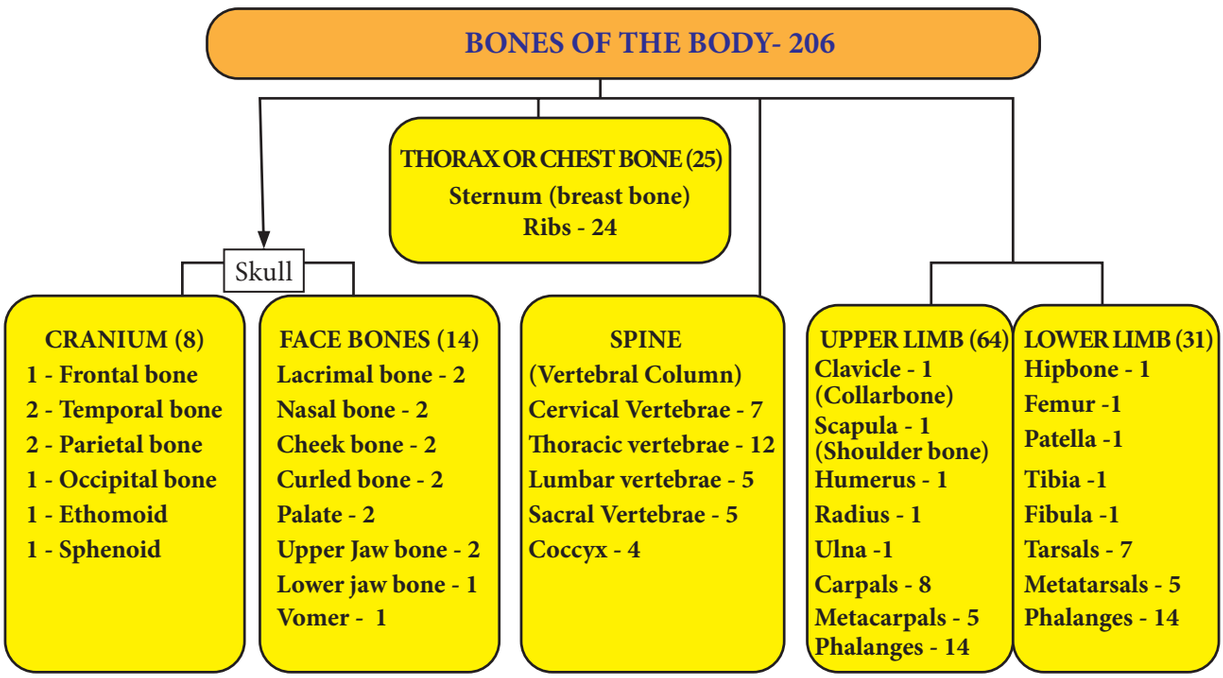
Tarsal bones: Tarsal bones of the ankle are seven short bones. The largest is the heel bone (calcanium).

Meta tarsal bones: Metatarsal bones are five long bones in the front of the feet. They support the toes.

Phalanges (toe bones): Fourteen in number and they are the smallest of the long bones.

BONES OF THE LOWER LIMB





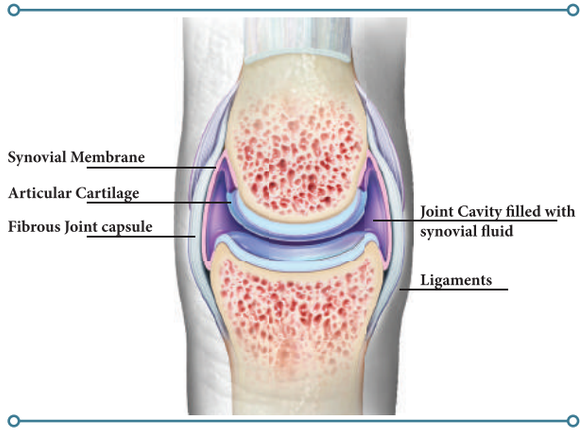
2.3.7 Joint

Joint is a union between two or more bones. It is a device to permit movement.

Scientific study of joints is called arthrology

TYPES OF JOINTS

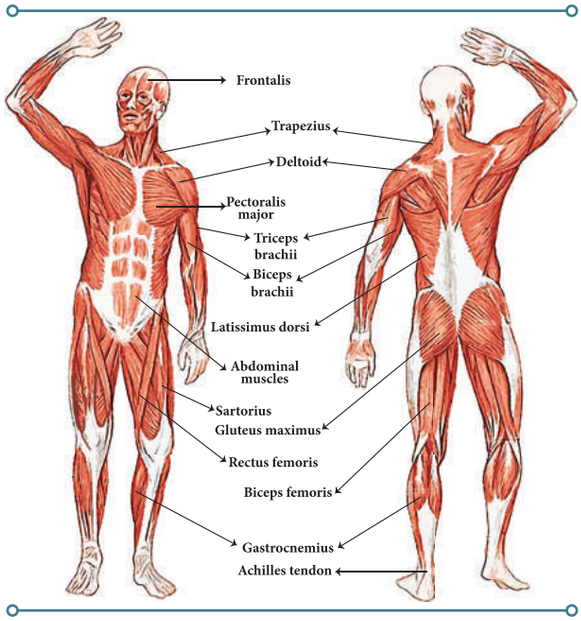
1. Fibrous Joints: In this joint there is no movement. Eg. Sutures of the skull. The bones are joined as though they were stitched (sutured) together.
2. Cartilaginous Joints: In which two bones are joined by a pad of fibrous cartilage, which allows slight movement. They are found in the vertebral column and pelvis.
3. Synovial Joints: Which are freely movable and found in the limbs and jaw.
4. Ball and Socket Joints: The round head of one bone fits into the cavity of another bone. Eg. Shoulder and hip joints.
5. Hinge Joints: The only movements are flexion and extension. Eg. Elbow, knee.
6. Gliding Joint: The bones glide on one another and allow fairly free movements. Eg. Wrist and ankle joint.
7. Pivot Joint: Turning is the only movement. Eg. The movement between the atlas and axis for turning the head.



STUDENT'S ACTIVITIES

1. Identity the joints with the given bones
2. Think and answer (Game)
   List of joints
   2 bones are joined together ..... joint
   3 bones are joined together ..... joint
   4 bones are joined together ..... joint
   5 bones are joined together ..... joint
   6 bones are joined together ..... joint
   7 bones are joined together ..... joint
   (etc)

2.4 MUSCULAR SYSTEM



Muscle is a contractive tissue, which brings movement. Muscles attached to bones of skeletal system forming

musculo skeletal system and constitute 40-50% of body weight. There are totally 639 muscles in human body.

A Person uses 17 muscles when he smile ☺ and 43 muscles when he frown.

FUNCTIONS OF MUSCULAR SYSTEM

- Movement
- Support
- Heat Production

There are three types of muscles

- Voluntary Muscles
- Involuntary Muscles
- Cardiac Muscle

VOLUNTARY MUSCLES

These are connected with the skeletal system causing the joints to move. They are called voluntary because their action can be controlled by the will.

Deltoid: It is a triangular muscle covering the shoulder joint and attached to the shoulder blade collar bone and humerus.

Gluteal: It is the muscles of the buttocks. Attached to the posterior surface of the ilium, sacrum and to the femur. They help to extend the hip joint.

INVOLUNTARY MUSCLES

Work without conscious control by the individuals are found in the internal organs.

CARDIAC MUSCLE

A special type of muscle found only in the heart. The fibres are striped, but the muscle is not under control of the will.

2.5 NERVOUS SYSTEM

Functional unit of nervous system is neurons.

Nervous system functions like a telephone system with the brain as the head office and nerves like the telephone wires, communication takes place with all parts of the body. By means of numerous messages sent and received by the various tissues and organs of the body to work in harmony.

BRAIN

Brain is the most important part of the central nervous system. It is well protected in the cranial cavity and has the following parts.

The cerebrum – fore brain

The cerebellum – hind brain

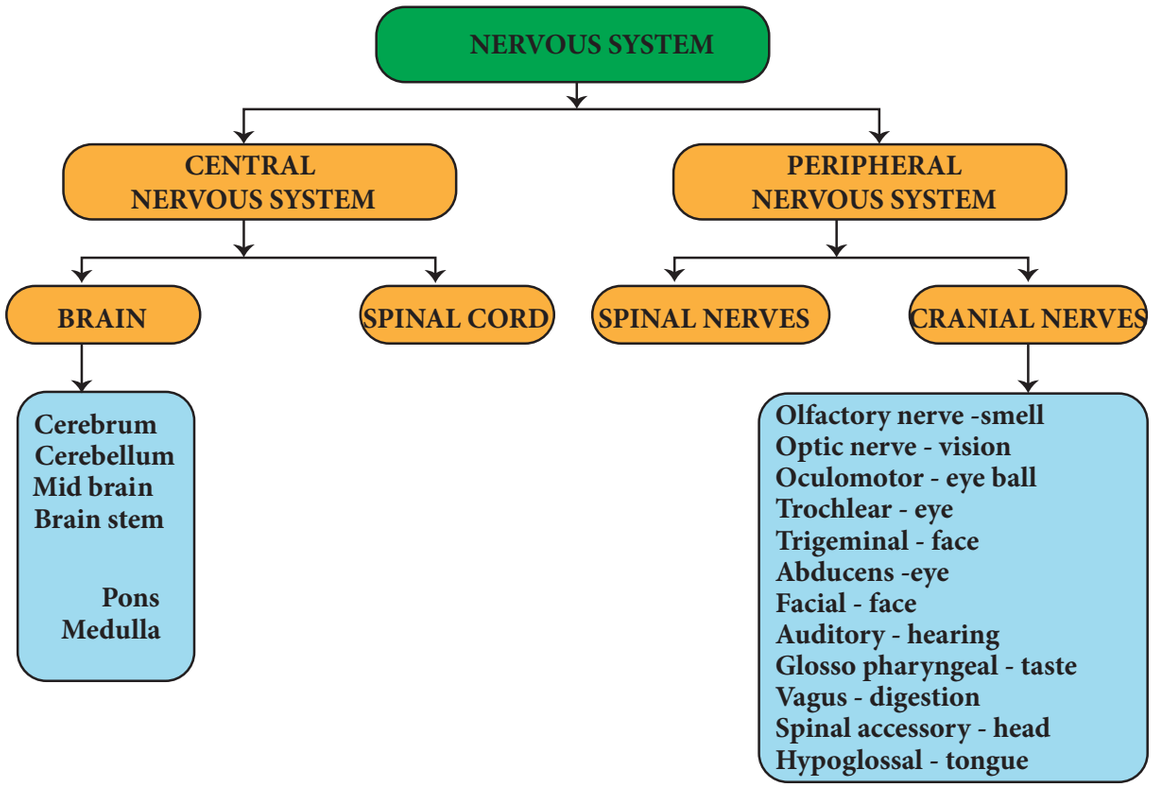
The mid brain

Brain stem – consisting of pons and medulla.

CEREBRUM

Cerebrum is the largest part of the brain and fills the front and top parts of the skull. It has two parts right and left. These two parts control the opposite sides of the body, so that diseases or injury of the right side of the cerebrum paralyses the left side of the body and vice versa.

Nerve impulses are sent from the brain move at a speed of 274 km/h.



FUNCTIONS OF THE CEREBRUM

a. Frontal lobe – motor centres controlling voluntary muscles.
   - Speech centre
   - Mental power such as memory, intelligence and will.

b. Parietal lobe – the sensory centres for sensations of touch, pain, heat, cold, and pressure.

c. Temporal lobe – for hearing

d. Occipital lobe – for vision

CEREBELLUM

The cerebellum is situated underneath the cerebrum at the back.

FUNCTIONS OF CEREBELLUM

- Helps to maintain balance
- Helps to maintain muscle tone
- Coordinates the work of muscles

The effect of alcohol in Brain:
Empty stomach - few minutes
Full stomach – Six hours

MID BRAIN

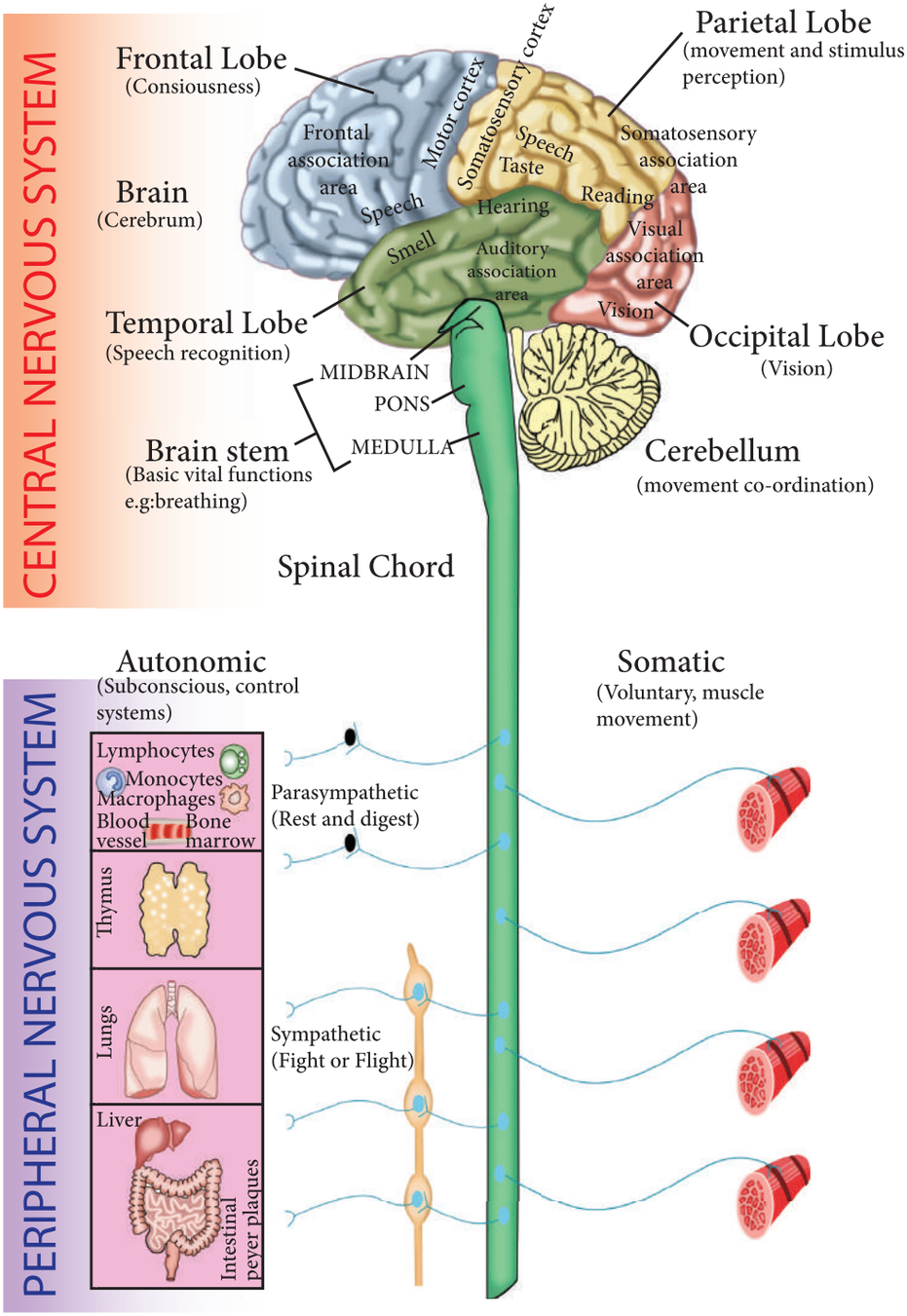
This consists of two short stalks of nerve tissue attached to the lower part of the right and left side of the cerebrum in the centre.

FUNCTIONS OF MID BRAIN

- Acts as a pathway for messages to and from the cerebrum.
- Contains reflex centres for vision and hearing.
- Contains centres for controlling body temperature, emotions and sexual responses.

BRAIN STEM

The brain stem is a stalk connecting the brain with the spinal cord. It has following parts.

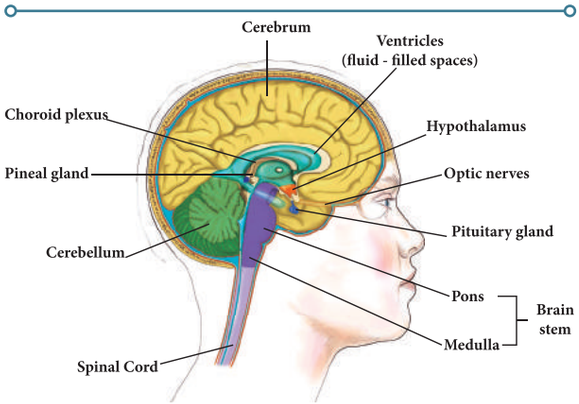


1. Pons
2. Medulla

FUNCTIONS OF MEDULLA

- Connects the brain with the spinal cord and conveys messages. It is in the medulla cover the cerebral nerve fibres cross over to the opposite side.
- Contains nerve centres, which control the vital functions of circulation and respiration.
- Contains reflex centres of swallowing, vomiting and coughing.

BRAIN



CRANIAL NERVES

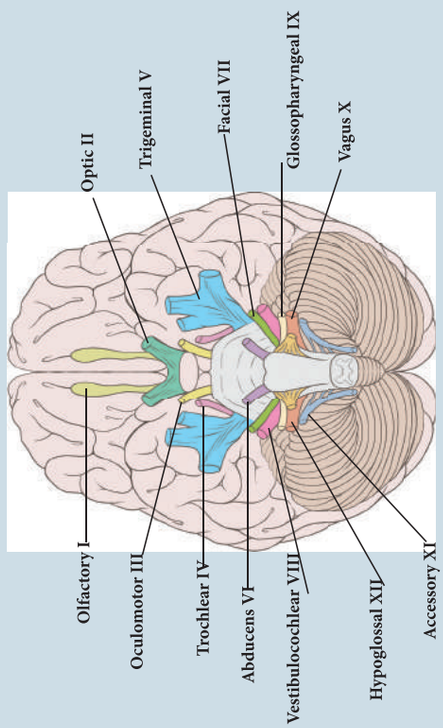
There are 12 pairs of cranial nerves which comes out from the brain and brain stem. They pass through the holes in the skull to the eyes, ears, face, tongue, throat, etc., The tenth cranial nerve called vagus, give branches to the larynx, lungs, heart and digestive organs. The vagus nerve functions as part of the autonomic nervous system.

STUDENT'S ACTIVITY

Quiz on Cranial Nerves and its function (Class should divided into two groups)

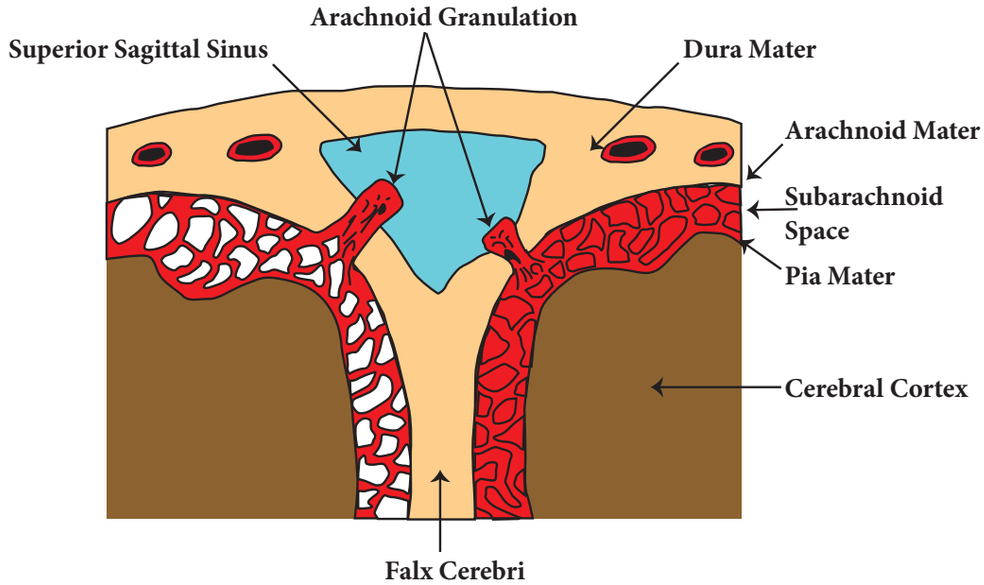
SPINAL CORD

- The spinal cord is a cord of nervous tissues. The thickness of a little finger and about 12cm longs. It lies inside a conal formed by the vertebrae.
- Functions of the spinal cord.
- Receives motor impulses from the frontal lobe of the cerebrum, and passes them on to muscles via the spinal nerves.
- Receives sensations from the skin and other tissues and relays the message to the brain.
- Reflex action is the quick response in the spinal cord.



Cranial nerves		
Number	***Name***	***Function***
I	olfactory	smell
II	optic	Sight
III	oculomotor	moves eye, pupil
IV	trochlear	moves eye
V	trigeminal	face sensation
VI	abducens	moves eye
VII	facial	moves face, salivate
VIII	vestibulocochlear	hearing, balance
IX	glossopharyngeal	taste, swallow
X	vagus	heart rate, digestion
XI	accessory	moves head
XII	hypoglossal	moves tongue

THE MENINGES



The brain and spinal cord are covered by three membranes called meninges.

- Duramater is the outer, thick elastic cover. It lines the skull and spinal cord.
- Arachnoid is a thin middle membrane. It is a loose covering and there is a space called 'theca' (sub arachnoid space) containing cerebrospinal fluid.
- Piamater is closed to the nerve tissue and carries blood vessels.
- When these membranes get infected, the condition is known as meningitis.

CEREBRO SPINAL FLUID

It is a clear fluid, which circulates both inside and outside the brain and spinal cord.

FUNCTIONS OF CEREBROSPINAL FLUID

- It acts as a water cushion to protect the brain and spinal cord from shocks.
- It nourishes and cleanses, washing away water and toxins.

2.6 CARDIO VASCULAR SYSTEM

Heart is an efficient muscular pump works 24 x 7

Cardio vascular system consists of the following organs:

- Blood
- Heart
- Blood Vessels – Arteries, Veins and Capillaries
- Lymphatics.

ANATOMICAL STRUCTURE OF THE HEART

Heart is a cone shaped, hallow muscular organs about the size of its owners closed fist. It weighs about 300 gm in a man and 250 gm in a woman. It is situated in the thoracic cavity between the lungs.

The heart is divided by a septum into right heart and left heart. The right heart contains

impure or deoxygenated blood, and the left heart contains pure or oxygenated blood. Each portion is further sub divided into a superior and an inferior chamber. The superior chambers are called atrium and inferior chambers are called the ventricle.

The atrium communicates with the corresponding ventricle through an opening called an atrioventricular opening which is guarded by a valve.

The atrioventricular valve on the right side is called the tricuspid valve and the valve on the left side is called bicuspid or mitral valve. These valves permit the flow of blood in only one direction, that is from the atrium to the ventricle but not in the reverse direction.

HUMAN HEART

STUDENT'S ACTIVITY

Still model – heart
Working model – blood circulation

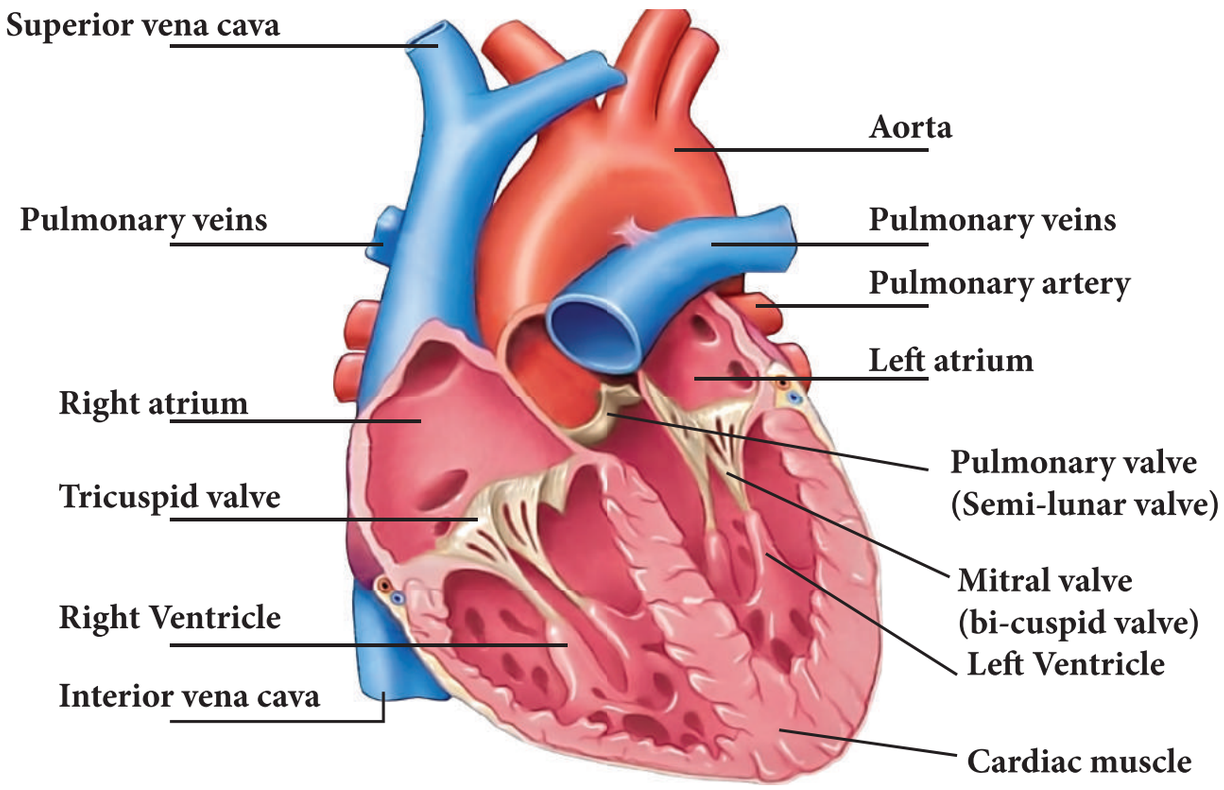
DO YOU KNOW?

Women's heart beats faster than men.

The human heart pump 182000000 (182 million) litres of blood during the average life time.

Pulmonary artery: The only artery which carries the deoxygenated blood.

Pulmonary vein: The only vein which carries the oxygenated blood.



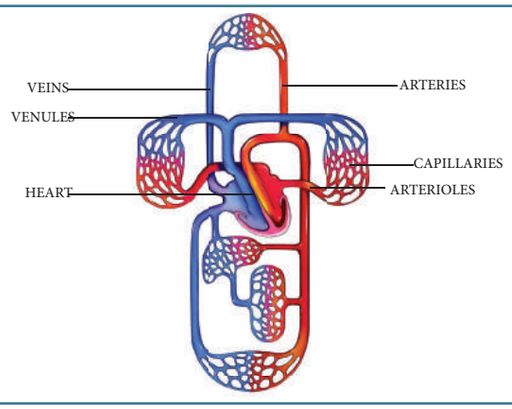
BLOOD CIRCULATION

Circulation can be roughly divided into pulmonary and systemic circulation.

1. Pulmonary circulation
2. Systemic circulation

PULMONARY CIRCULATION

Deoxygenated blood from all parts of the body reaches the right atrium through two major veins the superior and inferior vena cava. From the right atrium this blood reaches the right ventricle. From the right ventricle, blood flows into the pulmonary artery through which it is supplied to both lungs. In the lungs, the blood gets oxygenated.



SYSTEMIC CIRCULATION

The oxygenated blood from the lungs enters the left atrium through 4 pulmonary veins. From the left atrium the blood enters the left ventricle. From the left ventricle, through aorta, and its branches. This oxygenated blood is supplied to all parts of the body.

FUNCTIONS OF HEART

- It draws blood back from the capillaries and veins.
- It sends blood into the lungs where it is oxygenated.
- It sends blood through the aorta to all parts of the body.

BLOOD VESSELS

There are mainly 3 types of blood vessels:

- Arteries
- Veins
- Capillaries.

BLOOD

About 6 litres of blood continuously circulates through the heart and blood vessels in all parts of the body. It is a sticky red fluid is slightly alkaline in reaction. It made up of a liquid (Plasma) and solid (cells).

STUDENT'S ACTIVITY

Separation of plasma and cells in a test tube at classroom.

Plasma is a pale yellow fluid consisting of:

- Water 90 %
- Salts, including sodium chloride
- Proteins (Albumin, globulin, fibrinogen)
- Nutrients, such as glucose, fats, amino acids, vitamins and minerals
- Waste products such as Urea and carbon dioxide
- Antibodies and antitoxins for resistance to germs.

- Hormones produced by the endocrine glands.
- Substances for blood clotting and for preventing clotting of blood.
- Plasma is important for the life of the tissue cells. It gives water and nourishment and carrying away their waste products.

BLOOD CELLS

There are three main types:

- Red blood cells or Erythrocytes
- White blood cells or Leucocytes
- Blood Platelets or Thrombocytes.

Leukocytes in human body live for 2–4 days and erythrocytes for 120 days.

FUNCTIONS OF BLOOD

- Carries oxygen to the tissues by means of red blood cells.
- Carries food to the tissues.
- Carries away waste produces from the tissues to the excretory organ.
- Carries hormones from the glands to the target tissues.
- Fights germ infection by means of the white cells and antibodies.
- Distributes heat and helps to maintain body temperature.
- Helps to maintain water balance in the body.

LYMPHATIC SYSTEM

The lymphatic system is a special types of circulatory system. It is composed of:

1. The lymph
2. The lymphatic Vessels.
3. The lymph glands or nodes

FUNCTIONS OF LYMPH

- Lymph glands help to protect the body from infection by filtering the lymph to prevent germs from getting into the blood stream and fighting to overcome them.
- Producing new lymphocytes for the blood.

2.7 THE DIGESTIVE [ALIMENTARY] SYSTEM

The functions of the digestive system is to receive food and water.

Prepare and process it for absorption and to excrete the unwanted portion of the food.

Digestion and absorption are two chief functions of digestive system.

The digestive system may be up to 30 feet in length in adult and it is usually divided into eight parts. The mouth the Oesophagus, the stomach, the small intestine the large intestine with the liver, pancreas and gall bladder adding secretions to help the digestive process.

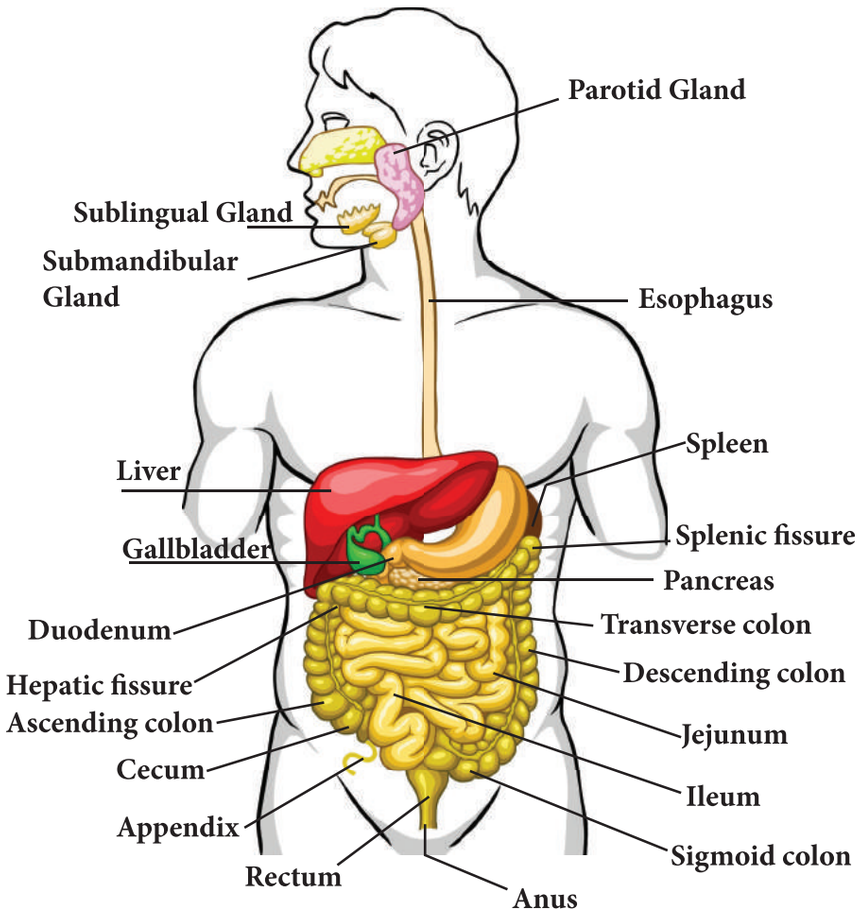
FUNCTIONS OF DIGESTIVE SYSTEM

- Break down of food substance into small particles
- Digestion of food
- Absorption of food
- Excretion of undigested food and toxic substances.

The mouth [oral cavity]

In the mouth there are 32 tooth. They are.

Molar	–	12
Premolar	–	8
Canine	–	4
Incisors	–	8



This helps to break down the food into small particles.

The tongue is a muscular organ, which helps in chewing, swallowing and speech. The taste buds help in the sensation of taste.

The salivary glands secrete saliva in the mouth. The three salivary glands are.

- The parotid gland
- The sub maxillary gland
- The sub lingual gland.

The oesophagus is a tube connecting pharynx {throat) and the stomach which transfer food from mouth to stomach.

The stomach is a muscular organ (J shaped) the ends are guarded by 2 sphincters

- Cardiac sphincter
- Pyloric sphincter

The liver is the largest and important organ of the abdomen, bile is secreted by the liver cells and stored in gall bladder.

The small intestine is about 6 meters long. The parts of the small intestine are:

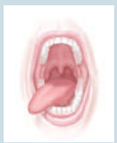
- Duodenum
- Jejunum
- Ileum

The large intestine is about 1½ meters. The small intestine opens into the large intestine. The large intestines consist of:

- Ascending colon
- Transverse colon
- Descending colon
- Sigmoid colon.

The sigmoid colon opens into the rectum. The faeces is collected in the rectum and expelled through the anus.

PHYSIOLOGY OF DIGESTION

	Organ	Enzymes	Action
Food	Mouth  saliva	Ptyalin Maltase	Starch – maltose Maltose – glucose
Bolus	Stomach 	Food – bolus – gastrin is released – discharges gastric juice contains – hydrochloric acid – kills bacteria in the food Enzymes • Pepsin – converts protein into peptones • Renin – converts indigestible protein of milk into digestible one • Lipase – converts fats into – fatty acid and glycerol	
	Liver 	Liver - bile Pancreas - Pancreatic juice • Pancreatin • Trypsin • Pancreatic lipase	Acts on fats dissolves fatty acid and glycerol Converts carbohydrates into fructose, amylase, glucose, galactose Converts peptones – polypeptides Converts facts – fatty acid and glycerol
Chyme	Small intestine 	Chyme – succus entericus Pepsin Nucleotidase Nucleotidase Splits lactase, maltase, sucrose – glucose	Converts polypeptides – amino acids Converts nucleotide to nucleoside Converts nucleosides Pentose Purine Pyramidin

	Organ	Enzymes	Action
		Final products of digestion takes place in small intestine Carbohydrate - Glucose Proteins – Amino Acids Fats – Fatty Acids, Glycerol	
Faeces	Large intestine 		large quantity of water is absorbed.

DO YOU KNOW? A new born child breathe and swallow at the same time for up to seven months.

DO YOU KNOW? **At least 700 enzymes are active in the human body.**

2.8 RESPIRATORY SYSTEM

Functional unit of respiratory system is respiratory bronchiole.

Respiratory system consists of a group of organs which are designed to convey air and to provide a mechanism in which blood and air comes into intimate relation with each other, so that, gaseous exchange occurs between the oxygen of the air is absorbed by the blood and the carbon dioxide is eliminated into the air.

The exchange of gases between the body and the environment taking place in the lungs is termed as external respiration. The gaseous exchange between the tissues and the lungs is termed as internal respiration.

Respiratory system consists of the following organs

- Nose
- Pharynx
- Larynx
- Trachea
- Bronchi
- Lungs.

NOSE:

The nose is made up of cartilage and bone. It allows the passage of air. Air which passed through nose is moistened by mucus, warmed by blood and filtered by hairs and cilia. It opens at the back into the pharynx.

PHARYNX

The nose opens into the nasopharynx which leads below into larynx.

LARYNX

It is also called the wind pipe and is about 10 cm long. The lower end, of it divides into 2 bronchi. It is made up of 16-20 rings of cartilage which are connected to each other by fibrous tissue.

BRONCHI

These are two short tubes similar in structure to the trachea and each leads to one lungs. Each bronchus divides further

into smaller branches called bronchiole, finally leading to small air filled spaces called alveoli which constitute the lungs.

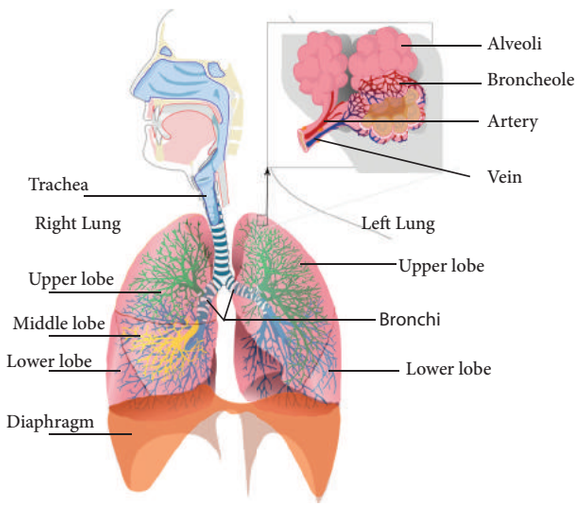
LUNGS

The lungs are two in number, and are cone shaped spongy organs. The base of the lungs rests on the diaphragm, and the apex behind the clavicle, the right lung has 3 lobes and the left lung has 2 lobes.

Each lung is covered by a thin serous membrane called pleura, which is actually made up of 2 layers, between which there is a fluid called as pleural fluid. This act as a lubricant.

The lung is made up of numerous tiny pockets of air sacs called alveoli, which form the main site for exchanges of gases between the inhaled air and the blood.

RESPIRATION

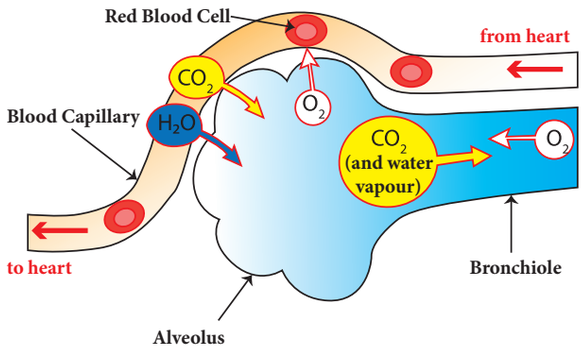


We breathe continuously from birth to death. Respiration may be defined as the mechanical process of breathing in and out. It involves both the respiratory system and muscles of the respiration.

Two phases of breathing are:

- Inhalation – during which the air is drawn into the lungs
- Exhalation – which refers to the expulsion of air from the alveoli
- The respiration is controlled by medulla oblongata

IMPORTANCE OF RESPIRATION



- It supplies oxygen and eliminates carbon dioxide
- It excretes volatile substance like ammonia, ketone bodies, essential oils, alcohol and water vapour etc.,
- By adjusting the amount of carbon dioxide elimination it helps to maintain the normal body temperature.
- It is necessary for the maintenance of optimal oxidation – reduction process in the body.

STUDENT'S ACTIVITY

1. Working model – Lung
2. Deep breathing exercise - inhalation and exhalation by balloon blow method.

2.9 EXCRETORY SYSTEM

INTRODUCTION

The end products of metabolism which have to be removed from the body are called excreta and the organs that remove them are called excretory organs.

EXCRETORY ORGANS

- Lung – Carbon Dioxide
- Kidney – Urine
- Intestine – Faeces
- Skin – Sweat

URINARY SYSTEM

Functional unit of kidney is nephron

Urinary system is the vital excretory system of the body.

Parts of the urinary system:

Parts	Functions
Kidney	Urine Formation
Ureter	Passes Urine to the Bladdder
Urinary Bladder	Storage of Urine
Urethra	Passing of Urine

KIDNEYS

The kidneys are bean shaped organs, lying on the posterior abdominal wall, one each side of the vertebral column. Each kidney measures 10-13 cm in length 2-3 cm in thickness and 6 cm in breadth. Each kidney weighs about 140 gms.

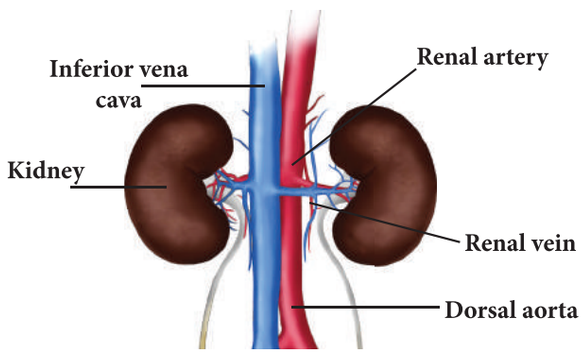
The kidneys are made up of basic units called nephrons. Each kidney contains about 10,00,000 nephrons approximately. A nephron has a t cup shaped part which acts as a filter part is connected to a long coiled tubule which carries the filtered liquid. All these tubules join together to form the ureter.

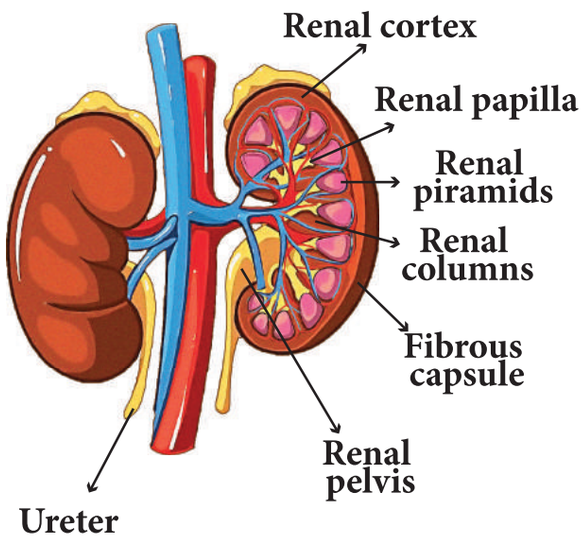
URETERS

It is a short tube passing from the kidney to the bladder. The bladder receives urine through the ureters and stores it. When the bladder is full to its capacity by a voluntary act the urine is expelled through an opening called the urethra. The male urethra is about 2.5-5 cm long.

FUNCTIONS OF THE URINARY SYSTEM

- Excretion of excess water and salts
- Excretion of metabolic waste products, drugs and toxic materials
- Maintaining water balance and acid base equilibrium of the body
- Maintaining the blood pressure by producing a substance called rennin
- Helping in the production of Red blood cells by secreting a substance called erythropoietin.





STUDENT'S ACTIVITY

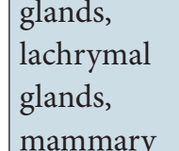
Chart Preparation – Excretory System (Kidney)

2.10 ENDOCRINE SYSTEM

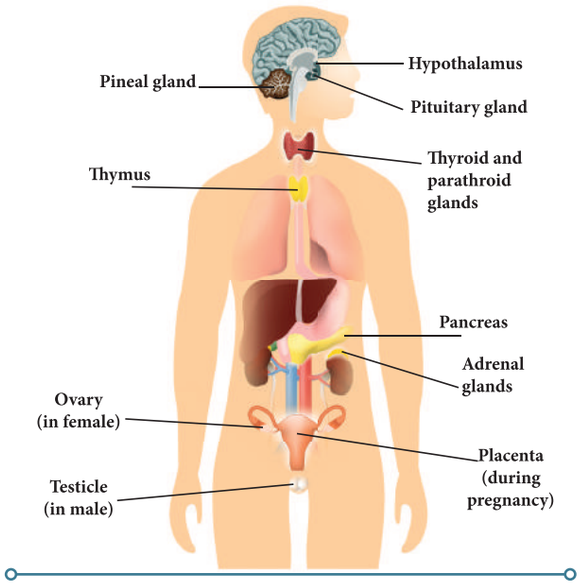
The glands of the body may be divided into – endocrine gland.

- exocrinegland

External secretion	Internal secretion
Exocrine glands Eg. Sweat glands, lachrymal glands, mammary glands	Endocrine glands [ductless gland] Eg. Pituitary glands Thyroid glands Para thyroid glands Islets of langerhans Adrenal glands Sex glands – ovary, testis



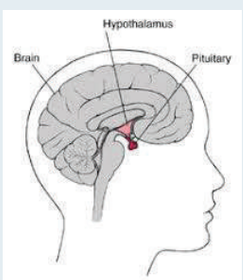
Hormones help your body by telling the cells what they need to do.



HORMONES

A hormone is a chemical substance produced by the endocrine glands and their overall function is to regulate the activities of various body organs and their function.

RXXEUR

Endocrine gland	Structure	Hormone	Functions
Pituitary  	Small gland – size of a cherry [pea sized] Just below the hypothalamns base of the brain Also called "Master Gland" <u>Pituitary gland</u> Anterior Pituitary gland Posterior Pituitary gland	Anterior Pituitary gland -Growth hormone	Facilitates the growth of bone and cartilage tissue <u>In children</u> Increase production → gigantism Decrease production → dwarfism <u>Adults</u> Excessive production Acromegaly

Endocrine gland	Structure	Hormone	Functions
		Thyrotrophic stimulating harmone [THS]	Stimulates the activity of thyroid gland
		Adrenio corticotrophic harmone [ACTH]	Stimulates the production of harmones of adrenal cortex
		Follicular stimulating harmone [FSH]	Influences the growth, development and maturation of the ovarian follicles. Formation of sperms in testis
		-Prolactin hormone	Acts on mammary glands during lactation
		-Luteinising hormone	Stimulates ovulation in females Stimulates interstitial cells of tests to secrete testosterone
		Posterior Pituitary gland Oxytocin	Acts on muscles of the uterus during delivery – contractions
		Vasopressin	• Acts on smooth muscles of arterial system and increases the blood pressure • Decrease secretion – diabetes insipidus
Thyroid gland 	Largest of endocrine glands Located in the neck region It has 2 lobes seen on either side of trachea	Thyroxin	• Regulates tissue growth and development • Increases BMR thus raises body temperature • Stimulates breakdown of protein for energy • Decreases breakdown of fats • Helps in conversion of β carotens – vitamin A • Ca and P are removed from bones and excreted in increased amounts.

Endocrine gland	Structure	Hormone	Functions
Para thyroid glands	Seen situated at the upper and lower poles of lateral lobes of thyroid glands	Para thyroxin	• Increases the reabsorption of calcium from bones • Increases the serum calcium levels • Increases the phosphate excretion in the urine stimulates lactation in mammary glands.
Islets of langerans in the pancreas.	Both exocrine / endocrine function is seen in pancreas The head of the pancreas is seen in the duodenum	Pancreas Alpha cells – glucagon Beta cells - insulin	• Increases the blood glucose level • Breakdown of glycogen into glucose in liver • Stimulates the breakdown of fat in adipose tissue.
Adrenal gland	Also called supra renals It seen above the kidneys <u>Adrenal glands</u> Adrenal cortex Adrenal medulla	Glucocorticoids	Cause increase in blood sugar.
		Minerlocorticoids	Acts on Na & K and help in conversion of Na in the body.
		Sex steroids	Development of reproductive organs and secondary sex characteristics.
		Adrenaline	Increases heart rate and increases BMR.
		Nor-Adrenaline	Decreases heart rate.
Male sex glands Testis	Seen inside the scrotal sac	Testosterone	Responsible for secondary sex characteristics.
Female sex glands Ovary	Seen on the either side of the uterus	Estrogen	Development and functioning of female reproductive system.
		Progesterone	Assists in normal development of pregnancy.

DO YOU KNOW?

1. The gland that makes hormones and help you to grow and stay full of energy is thyroid.
2. A common problem with the endocrine is diabetes.

2.11 SENSE ORGANS

Sense organs are nose, tongue, eye, ear and skin.

The organs of the special sense are specially adopted for the reception of certain kind of stimuli. The sensory impressions which are supplied by the nerves are carried to the brain where sanctioning are interpreted for eg. Smell, taste, sight, sound, touch.

NOSE

The nose is the organ of smell. The upper 1/3rd of the nasal cavity contains olfactory cells. From here the olfactory nerve begins and passed through the cribriform plate of ethmoid bone to reach the smell area of brain.

TONGUE

Tongue is the organ for taste. It is a solid muscular organ. Speech and helps in mastication of food. It is situated in the oral cavity. The mucous membrane of the tongue is moist and pink in healthy person.

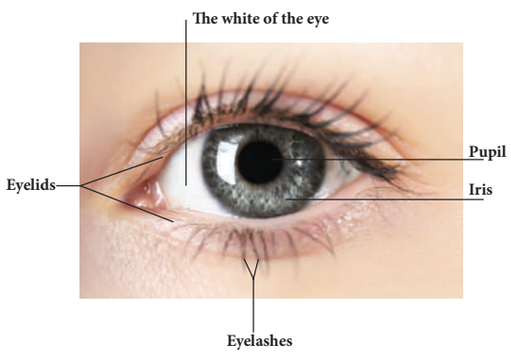
The upper surface of the tongue has a velvatte appearance covered by three varieties of papillae.

1. Circumvallate Papillae
2. Fungiform Papillae
3. Filiform Papillae.

EYE

STUDENT'S ACTIVITY

Identify the taste from various food stuffs by keeping the surface of tongue



DO YOU KNOW?

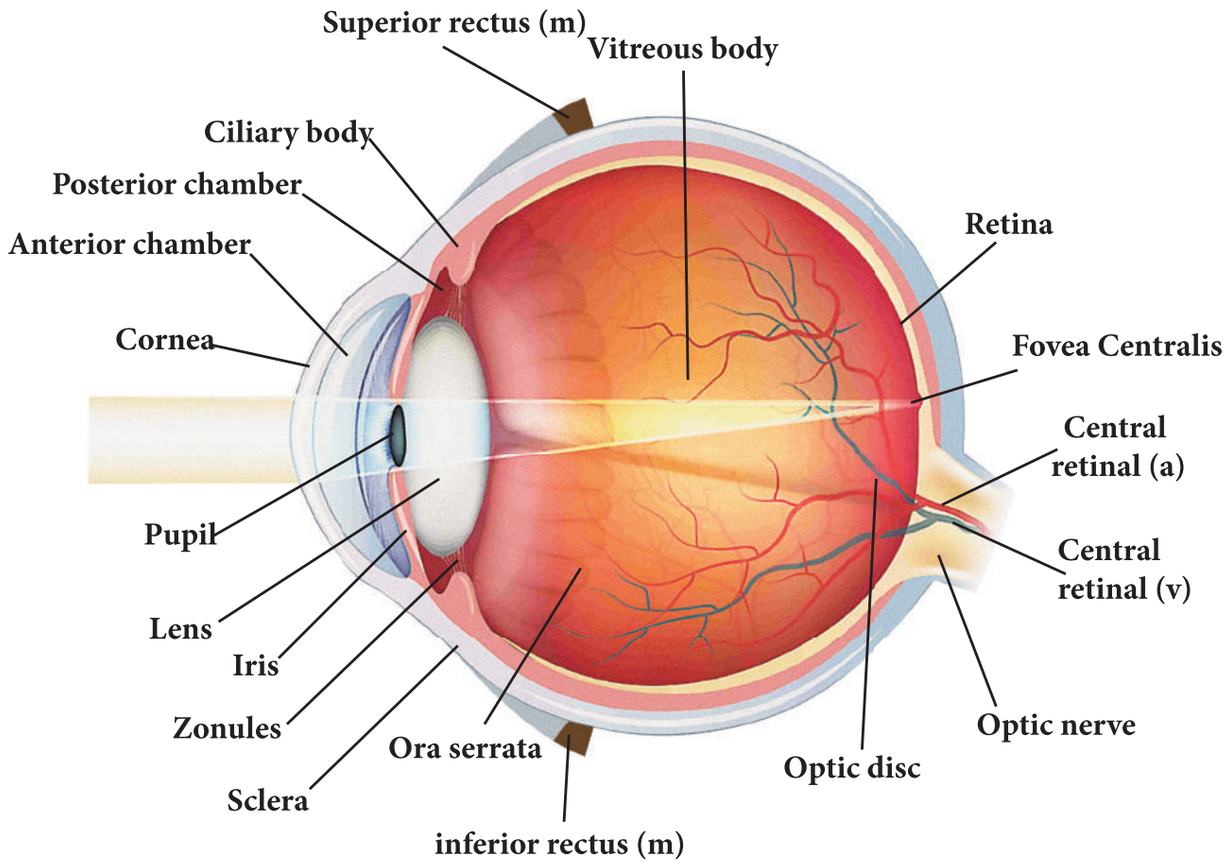
The only part of the body that has no blood supply - Cornea

Eye ball is spherical in shape situated in the anterior 2/3rd of the orbital cavity and it is embedded in the fat of the cavity. The optic or second cranial nerve is the sensory nerve of the sight.

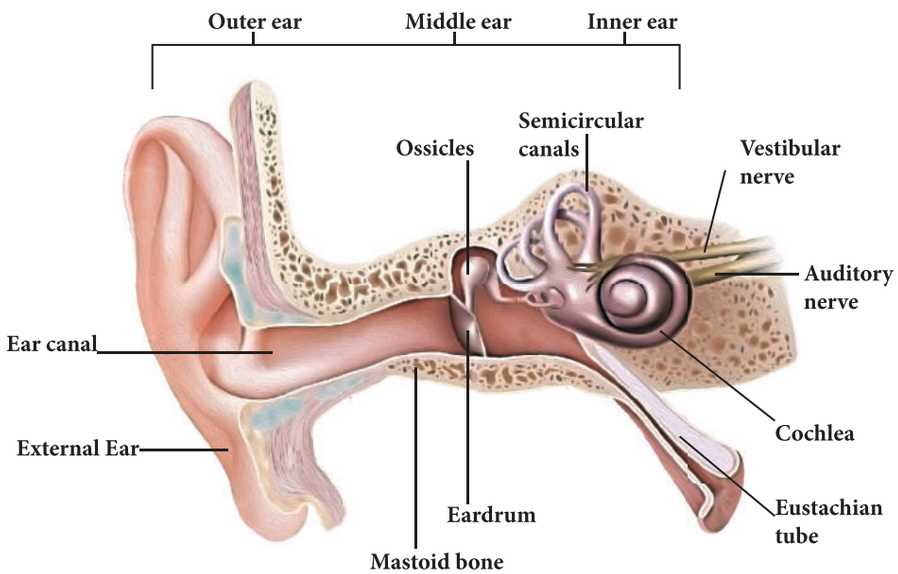
When an image is perceived the rays of light from the object seen, and pass through the cornea, aqueous humor lens and vitreous body to stimulate the nerve endings in the retina.

The stimuli received by the retina pass along the optic tract to the visual areas of the brain to be interpreted both areas receive messages from both eyes thus giving perspective and contour. One lens is provided in an ordinary camera where as in the eyes the crystalline lens is important in focusing the image on the retina.

STRUCTURE OF EYE



STRUCTURE OF EAR



Ear is the organ of hearing. The nerve supplying the ear is the 8th cranial nerve which is also called the auditory nerve or the vestibule cochlear nerve. The ear is divided into 3 parts:

- External ear
- Middle ear
- Internal ear.

External Ear

- Pinna or auricle – collects the sound waves
- External auditory meatus – conveys the vibrations of sound.

Middle Ear

- Ear drum – communicates to the mastoid process
- Eustachian tube - maintaining the pressure of air
- Auditory ossicles – 3 small bones (malleus, incus, stapes).

Mastoid process is the part of the temporal bone lying behind the ear. It is an air space which communicates in the middle ear.

Internal Ear

Consists of cavities called the bony labyrinth and membranous labyrinth. Bony labyrinth consists of 3 parts:

- The vestibule
- Semi circular canals
- Cochlea.

PHYSIOLOGY OF EAR

Sound waves pass along the external auditory canal cause the tympanic membrane to vibrate. The vibrations transmitted through malleus, incus and stapes. By movement of these bones, the vibrations are magnified and then communicated to the vestibular fenestra to the perilymph and to the endolymph in the canal of the cochlea. This stimuli reaches the nerve endings in the organ of corti and conveyed to the brain by auditory nerve.

SKIN

- Largest sense organ is SKIN. The surface area of skin is about 19.4 sq/ft.
- Lymph vessels are absent in epidermis, hair, nail, cartilage, cornea and central nervous system.

The skin covers the body. It consists of dermis and epidermis. It completely covers the body and protect the under lying structure from injury and infection by the bacteria.

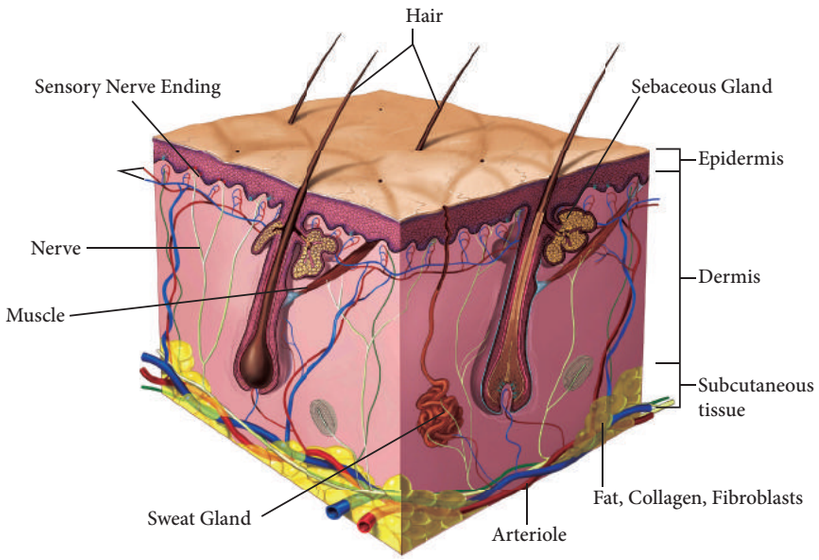
EPIDERMIS

This is the outermost thin portion of the skin. No blood vessels are found in this layer. It derives its nutrition from lymph. Nerves are found in this layer. The epidermis consists of four layer of cells. They are.

- The stratum corneum
- The stratum lucidum
- Stratum granulosum and
- the stratum malphigi.

DERMIS

This is situated below the epidermis. It is the most thickest dermis formed by connective tissue which is richly supplied with blood vessels and nerves.



DERMIS CONTAINS THE FOLLOWING

- Fine elastic fibres
- Capillary blood vessels and lymphatics
- Sensory nerve endings of various types
- Hair roots or hair follicles
- Sweat glands
- Sebaceous glands and
- Involuntary muscle fibres.

SWEAT GLANDS

Each sweat gland consists of a long tube, which at one end opens on to the surface

FUNCTIONS OF THE SKIN

Protection	The skin protects the inner parts of the body from mechanical injuries.
Excretion	Like kidney, the skin through its sweat glands, eliminates salts and metablic waste products in the form of sweat.
Sensory	Acts as a special organ of sense Regulation of body temperature.
Water balance	Formation and evaporation of sweat is an important factor in the regulation of water balance of the body.
Acid base equilibrium	Helps to maintain a constant reaction in the body.
Production of vitamin D	The skin contains a substance called -7de-hydro cholesterol which is converted into vitamin D by ultra violet rays of the sun.
Secretion	Sebum which is secreted by the sebaceous glands helps to keep the skin greasy and prevents drying.
Storage function	The subcutaneous tissue can store • Fat • Water • Salts • Glucose and such other substances.

through the sweat pore. At the other end, in the deeper part of the dermis, the tube forms a coiled mass with a blind end. The sweat passes through the sweat pore and evaporates from the surface by taking heat from the skin. The sweat glands are present in large amounts on the palms, soles, forehead and in armpits.

The sebaceous glands are irregularly shaped sac like glands that open into the hair follicles. The oily secretions [sebum] of these glands make the hair, water, proof and protect the skin from drying effects of the atmosphere due to high temperatures and low humidity.

2.12 REPRODUCTIVE SYSTEM

"Without the reproductive system. The human species could not survive. However, this system unlike other organs systems is not necessary for the survival of individual humans", but to produce a new individual".

The reproductive system is a collection of internal and external organs in both male and female.

SEX ORGANS

	Male sex organs	Female sex organs
Primary	A pair of testes	A pair of ovaries
Secondary	Epididymis gland Vas deferens Seminal vesicles Prostrate gland Urethra Penis	Fallopian tubes Uterus Vaginal canal Vagina The breasts

The smallest cell in man's body are sperm cell. (size 0.05 mm)

Testes: There is one pair of testes lying one in each scrotal sac. It weighs about 15 gms.

Scrotum: The scrotum is a bag of skin having two compartments one for each testis. The semiferous tubules and interstitial cells are concerned with the process of spermatogenesis and secretion of testosterone (male sex hormone).

Epididymis: The epididymis is a long, coiled tube that rests on the backside of each testicle. It functions in the carrying and storage of the sperm cells that are produced in the testes.

Vas deferens: This is a fibro elastic (30-40 cms) which extends from epididymis to end in ejaculatory duct. It is joined by seminal duct and opens in prostatic urethra.

The seminal vesicles: These are little sacs one on each side of the urethra near the base of the bladder. They also add a fluid to the "semen" to the stored sperm.

The prostate gland: The gland lies at the base of the urinary bladder, this adds another fluid to the semen which makes the sperms active in swimming to reach the ovum.

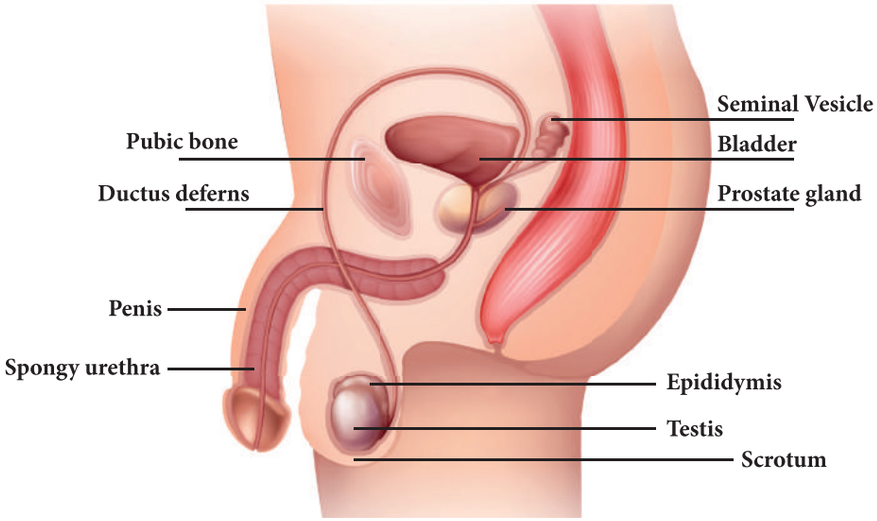
The penis: This is an external organ for both urinary and reproductive system.

Urethral openings: This is the tube that takes the sperm outside the body during ejaculation.

Male sex hormones: Androgens [maintains spermatogenesis and sexual activity].

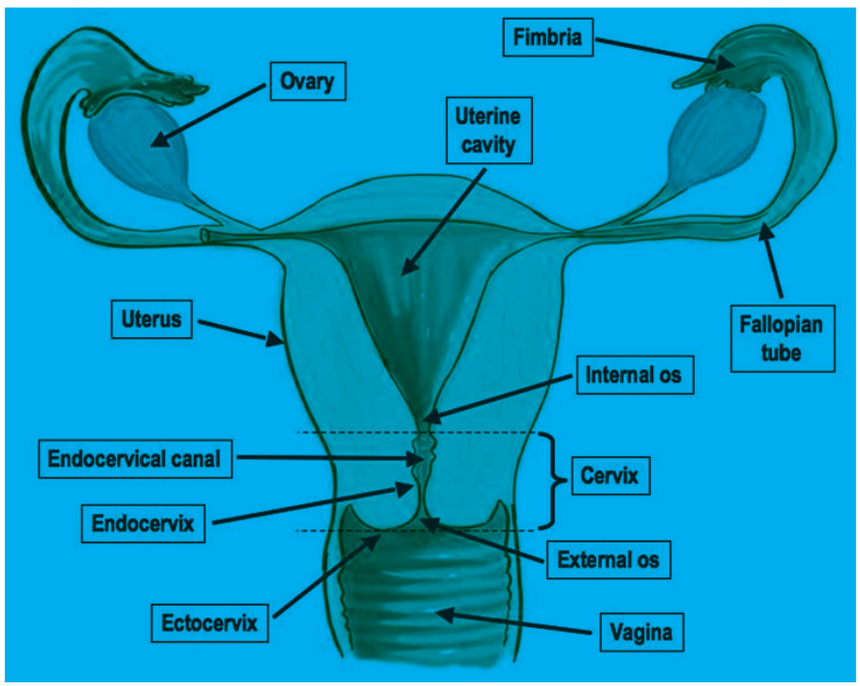
Testosterone [stimulates secondary sexual characteristics].

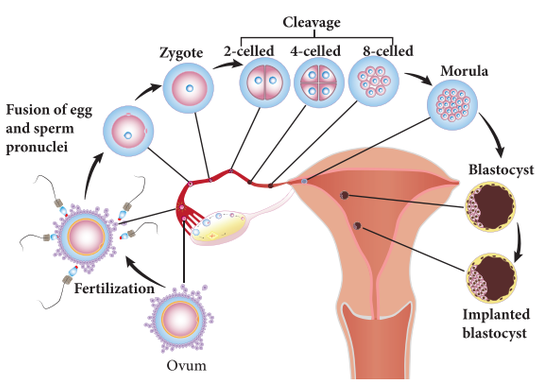
MALE REPRODUCTIVE ORGANS



FEMALE REPRODUCTIVE ORGANS

UTERUS





THE FEMALE REPRODUCTIVE ORGANS

External organs [The vulva]	Internal organs
Mons pubis Labia majora Labia minora Clitoris Vestibule Vagina Perineum	Ovaries Fallopian tubes Uterus Vaginal canal

The female reproductive organs:

The external organs form the vulva.

They are as follows:

Mons veneris or pubic Mont lies over the symphysis pubis, and is covered with hair after puberty.

Labia majora or the outer lips, form the sides of the vulva.

Labia minora or smaller lips are seen within the labia majora. They are moist by gland secretions.

Clitoris is a small sensitive organ with erectile tissue.

The urethral opening is seen between the Clitoris and vaginal opening.

Vagina is a muscular tube lined with membrane of special type of stratified epithelium, well supplied by blood vessels and nerves. The vaginal canal form vaginal opening to the external os of the uterus.

Perineum is the area from the vaginal opening back to the anus. The gonads of the females are called ovaries, they produce egg cells, ova. When the ovum matures, the graffian follicle burst and ruptures is called ovulation. The function of the fallopian tube is to collect the ovum which is discharged from the ovary, and pass it to the uterus where it reaches the endometrial layer of the uterus.

The uterus is a pear shaped muscular organ. It measures about 7.5x5x2.5 cm and weighs about 60gm. The parts of the uterus and fundus [upper], body [middle], cervix[lower pole].

The walls of the uterus is in 3 layers perimetrium [outer], myometrium [middle], endometrium [inner].

FUNCTIONS OF THE UTERUS

- Menstruation – changes in the endometrium under the influence of hormones
- Pregnancy – the uterus receives the fertilized ovum and develop as foetus.
- Labour – contractions to expel the foetus and placenta
- Involution – gradual return to normal size of the uterus following delivery.

FEMALE SEX HORMONES

Estrogen and progestron.

CONCLUSION

In this chapter, we learned about the human body organs – structure and its functions. The Body is made like a complex perfect machine. Each body is specially constructed to carry out its own function. The body consists of head, neck, trunk, upper limbs and lower limbs. The body has a strong frame work of bones called as skeleton. Human body is made up of living cells. Each cell has cell membrane, protoplasm and nucleus. The functions of the cells are digestion, excretion, respiration, growth and repair and reproduction. Tissues are made up of group of similar cells. Tissues are joined into larger units as organs. A system is group of organs. skeletal system, muscular, system, nervous system, circulatory system, digestive system and reproductive system respiratory system, excretory system, endocrine system are systems of our body.

ICT Corner

Human Anatomy

Through this activity you will be able to understand the anatomy of human body.

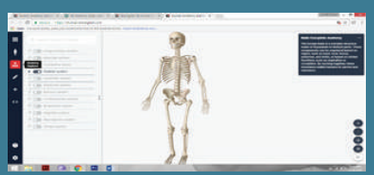
Step 1: Type the given URL in the browser. Human anatomy page will appear.

Step 2: Select 'Anatomy Explorer' from the menus on left and select a system or several systems you want to explore.

Step 3: Select 'Customize 3d Model' from the menus on left and use 'View modes' to Isolate a single part and explore it.

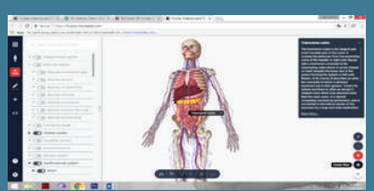
Step 4: Use buttons on right side bottom or use navigation arrow keys on keyboard to navigate the structure.

Step 1



Step 2

Step 3



Step 4

HUMAN ANATOMY'S URL:

https://human.biodigital.com/index.html

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*Pictures are indicative

ICT Corner

Digestive System

Through this activity you will explore the process of digestion.

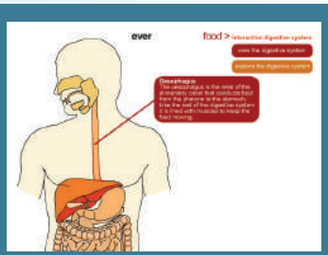
Step1: Use the URL to open the 'Interactive Digestive System' page. Click the 'View Digestive System' to view the digestive system.

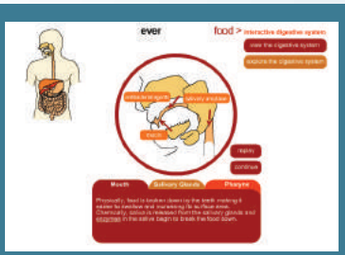
Step 2: Roll the mouse over the interactive diagram and place the cursor on any of the parts. A brief description of the parts will appear.

Step 3: Click the 'Explore the digestive system' to observe the process of digestion right from the mouth to the anus.

Step 4: During the exploration, questions will be asked and only correct answers will lead you to progress to the next process. Answer all the questions and finish the process of digestion.

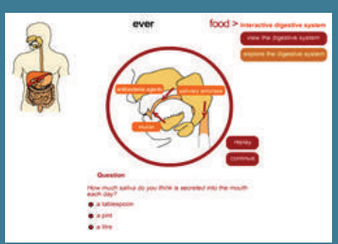
Step 1





Step 2

Step 3



Step 4

EXPLORE YOUR DIGESTIVE SYSTEM'S URL:

http://www.open.edu/openlearn/nature-environment/natural-history/explore-your-digestive-system

*Pictures are indicative

B190_11_NUR_EM

EVALUATION

RY3N8H

I. Choose the correct answers (1 mark)

1. A study of the structure of the body is termed as

   a. Anatomy b. Physiology

   c. Tissues d. Cells

2. The structural and functional unit of the human body is

   a. Protoplasm b. Nucleus

   c. Cell d. Cell membrane.

3. How many bones are present in the cranial cavity?

   a. 206 b. 22

   c. 8 d. 14

4. Which is the first bone in the cervical vertebral column?

   a. Atlas b. Axis

   c. Sacral vertebrate d. Lumbar bone

5. 4 small vertebrate in the tail region are fused to form a triangular bone is called as

   a. Sacral bone b. Femur

   c. Coccyx d. Medulla

6. The last two pairs of the ribs are not connected to the sternum by directly or indirectly is called as

   a. Floating ribs

   b. True ribs

   c. False ribs d. Ribs cage

7. Which is the strongest and longest bone in the body?

   a. Radius b. Ulnar

   c. Wrist d. Femur

8. The important part of the central nervous system is

   a. Brain b. Spinal cord

   c. Nerves d. All of the above

9. The largest part of the brain is

   a. Cerebrum b. Cerebellum

   c. Pons d. Medulla Oblongata

10. Function of the temporal lobe of the brain

    a. Motor centre b. Speech centre

    c. Mental powers d. Hearing centre.

11. The brain and spinal cord are covered by three membranes are called as

    a. Cranial nerves b. Meninges

    c. Medulla oblongata d. Duarmater

12. The shape of the heart is

    a. Square b. Triangle

    c. Cone d. Round

13. Which gland helps to protect the body from infection?

    a. Thyroid b. pituitary gland

    c. lymph glands d. parathyroid

14. Which is the largest and important organ of the abdomen?

    a. Spleen b. Intestine

    c. Pancreas d. Liver

15. Which enzyme converts protein into peptones

    a. Pepsin b. Renin

    c. Lipase d. Hcl

16. Larynx is otherwise called as
    a. Voice box b. Trachea
    c. Nostril d. Cartilage
17. The important excretory organs of the body are
    a. Lungs b. Kidney
    c. Skin d. Thyroid.
18. Which maintains the pressure of air in the tympanic cavity?
    a. Eardrum b. Lncus
    c. Eustactian tube d. Stapes
19. The outer thin layer of the skin is
    a. Dermis b. Epidermis
    c. Subcutaneous tissue d. Cornea
20. The shape of the uterus is
    a. Pear shaped b. Apple shaped
    c. Pea shaped d. Beans shaped.

II. Write short answers (3 marks)

1. Define anatomical position.
2. What is system?
3. Write about endocrine gland with examples.
4. Write the parts of skeleton.
5. Explain about cervical vertebral column
6. What are the functions of vertebral column.
7. What is meant by false ribs?
8. What is meant by joint?
9. Write the functions of muscular system.
10. Explain about Cardiac system.
11. Write the parts of brain.
12. Write the functions of cerebellum.
13. Explain about arachnoid mater.
14. Write the functions of cerebrospinal fluid.
15. Write the functions of heart.
16. Write the functions of lymph
17. What are the functions of digestive system?
18. What is meant by external respiration.
19. Write the parts of urinary system.
20. Define hormone
21. Explain the parts of urinary system.
22. Write the four layers of epidermis.
23. Mention the functions of uterus.
24. Write the internal and external organs of female reproductive system.
25. Explain about scrotum.
26. Write the parts of middle ear?
27. Write the names of the papillae which is found in the upper surface of the tongue.
28. Mention the functions of parathyroid gland.

III. Write short notes (5 marks)

1. Draw the structure of a cell and identify its parts?
2. Write the types of tissues and explain.
3. Explain the systems of the body.
4. Draw the structure of skeletal system.
5. Explain about cranium.
6. Write the bones of upper limb.
7. Define joints. Explain the various types of joints in our body?

8. Draw the diagram of gastro intestinal tract.
9. Explain the importance of Respiration.
10. Write the functions of Renal system.
11. Explain about thyroid gland.
12. Mention the functions of islets of langerhans.
13. Explain the physiology of Ear.
14. What are the functions of skin.
15. Draw the diagram and mention the parts of male reproductive system.

IV. Write an essay for the following questions (10 marks)

1. What is digestion and explain about physiology of digestion?
2. Draw the central nervous system and its functions.
3. Describe the structure of heart and blood circulation.
4. Describe the structure of female reproductive system.
5. Write an essay about blood vessels.
6. Draw and explain the structure of respiratory system?
7. Draw and explain the structure of renal system?
8. Write an essay about pituitary gland?

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INTERNET LINKS

academic.pgccedu, AandP>ANPlinks
www.innerbody.com

A-Z GLOSSARY

Artery – (தமனி) - A Tube of muscle and elastic fibers, which distributes blood from the heart to the capillaries and throughout the body.

Skeleton –(எலும்புக்கூடு) - Bony frame work of the body

Impulse – (தூண்டுதல்) - A sudden pushing force or a sudden uncontrollable act.

Meninges – (மூளை உறைகள்) - The membranes covering the brain and spinal cord.

Vein – (சிரை) - A vessel carrying blood from the capillaries back to the heart.

Capillariesn – (தந்துகிகள்) - Hair like, a minute vessel connecting an arteriole and venule

Red blood cell – (இரத்த சிவப்பணுக்கள்) - Otherwise called as erythrocytes contain haemoglobin which combines with oxygen in passing through the lungs

White Blood Cell – (இரத்த வெள்ளை அணுக்கள்) - The cells which have power against invading micro- organism and to destroy

Platelets – (இரத்த தட்டுகள்) - They help in the clotting of blood

Digestion – (செரிமானம்) - The act or process of converting food into chemical substances that can be absorbed into the blood and utilized by the body tissues.

Absorption – (உறிஞ்சப்படுதல்) - In physiology, the taking up of fluids or other substances by the tissues of the body

Sphincter muscle – (சுருக்கு தசை) - A ring shaped muscle, contraction of which closes natural orifice.

Bolus – (போலஸ்) - A rounded mass of masticated food immediately before being swallowed or one passing through the intestines.

Chyme – (கைம்) - The semi liquid acid mass of food that passes from the stomach to the intestine.

Metabolism – (மெட்டபாலிசம்)	- The sum of the physical and chemical process by which living organized substance is built up and maintained.
Ovary – (ஓவரி)	- One of a pair of glandular organs in the female pelvis. They Produce ova
Testis – (விந்தகம்)	- One of the two glands in the scrotum which produce spermatozoa
Fallopian tube – (பெல்லோபின்குழாய்)	- It is a uterine tube. It is used to release the Ova from the Ovaries to the interior of the uterus
Colon – (குடல்)	- The large intestine, from the caecum to the rectum
Nerve – (நரம்பு)	- A Bundle of conduction fibre enclosed in a shear and is to transmit impulses between and part of the body.

Unit 3

INTRODUCTION TO PSYCHOLOGY AND SOCIOLOGY

LEARNING OBJECTIVES

At the end of this chapter, the student will be able to,

RY7AWE

- Define psychology and sociology
- Understand the importance of psychology in nursing
- Define the behavior
- List the factors influencing behavior

  Mental health
- Brief the characteristics and factors influencing mental health
- Explain the mental health and its importance to nurses

  Learning
- Understand the factors influencing and theories of learning

  Attention and perception
- List the types and factors of attention

  Distraction
- Know the sources and forms of distraction
- Explain the implications of attention in nursing

  Perception
- List the types and factors influencing the perception
- Explore the gesalt principles of perception
- Understand the perceptual constancy, errors and its types

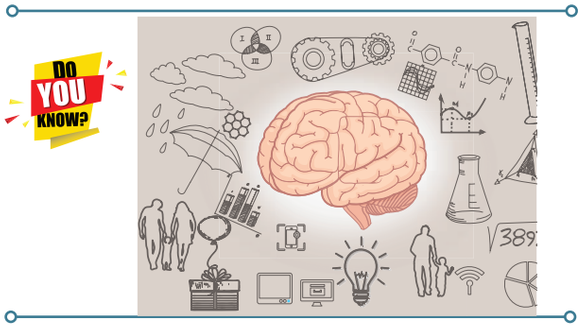
  Eemotion
- Explain the types and factors influencing emotion
- Understand the physiological changes due to emotions and its effect in nursing

  Motivation
- Narrate the concept and process of motivation
- Describe the nature and characteristics and kinds of motivation
- Define the individual differences
- Describe the factors causing individual differences and its importance in nursing

  Personality
- Explain the categories and traits of personality for nurse
- Define and discuss the importance of sociology
- Understand the application of sociology in nursing and basic principles of sociology.

மனநலம் மன்னுயிர்க் காக்கும் இனநலம்
எல்லாப் புகழும் தரும்
Goodness of mind will give wealth and good society will bring with it all praise to men.

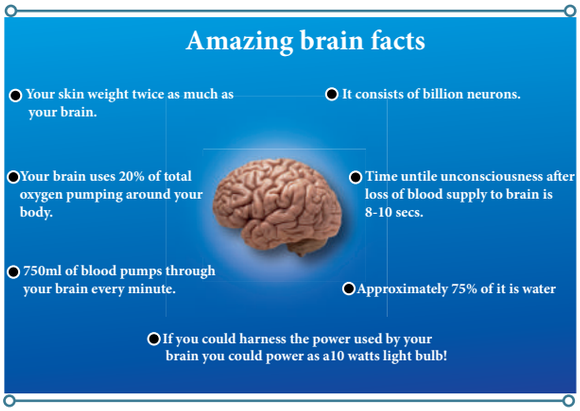
3.1 INTRODUCTION



Look at this picture. The brain is able to perceive all sides of it. If the brain is healthy and is able to perceive. The person can identify all the things around him, and behave normally. Eg. In above picture we can see one umbrella, balloon, clouds, man, different shapes, and electric bulb, graphs etc. if the mind is healthy and sound it can go ahead and think about what are the relationships among all the things around. The same way, the nurse needs to identify the patients and things around them and she needs to think that what is the problem for patient and why he is behaving in such a way. Ex; look at the picture down. By seeing this picture down the man is with headache, fever, because he is looking at the thermometer and with one towel or pad on the forehead.

So, the nurse knows that the patient may be with fever. She will try to identify the needs and help the patient immediately. To do this, the nurse must have enough knowledge about fever and also the

mind to perceive and act to the situation immediately. She needs to think what is going on and behave accordingly and also to understand the behavior of a patient? This will help the nurse to help the patient as well as for her. She also needs to establish the social relationship with the patient and family. So the nurse must be through of psychology which means knowledge of behavior and sociology which means **the science of** society, and social relationships.



- **Psychology** is the science of the mind and behavior. The word "**psychology**" comes from the Greek word psyche means “soul” and the Greek word logos means the study of something. It plays a vital role in taking care of the patients in nursing. The knowledge

of basic principles of psychology is significant in taking care of nurse herself and also in her interaction with the patient. The father of psychology is German philosopher Wilhelm Wundt (1832 - 1920)

- "**Sociology**" is a branch of science which deals with society, including patterns of social relationships, social interaction, and culture.

The nurses should understand that, psychology and sociology are sciences which must be incorporated in nursing.

In this chapter, we are going to discuss about the psychology in terms of behavior and what is the relationship between nurse and patients behavior? How to keep healthy behavior? What is social relationship? society, social structure etc.

Wilhelm Wundt

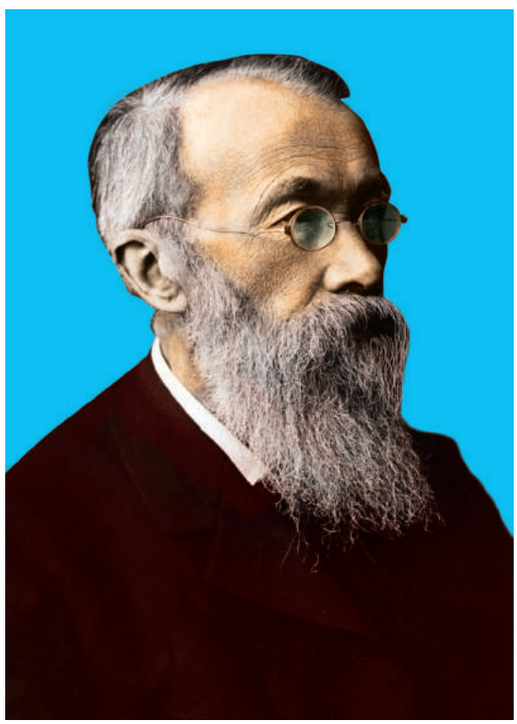
- Leipzig, Germany

-The "father of Psychology"

-Founder of modern Psychology

-Opened the first Psychology lab in 1879

-Applied laboratory techniques to study of the mind



Wilhelm Wundt
(1832 - 1920)

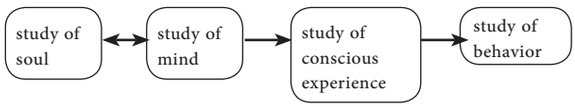
3.2 DEFINITIONS

3.2.1 Psychology

- **Psychology means**, scientific study of the way the human mind works and how it influences behavior
- "Psychology: the study of behavior and mental processes and how they are affected by an organism's physical state, mental state, and environment.
- Psychology is a science, which aims to give us better understanding and control of the behavior of the organism as a whole. (William McDoughall-1949)

3.3 EVOLUTION OF MEANING OF PSYCHOLOGY

The meaning of psychology has been shifted from study of soul to study of behavior



So, study of human behavior helps nurses to deliver quality care to the patients by adjusting their own behavior. Behavior involves both body and mind.

3.4 IMPORTANCE OF PSYCHOLOGY IN NURSING

The study of human behavior is of great value to a nursing professional in a number of ways.

Psychology has become necessary in every profession including nursing today. This is because of increasing emphasis being laid out on the interplay of body, mind and spirit in the health status of every individual. The learning of psychology helps a nurse in the following ways.

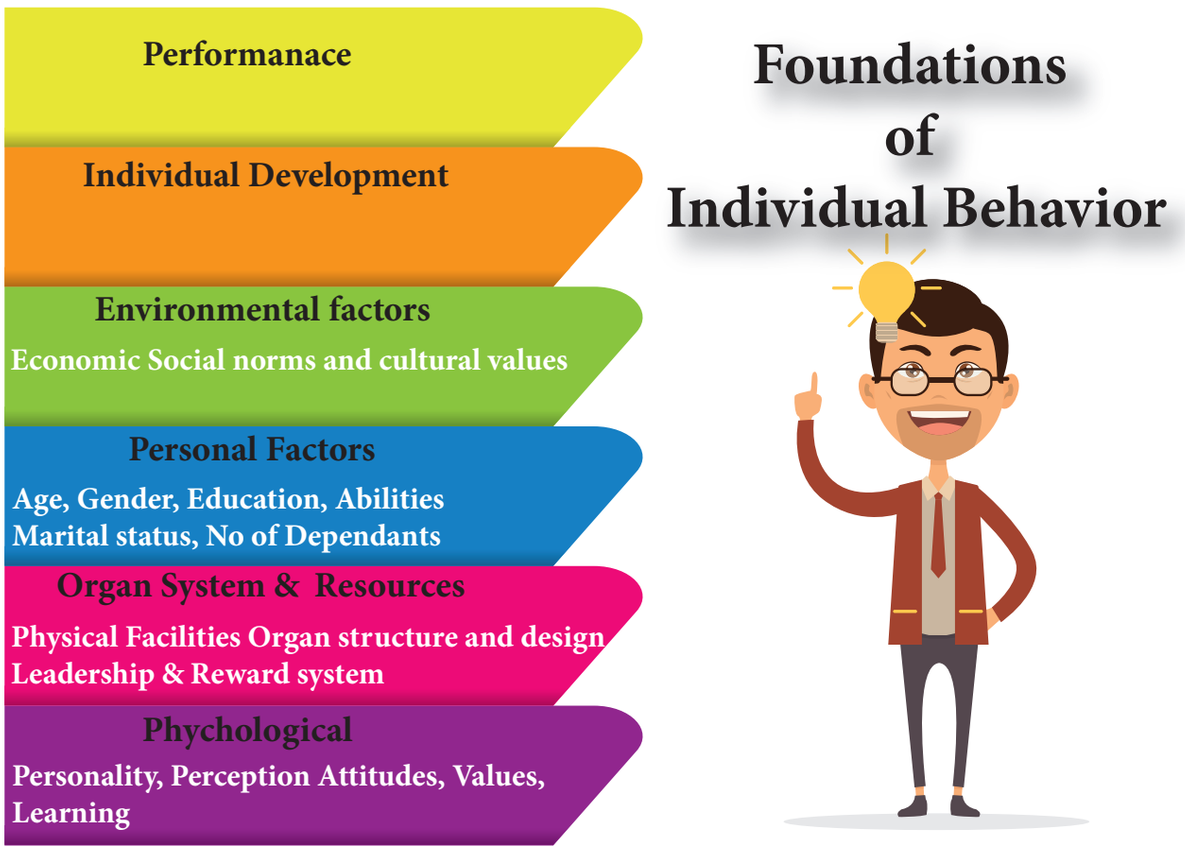
1. **To understand own self**- The knowledge of psychology will help the nurse to get insight in to her own motives, desires, emotions, feelings, attitudes. This knowledge also helps her to understand her strength and weakness.
2. **To understand patients**- Patients may also have tension, worries, pains and also many doubts about their illness. The knowledge of psychology will help the nurse to understand the problems and needs of patients to attend them. She can understand the motives, and attitudes of patients in a better way.
3. **To recognize abnormal behavior**- The knowledge of psychology will help nurses to understand abnormal behaviors and help the patient in management of mental illnesses.
4. **To understand other self**-The student nurse has to study, work, and live with other nurses and doctor, patient and their family members. She will learn why other differ from her in their like and dislike, in their interest and abilities or in their reaction to others.
5. **To provide quality care to patients**- A nurse with good knowledge of human psychology can understand what fears or anxieties the patient faces, what he feels? what he would like to know? and why he behaves the way he does?
6. **Help the patients to adjust the situation**- Illness and physical handicaps often bring about the need for major adjustment. A nurse trained in psychology can be an effective health educator and help in these kind of adjustment.
7. **Help the student nurse** to appreciate the necessity for changing the environment or surrounding. The change in the environment is sometimes necessary for better adjustment and happiness.
8. **Helps for Readjustment**
   1. Nursing profession requires readjustment for success in the nursing carrier-: overcoming homesickness and self-reliance is needed if she has to live smoothly in a hostel or a hospital.

2. Adjusting to sick person, who may cry desperately and ventilate their anger.
3. Trying to work and study together.

In this chapter we are discussing about behavior and factors influencing behavior to understand the psychological aspects of health care.

3.5 DEFINITION OF BEHAVIOR

- Behavior is defined as the way in which an animal or person behaves in response to a particular situation or stimulus.
- Behavior is a response of an individual or group to an action, environment, person, or stimulus.



3.6 PSYCHOLOGICAL FACTORS INFLUENCING OR AFFECTING BEHAVIOR

All above factors are foundation of the behavior of a human being. Knowing about each factor will help us to have a healthy behavior and application of psychology in nursing.

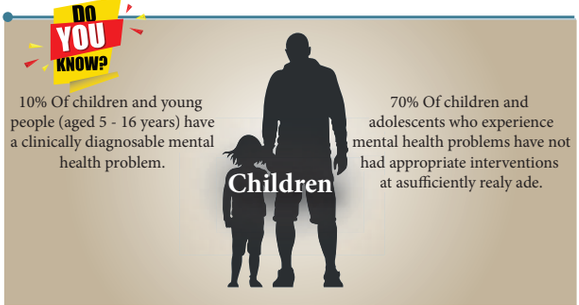
Factors Affecting Behavior

1. Mental health	2. LEARNING AND INSIGHT	3. Observation A) attentiion B) perception
4. EMOTION	5. PERSONALITY	6. MOTIVES
	7. INDIVIDUAL DIFFERENCES	

3.6.1 Mental health

3.6.1.1 Definition of Mental health

- It is "the adjustment of human beings to the world and to each other with maximum of effectiveness and happiness" **Meninger**
- Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps to determine how we handle stress, relate to others, and make choices.
- Mental health can be "conceptualized as a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." (The World Health Organisation (WHO) 2001).



Myth: Mental health problems don't affect me.
Fact- Mental health problems are very common. In 2014, about:
One in five American adults experienced a mental health issue
One in 10 young people experienced a period of major depression
One in 25 Americans lived with a serious mental illness, such as schizophrenia, bipolar disorder, or major depression.
Suicide is the 10th leading cause of death in the United States. It accounts for the loss of more than 41,000 American lives each year, more than double the number of lives lost to homicide.

In India according to National health survey 2015

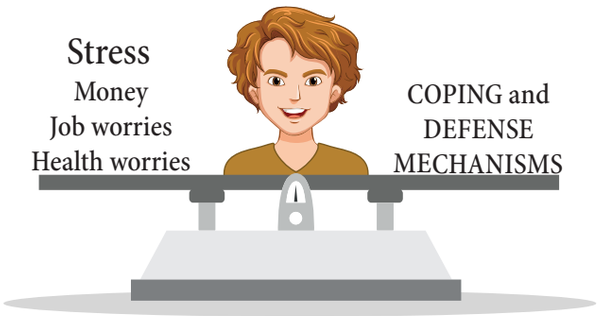
• **45 % of Indian population are suffering from depression**
• **871 suicide are happening daily in an average**
• **Suicide is the second leading cause of death in 18-29 age group**
• **150 millions are in need of active treatment**
• **Anxiety disorders and substance abuse are affecting 10 % of the population**

3.6.2 Characteristics of mentally healthy person

The mentally healthy person will be (refer picture)

- Free from internal conflict
- Searches for an identity
- Has strong sense of self esteem and self confident
- Knows his needs, problems and goals and solves problems
- Has good control over his behavior
- Productive
- Satisfied with profession and occupation

Imbalance



Balance

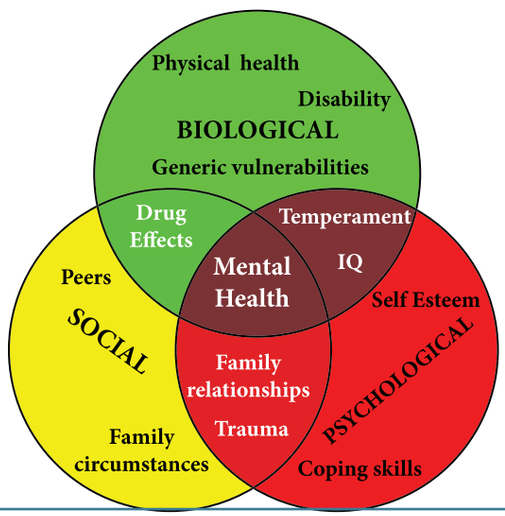
- Well balanced life
- healthy interest and aptitudes
- Socially adjustable.

The people who are having balance between stress and coping skills will be mentally healthy person.

STUDENT'S ACTIVITY

Each student can list out one of the stress event and write about what they have done to overcome from that situation.

3.6.3 Factors Influencing Mental Health



- **Other factors are**
  1 **Personal factors**
    - Age,
    - Growth and development,
    - Physical health and health practice
    - Self efficacy
    - Hardness(ability to resist illness)
    - Spirituality
    - Commitment, control and challenge
    - Resourcefulness.
  2 **Inter personal factors:**
    - Sense of belonging
    - Social net work and social support
  3 **Cultural factors**
    - Race
    - Economic situation
    - Religion
    - Culture.

3.6.4 Importance of mental health for nurses

The nurse must have good mental health to understand the patients and their family. She must be able to balance herself

in emergency situations. She should not have any conflicts among the health team members wherever she is working. When she possess all the characters of mentally healthy person then she will be able to deliver the quality care to patients and also she can prevent the harm to the patients.

3.7 Learning and insight

3.7.1 Learning

One of the most important characteristics of human being is the capacity to learn. Learning is central to all our behavior. Our attitude and emotional expressions are also learned behavior.

3.7.2 Definitions of learning

- Learning is defined as the mental activity by which knowledge, skill, attitude, appreciations and ideas are acquired, resulting in modifications of behaviors
- Learning means change in human disposition or capability that persists over a period of time and is not simply ascribable to processes of growth."
  — From The Conditions of Learning by Robert Gagne
- Learning means the process of gaining knowledge and expertise."
  — From The Adult Learner by Malcolm Knowles.

3.7.3 Factors influencing learning

It depends upon the following factors:

FACTORS INFLUENCING LEARNING

1. Personal factors
2. Environmental factors

Personal Factors Influencing Learning

The process of learning is influenced by a variety of personal factors. A thorough knowledge of these factors will prove very helpful for teachers and parents in understanding and guiding their children's learning. Some important personal factors are following:-

- **Sensation and Perception**- Sensation is at the core of perception. There are five sense organ i.e., skin, ears, tongue, eyes and nose. These sense organs are the gateway of knowledge and help in perception of various stimuli in the environment.
- **Fatigue and Boredom**-Fatigue is mental and physical tiredness which decrease in efficiency and competency to work. Boredom, on other hand is a lack of desire or an aversion to work.
- **Age and Maturation**- Learning is directly dependent upon age and maturation. No learning can take place unless individual is matured enough to learn.
- **Emotional Condition**-Emotional condition enhances the quality and speed of learning.
- **Happiness, joy and satisfaction** are always favorable for any type of learning.
- **Needs**- The lack of something is experienced by the child. The child then tries to perform that activity which culminates in the satisfaction of the need. Thus, the needs are associated with goals. The needs in human being can be physiological such as need for oxygen, food, water etc.

- **Interests**- Various types of interests of the students can be exploited to facilitate their learning.
- **Motivation**- It is the heart of the learning process. It generates the will in an individual to do something. Two type of motivation are commonly recognized. These are following:
    - **Intrinsic motivation**- If a student engages in construction of model aero planes because he thinks it will please his father, who is an ex-pilot,
    - **Extrinsic motivation**- It occurs when a student pursues a learning task because of teacher instructions.
- **Intelligence**- Intelligence as expressed by an I.Q score on an intelligence test is positively related to learning. Generally, students with higher I.Q learn rapidly.
- **Aptitude**- A student, who possesses appropriate aptitude for a particular subject of study or skill, will learn better and retain it for a longer time.
- **Attitude**- If a person is alert attentive and interested in the material to be learned. He is bound to have a favorable attitude towards it. Such an attitude will enable him to tackle the learning situation economically, pleasantly and effectively.

3.7.4 Environmental Factors

- Surrounding of a person
- Relationship with teachers,
- Relationship with parents and peers
- Social Media influence on learning
- Learning situation
- Learning material.

Theories of learning

The following are the main theories of learning:

1. **Behaviorism** - this is based on the behavioral modification towards the learning to achieve the goal.
2. **Cognitivism** - it means learning through insight (using the thinking capacity)
3. **Social Learning Theory** – learning from the social models, social games and social media. Ex; learning from the cine actors, famous personalities, family members, friends etc.
4. **Social Constructivism** –knowledge is actively constructed through collaborative and Co-operative Learning from the social activity. Eg; journaling.
5. **Multiple Intelligences** –Every person has multiple intelligence capacity, like intelligent in Linguistic (speaking), Logical-Mathematical, musical intelligence, Inter personal and Intrapersonal relationships intelligence and etc. so the teaching should be focused to enable the students to enhance their strengths and reduce their weaknesses Delivery of instruction or teaching must be through the multiple mediums. The Student- Centered Classroom must be arranged. It is mostly Self-Directed Learning.

The major theories are Behaviorism and cognitivism. In this chapter we will **discuss only about these two theories.**

3.7.5 Behaviorism

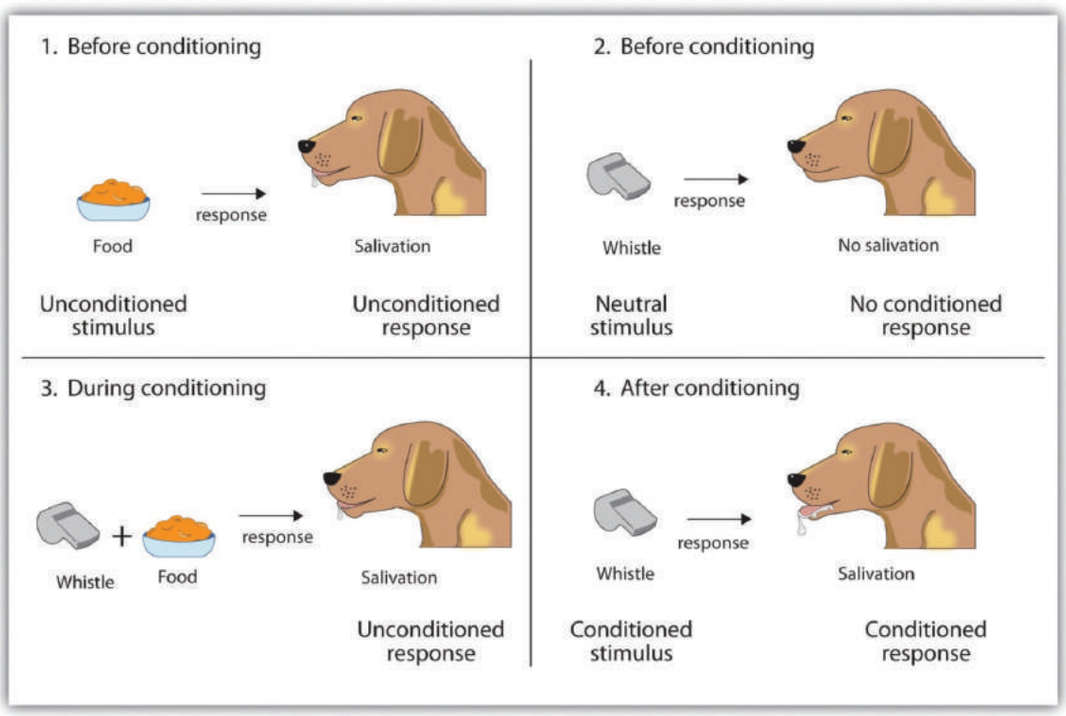
Behaviorism Classical Conditioning (PAVLOV)

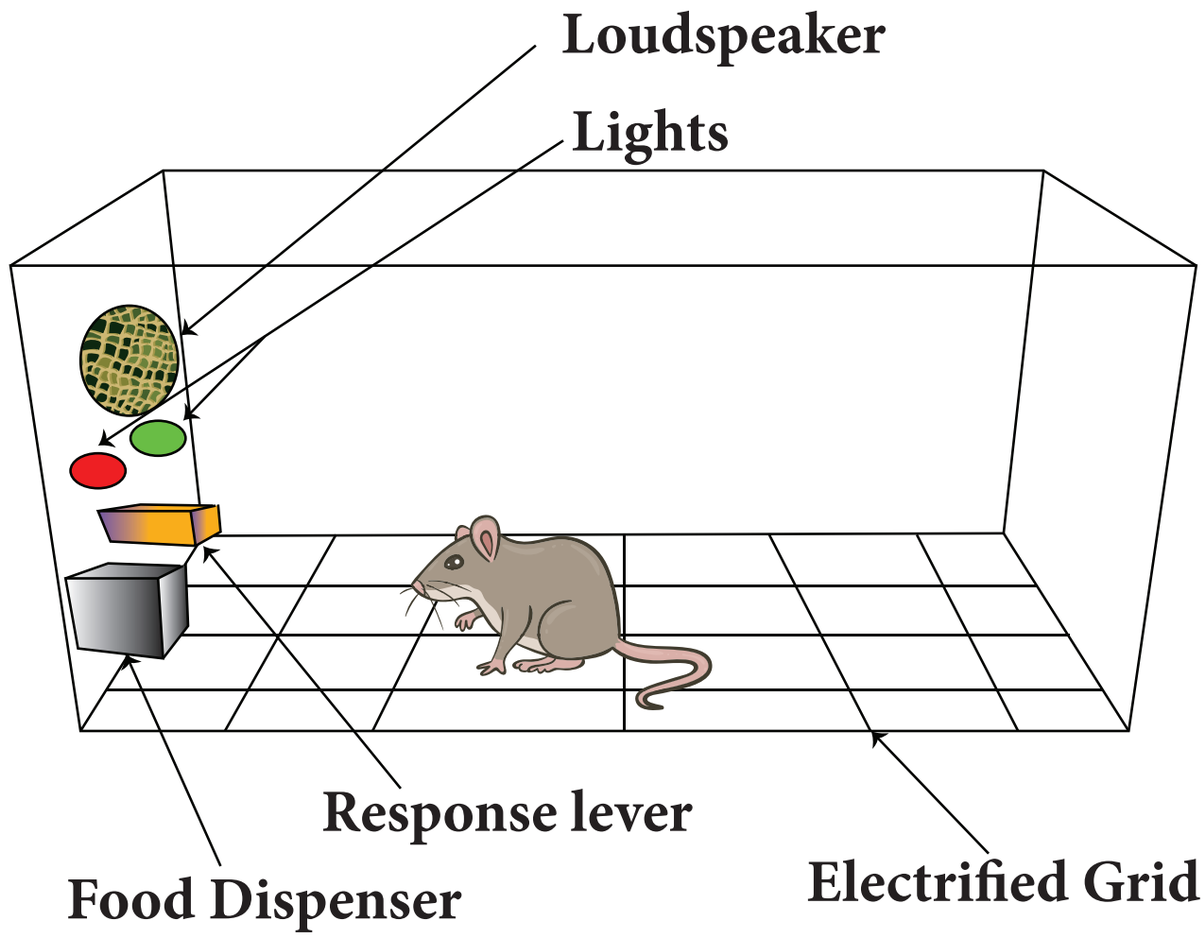
- A stimulus is presented in order to get a response.
- It is about reflexes
- **Classical conditioning** Ivan Pavlov a Russian physiologist, a researcher experimented on a dog. A capsule attached to a dogs 'salivary gland to measure the salivary flow. A whistle was rung every time and meat powder was given to the dog. This was repeated several times. Later Pavlov observed that dog salivated at the mere sound of the whistle without giving meat powder. Thus the dog has been conditioned to respond. Pavlov showed how the internal process such as learning can be studied objectively.
- **Principles of classical conditioning** used in the following areas for learning
- Developing good habits
- Breaking of bad habits and elimination of fear
- Training of animals
- Use in psychotherapy
- Useful in developing favorable attitude.

3.7.6 Operant Conditioning (SKINNER) it is another Behavioral Theory

- The response is made first then reinforcement follows.
- It is about feedback/reinforcement.

Skinner experimented on a rat which was placed inside a glass box containing a lever and food tray. The rat was free to explore the box. Whenever the lever in the box was pressed automatically a piece of food was dropped on the tray. The number of times, the rat pressed on the lever was recorded. Pressing the lever was the response to be learned (the operant response) and the food was the stimulus consequences





(reinforcement). Thus the rate of presses increased with rewarding of the rat with food.

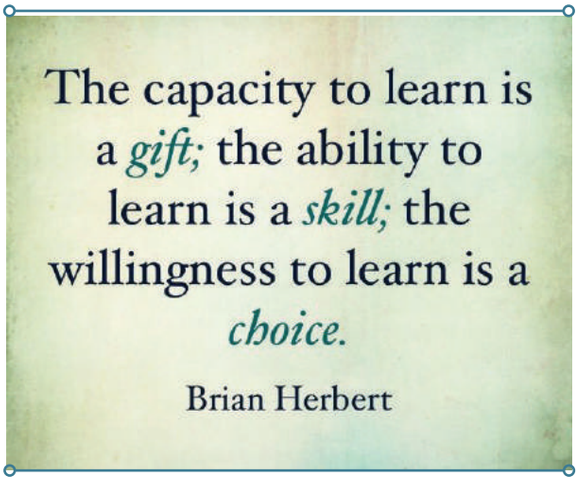
This theory helps as behavioral psychology to initiate and enhance the learning through positive reinforcement by appreciating and giving rewards to the students.

3.7.7 Cognitivism

It means learning through insight

- **Insight**- A sudden understanding which alters the perception about (means old object looks new) like complicated problem and solve it by thinking.
- **The another meaning of insight is** the capacity to gain an accurate and deep understanding of someone or something.
- **Learning by insight** means sudden grasping of the solution, a flash of understanding, without the process of trial and error. All discoveries and inventions have taken place through insight.

Learning by insight: This theory is also called Gestalt Theory of Learning. Gestalt psychologist concluded that, the individual learns by his ability known as insight and not by trial and error method. They underwent an experiment on a Chimpanzee called sultan.



Experiments of Theory of Learning by Insight:

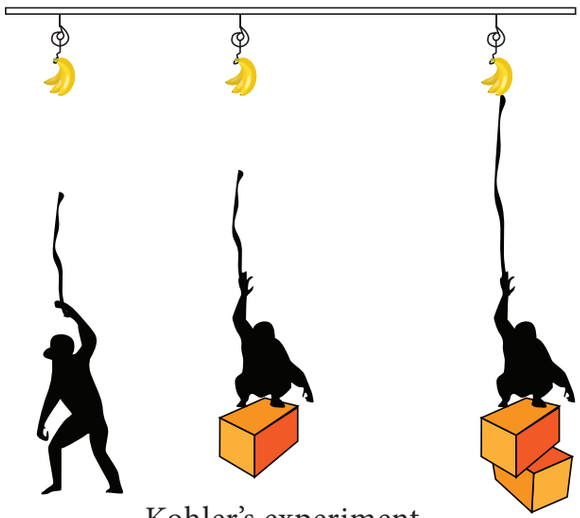
(i) Kohler's experiment on Sultan (Experiment with box):

Kohlar kept a ***Chimpanzee*** (named Sultan) hungry for some time, and then shut him in a large cage. He hung bananas from the ceiling, and kept a box on the floor of the cage, fast beneath. The Chimpanzee could not reach the banana. Another box was put in a corner of the cage.

But Sultan could not get the idea of placing one box on the other and thus reaching the banana. Ultimately Kohler gave demonstration of putting one box on the other. Sultan could now learn the whole situation. He used his intelligence and insight to put the two boxes one upon the other, stand on these and then reach the bananas.

(ii) Experiment with two sticks:

In another experiment Kohler kept two sticks in the cage. One end of the shorter sticks could be fitted in the one end of the longer sticks, so as to make them longer. The monkey did not get the idea of forming the two sticks through trial and error. When Kohlare gave a hint through putting his finger in the hole of the bigger stick, the sultan viewed the whole situation and performed the right task through understanding the insight.



Kohler's experiment

NURSING IMPLICATIONS OF THEORY OF LEARNING BY INSIGHT

The nursing teacher must teach the student nurses following the certain principles like.

(i) Proceeding from whole to the part

We must always proceed from the whole to the part, so as to give a complete insight into the subject. Begin from the world, and then come to our country, our state and our city. Teach about the whole flower and then analyze the parts. Teach the whole sentence or word, and then analyze

into words of letters. In the same way teach about the whole body anatomy and physiology then proceeding to each part of the body and its pathological changes with treatment needed.

(ii) Creating motivation

The nursing teacher should, arouse motivation by giving rewards and reinforcement.

(iii) Emphasis on Understanding

For all higher learning, what is needed is deep understanding and insight into the problem. Learning by insight (whether it is a geometrical problem, arithmetical sum or scientific experiment) saves time and energy.

So, the students must be introduced in to the problem solving methods of learning. The nursing students have to

LEARNING NEVER ENDS
in
Nursing

let us never consider ourselves finished nurses....we must be learning all of our lives.

DO YOU KNOW?

About a Nursing Student

"If she can study in this chaos, then handling stressful situations when she's a nurse will be a piece of cake."

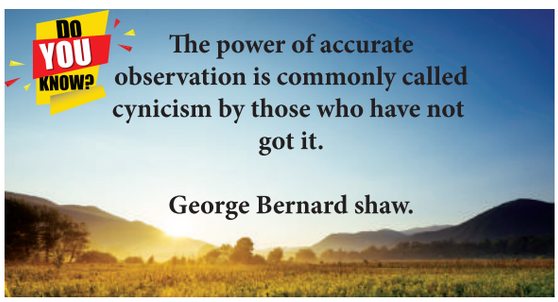
STUDENT'S ACTIVITY

use their insight in many situations. Like, if the patient vomits suddenly the nurse must observe the type of vomiting, amount, and consistency and character of vomiting. She may need to assess the vital signs and identify the problem and solve it. So insight learning is must for nurses.

STUDENT'S ACTIVITY

Make like this cards and display in your classroom. so,the students will learn the behavior.

3.8 **OBSERVATION-** It is the another factor which will influence the behavior, by learning observation we can learn psychology.



- **Definition of observation**

Observation is the action or process of carefully watching someone or something.

Ex. The nurse observes the behavior of patient with anxiety.

"He's sleeping nice & peacefully - Let's wake him up for his obs."

- **Observation has two mental activities.**

1. Attention
2. Perception

3.8.1 Definition of attention; it is the process of concentration on particular aspect of information or event using behavioral and cognitive process.

OBSERVING

- Observation is a conscious , deleberate skill that is developed only through and with an organized approach.

Ex : Client data observed through four senses that is through vision , smell , hearing and touch.

Attention has also been referred to as the allocation of limited processing resources.

The field of consciousness is vast and attention is one of its parts. For example, when we are reading, there are, Book, note, table, chair, etc., around us but, all these can be under my consciousness, but my attention is on the words being read on the paper.

Attention is not possible in the absence of consciousness, but attention and consciousness are not one

The activity of concentrating mind on a particular matter is called attention.

Attention is an active part of consciousness

3.8.2 Types of Attention

There are 4 types of attention:

- **Non-volitional Attention**- It is also called involuntary attention.
- **Enforced Attention**-Instincts will force attention
- **Spontaneous Attention**-Internal motivation and sentiments
- **Volitional Attention**: It is also called voluntary attention
  - **Implicit Attention**: ordinary efforts (natural and novelty)
  - **Explicit Attention**: make efforts for a number of times(repetition of something).

3.8.3 Factors related to Attention

(i) External Factors:

Any object, Size, Intensity, Repetition, Duration, Movement, Contrast, Change, Novelty.

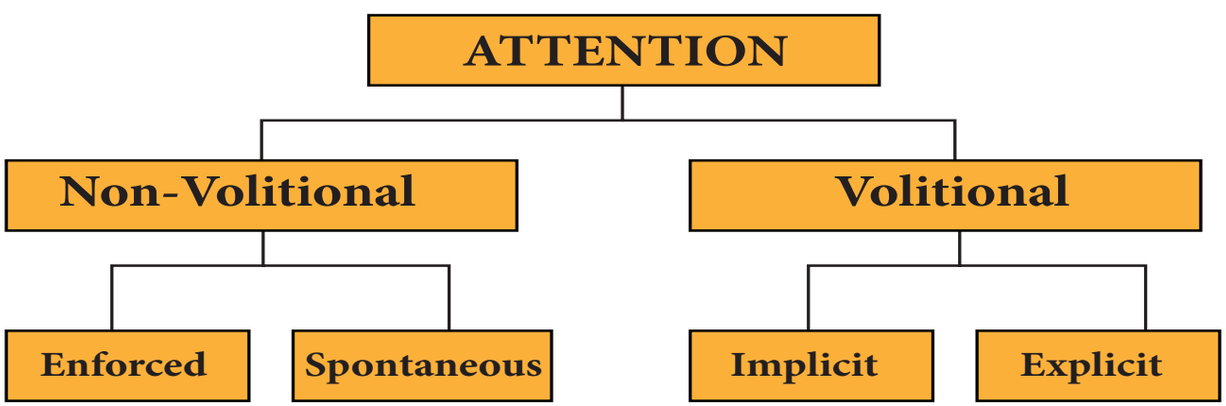
(ii) Internal Factors:

Any person Interest, Desire, Motives, Aim/Goal, Habit, Past Experience, aptitude, attitude, mental set, disposition and temperament etc

3.8.4 Distraction

- **Definition** -It means interference in attention. any factor which normally tends to break up attention

TYPES OF ATTENTION



- **Sources of Distraction**
  - **External Factors**: Noise, music, improper lighting, uncomfortable seats, inadequate ventilation, defective method of teaching, improper use of teaching aids, defective voice of the teacher, etc.
  - **Internal Factors**: Emotional disturbances, ill health, anger, fear, feeling of insecurity, boredom, lack of motivation, feeling of fatigue, lack of interest, unrelated subject matter, etc.
- **Forms of Distraction**
  - **Continuous Distraction**- continuous noise or music which disturbs the work
  - **Discontinuous Distraction**- on and off of voice or noise which disturbs our concentration
  - **Span of Attention**: limit of the ability of a person to attend or concentrate on something.

Forms of Distractions

3.8.5 Inattention

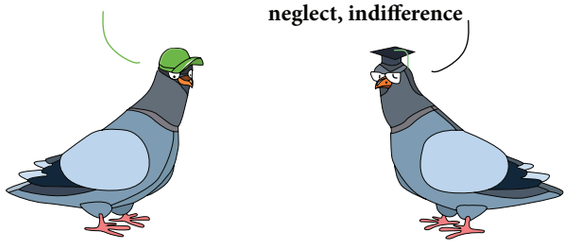
- There are two fields of consciousness – the field of attention and inattention.
- The field of attention is in the center of consciousness and that of inattention to the edge of consciousness. The things on the edge of consciousness influence the mind to some extent, but our attention is not diverted to them.

Inattention may call as negligence which may enter into legal issue.

There are other names for inattention from thesaurus as follows;

What are other words for inattention?

disregard, carelessness, negligence, inattentiveness, inadvertence, heedlessness, neglect, indifference



Attention Span: It varies with age, physical, mental and emotional condition and nature of material read. On an average span of attention of a child is limited to 4 to 5, whereas for adults it is within 6 to 7 letters or digits. Touchidoscope is the apparatus using for determine the span of attention.

3.8.6 The implications of attention in nursing

Every step in the nursing field is very important. A great nurse pays excellent attention to detail of patient information and she must be careful, not to skip any steps or make errors. From reading a patient's chart correctly to remember the events of a delicate cases, there is nothing that essential chance in nursing. When a simple mistake can spell/ create tragedy for another's life, attention to detail can literally be the difference between life and death.

STUDENT'S ACTIVITY

Let the students tell the multiples of table 7 till they are able to. The teacher can identify the span of attention and concentration

3.8.7 Perception it is an another activity of observation

3.8.8 Definition of perception

The process by which the brain organizes and interprets the sensory information.

3.8.9 Perception - It is the process of acquiring information with our senses.

- It is the process of attaining awareness or understanding of sensory information.
- The process by which an individual selects, organizes, and interprets stimuli into a meaningful and coherent picture of the world.

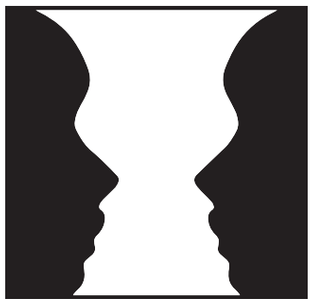
3.8.10 Perceptions are divided into

1) Visual perception 2)Auditory perception

3.8.11 Factors influencing perception:

- Functioning of the sense organs
- Previous experience
- Emotions such as fear can influence perception
- Needs and Motivation
- Functioning of the brain
- Frequency of exposure
- Interest
- Cultural influences,

3.8.12 Gestalt principles of perception



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1. Figure-ground Relationship:

According to this principle any figure can be perceived more meaningfully in a background and that figure cannot be separated from that background. For example, letters written with a white chalk piece are perceived clearly in the background of a blackboard. In the following figure two faces can be seen in the background of a white colour. The same way the white background can be perceived as a vessel in the background of two faces.

2. Grouping of Stimuli in Perceptual Organization

As said above, according to gestalt principle, the objects can be perceived meaningfully when they are grouped together. There are some principles which