Department of Physical Education
Guru Ghasidas Vishwavidyalaya, Bilaspur.

MODEL ANSWER

Class :- B.P.Ed. - Semester - I Session :- 2013-14
Subject :- Anatomy, Physiology & Health Education (AS-2580)
Paper :- Second Max. Marks :- 60
Time Allowed :- Three hours.

SECTION-A
(Short answers type questions)

Ans 1-(i) lysosomes.

(ii) Oxygenated (Pure) Blood.

(iii) Secondary Sex organs of female reproductive System:-
- (a) Fallopian Tube
- (b) Uterus
- (c) Vagina
- (d) Mammary glands.

(iv) (a) They give shape, form and appearance to the body.
(b) They protect the vital organs of the body.
(c) They keep the joints in proper position.
(d) They produce movements of the body.

(v) Examples of endocrine glands :-
(a) Pituitary (b) Thyroid (c) Pineal (d) Adrenals (e) Parathyroid (f) Ovary (g) Testis (h) Thymus etc.

(vi) Vertebrae and bones of the face.

(vii)(a) Transfusion of infected blood or blood products.
(b) from infected mother to child. etc.

(viii)(a) Ulna. (b) Radius (c) Tibia (d) Fibula etc.

(ix) R.B.C. :- Red Blood Corpuscles/Cells.

(x) ~~Plts~~ White blood cells.

SECTION-B

UNIT-I

Ans-2 :-

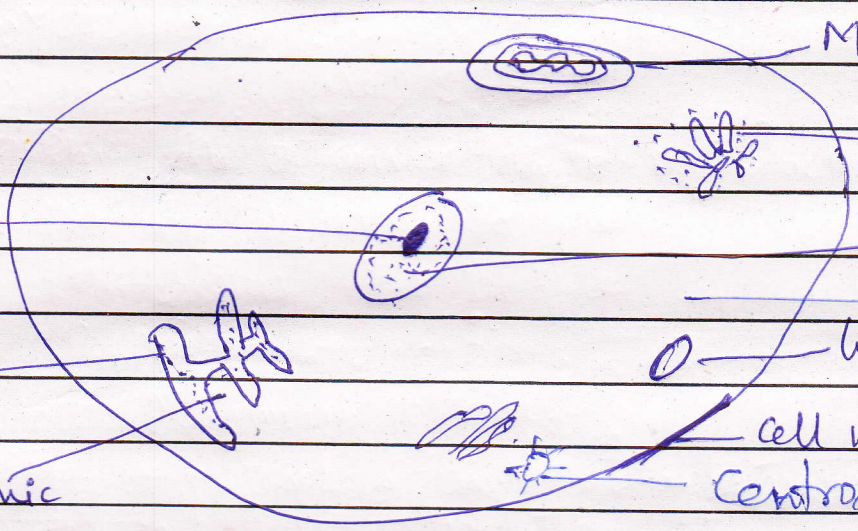


fig.: Structure of a Cell.

The cell is the unit of living tissues. Cells of different tissues perform different functions. A cell is made up of the following structures:-

(i) Cell wall :- It is the external boundary of a living cell. The cell wall allows the diffusion of substances into and out of the cell.

(ii) Nucleus :- Present almost in the centre of a cell. It is more or less spherical in shape. It is bounded by nucleus membrane. The nucleus contains :- a) nucleolus (b) Chromatin

(iii) Cytoplasm :- It lies between the cell membrane and the nucleus. It contains cell organelles like endoplasmic reticulum, golgi apparatus, mitochondria, lysosomes and centrosomes.

(iv) Microsomes :- They are extremely small bodies present in the cytoplasm. Microsomes contain (a) Ribosomes (b) Granular matrix. Ribosomes concerned with protein synthesis. Granular matrix contains :-

I) Oxidases which generate hydrogen peroxide.

II) Catalase which converts hydrogen peroxide into water

(v) Organelles of cytoplasm:

(a) Endoplasmic reticulum : Granular, Agranular

(b) Golgi apparatus. (cup shaped)

(c) Mitochondria (Power house of the cell)

(d) Centrosome (Rod shaped)

(e) Lysosomes (Suicide bag)

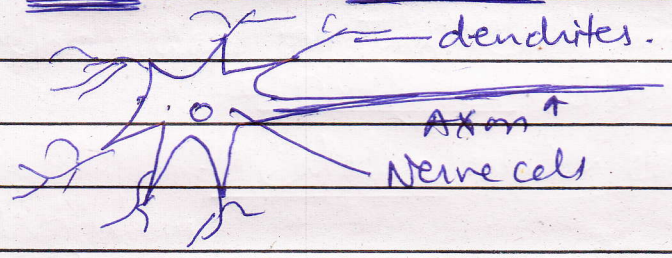
(f) Microtubules .etc.

Ans 2 (OR) :- Nervous tissue is composed of three kinds of matter :-

(i) Gray matter which forms the nerve cells.
(ii) White matter which form the nerve fibres
(iii) Neuroglia which is a supporting tissue. It holds together and supports nerve cells and fibres.

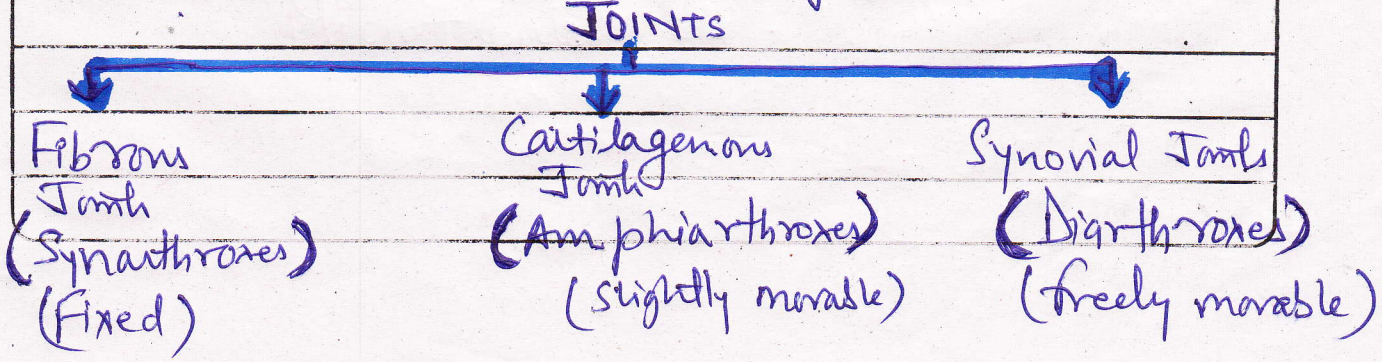
Each nerve cell with its processes is called a neurone.

Nerve cells are composed of highly specialized granular protoplasm, with large nuclei and cell wall as other cells. Neurone is the unit with which the nervous system is composed of. It consists of nerve cell, axon and dendrite.



UNIT-II

Ans 3. Any connection between bones of the skeleton is called as a joint or articulation.



(i) Fibrous Joints :- Also called fixed or immovable joints. In these joints there is a tight union between the bones, so no movements is possible at these joints. e.g. Sutures of the skull and teeth in their sockets.

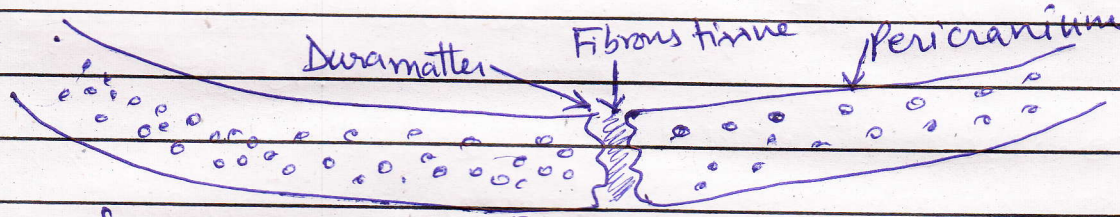


Diagram of a fibrous joint. (suture of skull)

(ii) Cartilagenous Joints :- Also called slightly movable or amphiarthroses joints. In this the articular ends of the bones are covered by hyaline cartilage. There is a pad of fibrocartilage between the joints. Covered by ligaments.

e.g :- Symphysis pubis and intervertebral joints.

(iii) Synovial joints :- Also called freely movable or diarthroses. In this.

(a) the articular ends of bones are covered by hyaline cartilage. (b) Bones are bound together by ligaments. (c) Enclosed by fibrous capsule. (d) Capsule of the joint is lined by synovial membrane. (e) cavity of the joint contains synovial fluid.

Diagram of a synovial Joint.

Classification of Synovial joints :-

(i) Gliding joint (Plane joint) :- Here two flat surfaces of bones glide on each other, e.g. joint between carpal and tarsal bones.

(ii) Hinge joint :- Here, movement is possible on one ~~side~~ plane only. e.g. :- Elbow joint.

(iii) Pivot joint :- In this joint, rotation is the only possible movement, e.g. joint between radius and ulna.

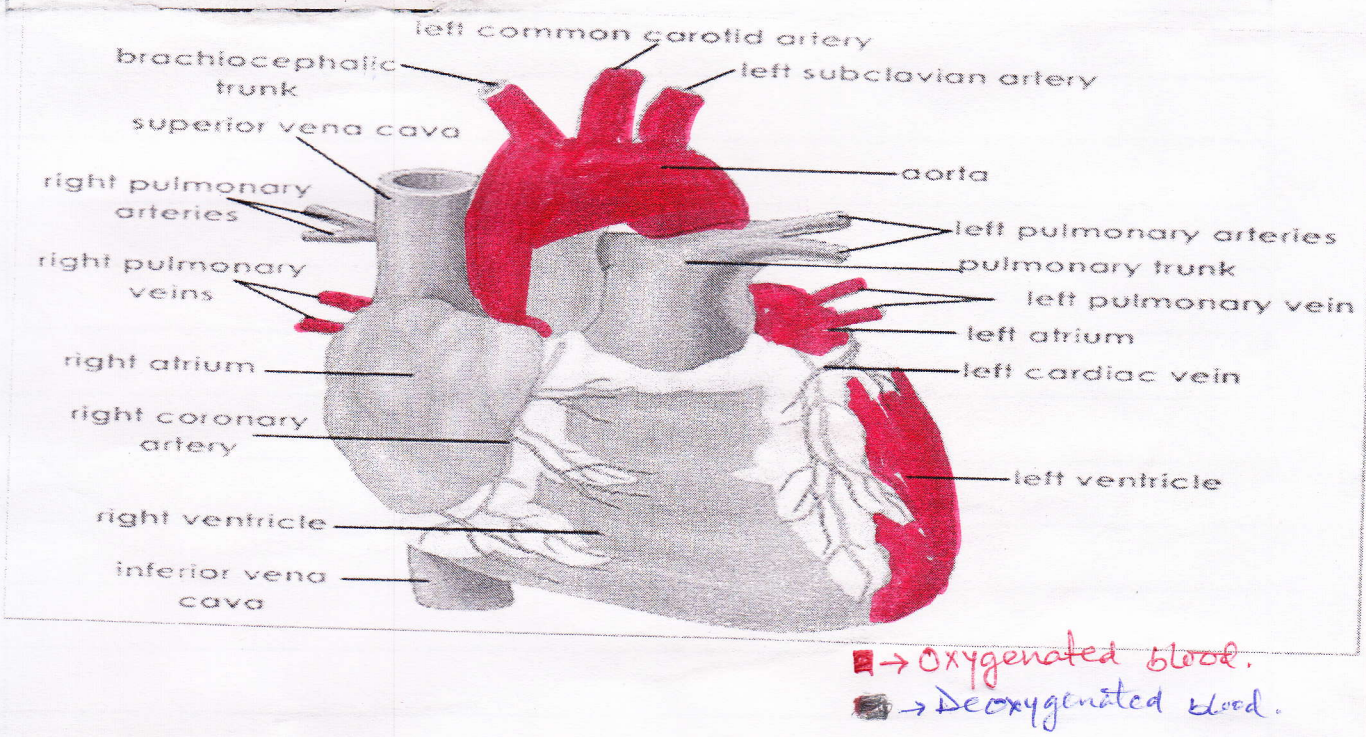
(iv) Ball and Socket joint :- Articular end of the (one) bone is 'ball like'. It fits into the socket like cavity of another bone. Movement in all direction is possible in this type e.g. shoulder joint and hip joint.

(v) Condyloid joint :- It is similar to hinge joint but movement occurs in two

planes. e.g. wrist joint.

(vi) Saddle joint :- It has one concave surface. This results in free movement in all directions. e.g. joint between metacarpal bone of thumb and trapezium.

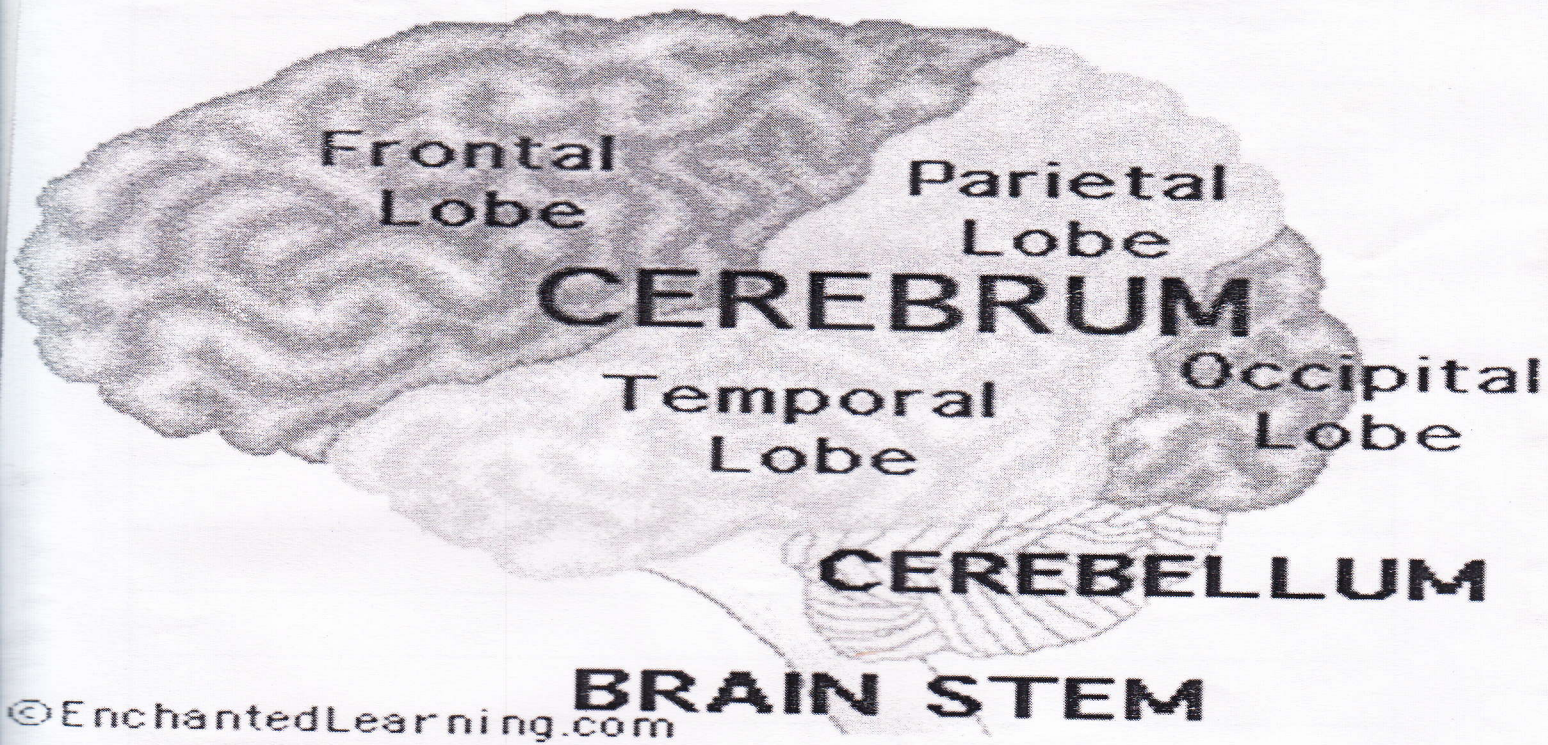
Ans 3 (OR) :- HUMAN HEART



UNIT-III

Ans4:- Short notes :-

(a) Brain and its parts :-



The brain is situated inside the cranium. The brain of human beings is maximum developed amongst all animals. Its weight about 1,350 gms. The human brain may be divided into three parts :- (i) Fore brain (ii) Mid Brain (iii) Hind Brain

(i) Fore brain :-

It consists of cerebrum, the largest part of the human brain. Cerebrum portion of the fore brain is highly developed and makes about two-third of the total brain. It has many convolutions called Sulci and guri. The cerebrum consists of two cerebral hemispheres joined by

Corpus Callosum. There are three deep and wide fissures that divide the cerebrum into four lobes. viz. frontal, Parietal, Temporal and Occipital lobes. Each lobe is concerned with specific functions. The cerebral cortex is the outer layer of cerebrum. It consists of grey matter and has many layers of nerve cells.

- Frontal Lobe → Motor Area (voluntary movements of muscles)
  Premotor Area (involuntary movements and A.N.S.)
- Parietal lobe → Perception of general sensations like pain, touch & temperature
- Temporal lobe → Taste and Smell
- Occipital lobe → Visual area (Control of visual sensations)
  Auditory area (Hearing sensations controlled)

HYPOTHALAMUS → The base of brain constitutes the hypothalamus and consists of large amount of grey matter present within the white matter. It contains nerve centres for temperature regulation, hunger, thirst and emotions. It also produces various neurohormones that control the secretions of anterior pituitary gland.

ii) Mid Brain :- It joins the cerebrum with the ~~cells~~ cerebellum. It has ~~three~~ large number of nerve cells scattered within the white matter. These nerve cells or nuclei

are involved in controlling the voluntary muscles activities. and also acts as centre for auditory and visual reflexes.

iii) Hind Brain :- It consists of cerebellum dorsally the brain stem ventrally. Cerebellum form the major part and is a large reflex centre for the coordination of activities of voluntary muscles. It contains centres for the maintenance of posture and equilibrium of the body. Brain stem consists of pons varoli infront of cerebellum and behind medulla oblongata. Cerebellum on its surface has cerebellar cortex made up of grey matter and its deeper part is made up of white matter.

(B) WARM-UP :-

It is the programme use to increase the body temperature to prepare individuals before exercise. It is of two types :-

(a) General warm.

(b) Specific warm. (Related to the main event)

The effect of warm up have are as follows :-

(i) Increasing body temperature

(ii) Increasing enzyme activity and metabolic rate.

(iii) Increase in blood flow and oxygen analability.

4) Decrease in contract and reflex time.
5) Increasing the range of movement.
6) Decrease in injuries.
7) Attainment the second wind.
(The above points may be discussed in detail)

Ans 4 (OR)

Effect of Exercises on circulatory System:-

(i) Heart rate and stroke volume is increased:-
[72 beats/min ——— 210 beats/min
3 times of basal volume - 70 ml to 210 ml
70 ml/stroke ——— 130-180 ml/stroke

(ii) Cardiac Output is increased:-

	Heart Rate	Stroke Volume	Cardiac minute Output
REST	72 beat/min	x 70 ml/stroke	= 5.4 lit/min
Exercise	150 beat/min	x 180 ml/stroke	= 27 lit/min

(iii) Venous return increases (milking action and movement of thorax) from 5 lit/min to 40-45 lit/min.

(iv) Blood pressure is increased upto 210 instead of 140 [both systolic and diastolic pressure increases.

(v) More circulation to active muscles area. (micro-circulation)

At rest - the muscle is for equilibrium and posture. During exercise/activity - many multiple action.

Effect of exercise on respiratory system :-
(Procurement, transportation and utilisation)

i) **Rate of respiration is increased.**
(from 16-20 frequency/min to 40-50 f-/min)

ii) **Depth of respiration is increased (Tidal volume)**

iii) **Maximum minute ventilation increased.**
(M.V. = Tidal volume × Respiratory frequency)

	Resp. Rate	Tidal volume	Minute ventilation
Rest :-	16 F/min	0.5 lit/breath	= 8 lit/min.
Exercise :-	40 f/min	3.5 lit/breath	= 140 lit/min

iv) **O_2 Absorption is increased.**

(a) **More O_2 availability**

Rest :- Procuring 10 lit of air — 20% of O_2 = 2 lit

Exercise :- Procuring 150 lit of air — 20% of O_2 = 30 lit.

(b) **More extraction of O_2 at tissue level.**

	Arterial O_2 content	− Venous O_2 content	= O_2 Extraction.
Rest :-	20%	16%	= 4%
Exercise :-	20%	4%	= 16%

(The answer may also include general advantages also)

Sheet-8

UNIT-IV

Ans 5 (a) :- Personal Hygiene :-

The hygiene is a Greek word derived from the word "hygea". Hygiene is a set of practices performed for the prevention of diseases or preservation of health.

* Concept of hygiene :
* Home and everyday life hygiene :- like. hand, respiratory, food, bathing, medical, kitchen etc.
* Advantages of personal hygiene (also elaborated).

c) Purification of water :- It is the process of removing undesirable chemicals, biological contaminants, suspended solids and gases from contaminated water. In general the methods used include physical processes such as :-

(i) Filtration < Rapid Sand filters, slow " "
(ii) Sedimentation < Sludge " storage and removal, Floc blanket clarifiers
(iii) Distillation.
(iv) Biological process such as fast & slow sand filtersor, biologically active carbon, chemical processes such as flocculation and chlorination and the use of electromagnetic radiation such as ultraviolet light.

Sheet 13

c) Health Education :-

"Health education is a process that informs, motivates, and helps people to adopt and maintain healthy practices and life styles, advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end."

By :- National conference on Preventive Medicine in U.S.A.

(i) **Scope of health education :-** Home, School, Library, hospitals, Railway stations / bus stations, Media, Exhibitions, health clubs, etc.

(ii) **Objectives of Health Education :-**

(a) Informing the people
(b) Motivating the people
(c) Guiding into action.

(iii) **Concept of Health Education :-**

(a) Matter of public relation
(b) transmission of information about health, diseases.
(c) Concerned with ultimately reduce the diseases.
(d) Concern with inducing changes.

(iv) **Contents of Health Education :-**

(a) Human biology
(b) Hygiene — Personal and environmental
(c) Family health care.
(d) Control of communicable & non communicable diseases.

Ans 5 (OR) :- Principles of health Education :-

Meaning and definition of health Education :-

"Health education is a process that informs, motivates and helps people to adopt and maintain healthy practices and life styles, advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end".

By → National Conference on Preventive Medicine in U.S.A.

Principles of health education includes these points with explanation :-

i) known to known.
ii) Participation : (Active hearning in group discussion etc)
iii) hearning by doing.
iv) Reinforcement - (Booster dose" i.e. repeatition at intervals)
v) Comprehension - (Use simple languages, understandable)
vi) Interest (Psychological principle — "felt needs")
vii) Src. (People), Seed (Health facts (topic) & Sower (Media transmitting).
viii) Motivation < Intrinsic / Extrinsic
ix) Leaders.
x) Good human relations.

Sheet B

Ans 6(OR) Malaria :- It is a parasitic disease. This parasite is from the genus plasmodium and the host is a female mosquito of the anopheles genus.

Causes of Malaria :- It is caused by a parasite that has infected that Saliva glands of a female mosquito. There are five types of plasmodium that can infect humans :-

i) P. falciparum. (Most no. of cases caused by it)
ii) P. Malariae
iii) P. Ovale
iv) P. Vivax
v) P. Knowlesi

- It can also be transmitted through blood transfusion

Signs and Symptoms :- Uncomplicated Category, Complicated Category

Uncomplicated category :- Chills, fever, Nausea & vomiting, headache, body aches etc.

Complicated Category :- (low immunity to this diseases) → Blood and organ disorder. including fluid on the lung, and loss of kidney function.

Preventions of Malaria :- To get not infected from malaria, first of all a person should avoid being bitten by a mosquito carrying the malaria parasite. for that purpose some preventive measures need to be followed :-

(16)

* Have screens over cover windows and doors.
* Sleeping inside mosquito nets and use of mosquito repellents of various forms.
* Avoid travel to or through countries where malaria occurs.
* Spray mosquito repellents on clothing to prevents mosquitoes from biting through thing clothing.
* Staying indoors in well-screened areas between dusk and dawn.
* wear long sleeved shirt & pants especially when you are outdoors.
* Keep anti-malarial drugs (prescribed by doctors)

Alternatives names of Malaria:-
(i) Quartan Malaria.
(ii) Falciparum Malaria
(iii) Bidiurotesian fever
(iv) Blackwater fever.
(v) Tertian Malaria.
(vi) Plasmodium.

Ans:- Short notes on :-
(a) Sanitary facilities in schools :-
The sanitary facilities in schools related to water (drinking) Toilets separate for boys and girls, environmental Sanitation. etc. to improve the health of

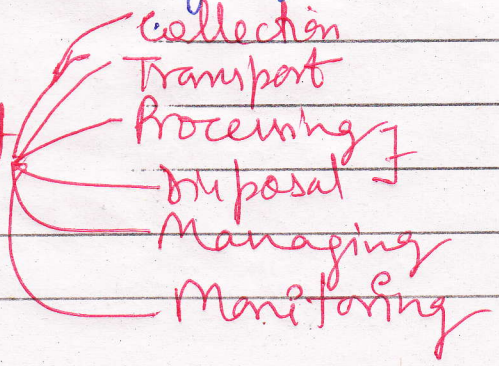
school aged children, highlighting the need for hygiene promotion, life skills development and water, sanitation and hand-washing facilities in schools.

Schools can also be a key factor for initiating change by helping to develop useful life skills on health and hygiene. Children are often eger to learn and willing to absorbs new ideas. New hygiene behaviour learned at school can lead to life-long positive habits, not only for the children but also within the community.

School childrens can influence the behaviour of family members - both adults and younger siblings - and thereby positively influence the community as a whole.

b) Refuse and disposal:-

Refuse and disposal comes under the waste management programmes. Waste management is the collection, transport, processing or disposal, managing and monitoring of waste material



The term usually relate to materials produced by human activity, and the process is generally undertaken to reduce their effect on health, the environment or aesthetics.

Refusal and disposal is a distinct practice from resource recovery which focusses on delaying the rate of consumption of natural resources. There are many ways of disposal, some of them are given below :-

i) Landfill.
ii) Incineration
iii) Recycling
iv) Sustainability.
v) Biological reprocessing.
vi) Energy and resource recovery.