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HEALTH EDUCATION AND COMMUNITY PHARMACY

IMPORTANT QUESTIONS AND ANSWERS

PATEL COLLEGE OF PHARMACY, B.M ROAD RAMANAGARAM

HEALTH EDUCATION & COMMUNITY PHARMACY

SYLLABUS

1. CONCEPT OF HEALTH
2. NUTRITION & HEALTH
3. DEMOGRAPHY & FAMILY PLANNING
4. FIRST AID
5. ENVIRONMENT & HEALTH
6. FUNDAMENTAL PRINCIPLES OF MICROBIOLOGY
7. COMMUNICABLE DISEASES
8. NON-COMMUNICABLE DISEASES
9. EPIDEMIOLOGY

CHAPTER-1
CONCEPT OF HEALTH

Q.1 Define Health. Write its various dimensions of Health.

Health- Health is defined as a state of complete physical, mental & social well being & absence of diseases.

Dimensions of health

1. Physical health: It is the normal functioning & growth of all parts of the body. For example- good complexion, clean skin, sweet breath, sound sleep etc.

2. Mental health: It is the ability of an individual to adjust with the surrounding world & society such that he lives harmoniously with others.

3. Social health: It is the ability of an individual to adjust with society.

4. Spiritual health: It refers to that part of individual which reaches out and strives for meaning & purpose in life.

Q.2 Discuss the various determinants of the health.

Ans: The various determinants of the health are:

1. **Heredity**- The health of an individual depends on the heredity to a certain level as the genetic material cannot be changed or altered. Diseases like diabetes & metal retardation are hereditary.
2. **Environment**- Changes in environment like water, air, climate etc has effect on the human being. The environment is of two types-
   a) **Internal environment**- It relates to each & every tissue, organ & system of the body & their harmonious functioning.
   b) **External environment** is the physical, biological & psychological components to which an individual is exposed.

3. **Life-style**- It includes culture, behavior & also habits like smoking, alcoholism etc. Diseases like heart diseases, cancer, diabetes etc also related to the life style.
4. **Socio economic conditions**- This includes income, education, occupation, nutrition etc.

a) **Income**- Rich peoples have a capacity to seek better medical care. So they are healthy. But the rich people are inactive & sedentary. So they are prone for heart diseases, obesity etc.

b) **Education**- Educated peoples knows the importance of a clean environment & good health. Therefore education plays very important role in maintaining the health & society.

c) **Nutrition**- Good nutrition is essential for normal growth & also for resistance against infection.

d) **Occupation**- Employment provides income so employed peoples enjoy good health because they can afford medical care's but unemployed cannot.

5. **Health services**- The aim of health & family welfare services is to treat diseases, prevent illness & promotion of health. Health services like safe water supply & immunization prevent a variety of health diseases.

Q.3 Write a note on indicators of health.

Ans: Indicators are required to assess the health of a community & also to compare the health status of one community with other.

Characteristics of indicators

An ideal health indicator should be valid, reliable, sensitive & specific

Types of indicators

The important indicators of health are-

1. **Mortality indicators**
2. **Morbidity indicators**
3. **Disability rates**
4. **Nutritional status indicators**
5. **Health care delivery indicators**
6. **Environmental indicators**
7. **Social & mental health indicators**
8. **utilization rates**
9. **Socio- economic indicators**

Q.4 How can the disease be prevented?

Ans: The disease can be prevented at three levels-

1. **Primary prevention**- This action is taken before the onset of disease. This intervention is taken at the prepathogenesis phase of the disease. The interventions are health promotion & specific protection.

2. **Secondary prevention**- It is the action taken at the early stage of disease to halt the progress of disease & prevents complications. The modes of intervention are early diagnosis & treatments.

3. **Tertiary prevention**- It is the measure taken after the disease has advanced beyond the early stages. The mode of intervention is disability limitation & rehabilitation. These measures minimize the suffering & help the patient to adjust with the derangement of health.

CHAPTER-2
NUTRITION & HEALTH

Q 1 Define Nutrition. Classify food and its functions.

Nutrition- Nutrition is defined as the science of food & its relationship to health. Nutrients are specific dietary constituents such as proteins, vitamins & minerals. Food must contain adequate amounts of all these nutrients in order to maintain health.

Functions of food

- It provides energy for mechanical work.
- It maintains growth, repair & reproduction.
- It provides resistance against infections & diseases.
- It maintains the functions of body tissues.

Classification of food

1. **According to source**
   - Vegetable food for ex- Rice, Wheat etc
   - Animal foods for ex- Meat, egg, fish etc.
2. **According to functions**
   - Body builders for ex- meat, milk, fish etc.
   - Energy yielders for ex- cereals, sugars etc.
   - Protectives for ex- vegetables, fruits etc.
3. **According to chemical nature**
   - Proteins
   - Fats
   - Carbohydrates
   - Vitamins
   - Minerals

Q.2 Define Protein. List there function. Name the types of amino acid.

Ans: Protein is high molecular weight polypeptides containing alpha amino acids joined together by peptide linkage.

Function:

1. They provide structural frame work for cells and tissues.
2. Maintence of osmatic pressure.
3. Synthesis of antibodies, plasma proteins and hemoglobin.
4. Proteins can be catabolized to release energy.
5. Act as enzymes and hormones.

TYPES OF AMINO ACIDS:

1. **Essential or Indispensable Amino acids:** These are those which cannot be synthesized by the body. So they must be supplied in adequate amount through diet .eg.valine, leucine, and methionine.

2. **Non –essential Amino Acids**: These are those which can be synthesized by the body and hence they are not required component of the diet.eg. Alanine, arginine and glycine.

Q.3 Write a note on balance diet.

Ans: Balanced diet is defined as a food which contains adequate amounts of carbohydrates, proteins, fats, vitamins & minerals & which provide energy & maintains good health.

Composition of balanced diet

The composition of balanced diet for an average Indian is as follows-

➢ Cereals	-	400gms
➢ Pulses	-	55 to 70gms
➢ Leafy vegetables	-	100gms
➢ Other vegetables	-	75gms
➢ Roots & tubers	-	75gms
➢ Milk	-	200gms
➢ Fats & oils	-	35gms
➢ Meat & fish	-	30gms
➢ Egg	-	30gms
➢ Fruits	-	30gms
➢ Sugar & jaggery	-	30gms

Q.4 Define & classify vitamins with their function, deficiency diseases & their symptoms.

Vitamins- These are the organic compounds which are required in very small amounts & are essential for various biochemical reactions. The body cannot synthesize vitamins so they must be provided by food.

Classification of vitamins

1. Fat soluble vitamins- Vitamin A, Vitamin D, Vitamin E & Vitamin K.

2. Water soluble vitamins- Vitamin B complex & Vitamin C.

Vitamin A

Source: - Present in carrot, green vegetable, papaya, mangoes & diary products like milk, butter.

Functions

- ➢ It is necessary for the production of retinal pigments.
- ➢ It is essential for maintaining the integrity of epithelial cells.
- ➢ It is anti-infective.
- ➢ It protects against cancer like lung cancer.

Deficiency- It leads to Night Blindness, Xeropthalmia and Keratomalacia.

Requirement: 5000 I.U. daily

Vitamin D

Source: - Found in animal fats & fish liver oil & also produced on exposure of skin to UV rays of sunlight.

Functions:

- It is necessary for bone & teeth formation.
- It is also necessary for normal growth.
- In the kidney it increases the reabsorption of phosphates.

Deficiency:- It produces Rickets in children & Osteomalacia in adults.
Requirement:- 1000 I.U Daily.

VITAMIN E

It belongs to a group of compounds called tocopherols. Alpha, Beta, gamma and delta tocopherols are known.

Functions

1. It is necessary for reproduction and its deficiency leads to sterility.
2. It is necessary for muscle metabolism.
3. By an antioxidant effect, it protects vitamin A from destruction.
4. It prevents hemolysis by protecting unsaturated fatty acids of erythrocyte membrane.

Source: - Soya bean oil, wheat germ oil and rice germ oil.
Deficiency: - Deficiency of vitamin E produces abortion and sterility in animals.
Requirement: - The daily requirement of vitamin E is 15 to 3o mg.

VITAMIN K

The major forms of vitamin K are vitamin K_1 and K_2

Functions: - Vitamin K is necessary for the synthesis of clotting factors especially prothrombin. Its deficiency decreases prothrombin content of blood.
Sources: - Vitamin K_1 is present in liver, spinach, green leafy vegetables and cow's milk. Vitamin K_2 is synthesized by intestinal bacteria.
Deficiency: - Increased bleeding due to defective clotting mechanism.
Requirement: - 0.03mg per kg Daily.

WATER SOUBLE VITAMINS

The water soluble vitamins which belong to the group of vitamin B complex are thiamine, riboflavin, nicotinic acid, pyridoxine, pantothenic acid ionositol, biotin, methionine, folic acid and cyanocobalamin.

THIAMINE (Vitamin B1, Aneurine)

Sources: Peas, beans, oatmeal, pea nuts, vegetables and fruits.

Deficiency: Deficiency of thiamine produces

1. Beriberi a symptom complex with characteristic neuropathy.
2. Wernicke's encephalopathy characterized by confusion, Ophthlmoplegia, nystagmus, tremors, and mental retardation.

Requirement: 2mg. daily increases with intake of more carbohydrates.

RIBOFLAVIN (Vitamin B2)

Sources: Milk, eggs, liver, kidney, green leafy vegetables, meat and fish.

Deficiency: Deficiency of riboflavin produces angular stomatitis. It is prevalent in malnourished children and it is used as an index for malnutrition. Other deficiency symptoms are:

1. Delayed wound healing 2. Impaired neuromotor function.

Requirement: 2 to 3 mg. daily.

NIACIN (Nicotinic Acid, Vitamin B3)

Sources: Liver, kidney, meat, poultry, fish, legumes and ground nut.

Deficiency: Deficiency of niacin produces pellagra. This disease is characterized by three D's diarrhea dermatitis and dementia. In addition, glossitis and stomatitis may also occur. **Pellagra** occurs in malnourished individuals who live on a diet containing maize or jowar. Pellagra can be prevented by avoiding maize and jowar and by taking a mixed diet containing milk and or meat.

Requirement: The daily requirement of niacin is 50mg.

PYRIDOXINE (Vitamin B6)

Sources: Milk, liver, meat, egg yolk, fish, whole grain cereals, legumes and vegetables.

Deficiency: Irritability, abdominal distention, loss of body weight and anemia in children. In adults, the deficiency produces lesion of skin and mouth, peripheral neuritis and mental changes. Of these diseases peripheral neuritis is the most important deficiency diseases.

Requirement: 2mg. per day for adults. During pregnancy and lactation, the requirement is 2.5mg.per day.

FOLIC ACID

Sources: Rich in vegetarian food like cabbage, spinach and all green leafy vegetables. Non vegetarian food contains less folic acid.

Deficiency: The deficiency of folic acid leads to defective maturation of red blood cells. This leads to megaloblastic anemia. This type of anemia is characterized by the release of abnormally large sized red blood cells

But these RBCs have sufficient hemoglobin

Requirement: 100 to 300 micrograms daily.

CYANOCOBALAMIN(Vitamin B12)

Sources: Non-vegetarian foods like meat, beef, liver kidney, oysters, eggs and milk. Very little is present in vegetarian food like leguminous plants.

Deficiency: Deficiency of cyanocobalamin leads to megaloblastic anemia very similar to the deficiency of folic acid. Both cyanocobalamin and folic acid are required for the development of red blood cells.

Requirement: The daily requirement is 1to 1.5 micro grams per day.

Q. 5 Write note on Ascorbic Acid (vitamin C).

Source- Citrus, fruits, tomatoes and green vegetables. Alma and guava fruits are very rich sources of vitamin C.

Deficiency: Deficiency of vitamin C produces scurvy. The symptoms of scurvy are weakness, fatigue, pain in joints and muscles. Also there is bleeding of gums and loosening of teeth.

Requirement: 40 to 60 mg. daily

Q6 Define Mineral. Write its function and its classification.

Ans: Human body contains more than 50 chemical elements. These minerals are obtained mainly through food. Minerals make up 1/20th of body weight.

Functions of minerals:

1. They are the constituents of bone and teeth and required for their growth e.g. calcium and phosphorus.
2. They are necessary for growth.
3. They stimulate digestive secretions.
4. They maintain tone and function of muscles. eg. Sodium and calcium.
5. They maintain electrolyte balance in body fluids.
   eg. - Sodium potassium and chloride

Classification of minerals

1. Major minerals: Calcium, phosphorus, sodium, potassium and magnesium.
2. Trace elements with known function: Iron, iodine, fluorine, zinc and Copper.
3. Trace elements with no known function: lead, mercury, barium and aluminum.

Q.7 Write the function, sources, deficiency of calcium in human body.

Ans: It forms 1.5 to 2 per cent of body weight. An average adult body contains 1200 grams of calcium. Of this 98 per cent is present in bones.

Functions:

1. It is necessary for growth of bones and teeth.
2. It is required for the clotting of blood.
3. It regulates the contraction of muscles.
4. It is required for cardiac action and milk production.
5. It forms a component of several enzymes.

Sources:

1. Milk and milk products like cheese, curd and butter milk. They are the best natural sources of calcium.
2. Green leafy vegetables like spinach.
3. Millets like ragi.

Deficiency: Deficiency of calcium leads to rickets in children and osteomalacia in adults. Also it leads to delayed blood clotting.

Requirement: 400 to 500 mg per day.

Q.8 Write the function, sources, deficiency of Iodine in human body.

Ans: Iodine is an essential micronutrient. The total body content of iodine is about 50mg. the blood level is about 8-12 micro grams/dl.

Function of Iodine:
a) It is required for the synthesis of Thyroid Hormones.
b) Iodine amount required for growth and development.

Sources: The best source of Iodine is sea food. Eg. Sea, fish, sea salt & cod-liver oil.

Deficiency: Goiter and Hypothyroidism.

- Retarded physical growth and mental development

Requirement: 150mg/day.

Q.9 Write the function, sources, deficiency of Iron in human body.

Ans: Iron is very important nutrient. The adult human body contains 3 to 4gm of Iron. Hemoglobin of blood 50 to 70percent of Iron is present.

Function:
1. It is necessary for the synthesis of Hemoglobin.
2. It required for Brain development and muscle activity.
3. Iron regulates body temperature.

Source: Iron is present in liver, meat, kidney, fish, green vegetables, jaggery and Date fruit.

Deficiency: Deficiency of Iron leads to Anemia.

Requirement: 15 to 30mg per day.

Q. 9 Write a note on malnutrition. Explain the protein deficiency disease.
Or (PEM)

Ans: The deficiency of any of the essential constituents of food leads to malnutrition.This in turn leads to specific diseases. Two important diseases are caused due to protein energy malnutrition (PEM) in children. They are:

- **Kwashiorkar**
- **Marasmus.**

- **Kwashiorkar:** This form of PEM occurs mostly in the second year of life. It is due to weaning of the child from breast to a diet low in protein.So the essential feature is a deficiency of protein with adequate energy intake.\

Features:

- The child is not very thin. There is generalized edema.
- The skin changes may vary from pigmentation, thickening and cracks to ulceration.
- Hair Colour will be changed to reddish or gray.
- Diarrhoea is common.

Prevention:

- Education of mothers about nutrition.
- Supplementation of diet provide in nutrition centers.
- Encouraging the use of locally available diet. Ex. Nuts and seeds.

Marasmus: The incidence of marasmus is high when compared to kwashiorkor. It occurs in the second six months of life. It occurs due to a diet very low in both protein and calories.

Features:

- The child is very thin.
- Head is very large for the body.
- There are no oedema and hair changes.
- Weight of the child is reduced below 60 per cent.

Prevention:

- Family planning to restrict the number of children.
- Immunisation of children.
- Encouraging breast feeding.

CHAPTER-3
DEMOGRAPHY AND FAMILY PLANNING

Q.1. What is Demography? Write a Short note on various stages of Demographic cycle.

Ans: Demography may be defined as the scientific study of all aspects of population progress, welfare, death in a family, birth, age etc. It also includes the studies of standard of living.

Demographic cycle: It has five stages mainly.

1. **First stage-** It is also called as high stationary stage. It is characterized by high birth rate & high death rate which cancels each other.
2. **Second stage-** It is also called as early expanding stage. Here there is a decrease in death rate & the birth rate remains the same, therefore the population expands.
3. **Third stage-** It is also called as low stationary stage. There is low birth rate & low death rate so population becomes stationary.
4. **Fourth stage-** It is the declining stage. Here the population begins to declines as the birth rate is lower than death rate.
5. **Fifth stage** –Population begins to decline as birth rate is lower than death rate. East European countries like Germany & Hungary are now in this stage.

Q.2 Define fertility. Write the various factor which regulate fertility.

Ans: Fertility is the actual bearing of children. Some demographers prefer the word **Natality** in place of fertility. **Facundity** is the capacity to have children.

Factors of Fertility: The following are important factors which regulate fertility.

1. Age at marriage: Early marriage is long established custom in India. The disadvantages of early marriage are:

a) Population Growth due to increased child birth
b) Adverse effect on the health of women.

2. Duration of Married life: Maximum child birth occurs in the first 15 years of married life.

3. Spacing of Children: Spacing between births reduces fertility rate.

4. Education: Educated women give birth to lesser number of children when compare to illiterates.

5. Economic Status: Fertility decreases with an increase in per capita income. Economic development is the best contraceptive.

6. Caste and Religion: Muslim show higher fertility than Hindu. Among Hindus, fertility is high in lower caste.

7. Nutrition: It has an indirect effect. Well fed societies show lower fertility rate.

8. Family Planning: It lowers the fertility rate.

Q.3 what is the role of pharmacist in family planning?

Ans: The pharmacist comes across a number of people. The illiterates or the less educated peoples are unaware of the benefits of family planning; therefore the pharmacist plays a very important role in the family planning & removing any fears about family planning.

The pharmacist can promote family planning by:

- Displaying family planning posters in hospital & drug store
- Advising peoples about family planning & spacing of children's
- By distributing pamphlets which give a information about family planning
- To explain about the various oral contraceptives & the others techniques of family planning
- Guide peoples to hospital & family planning centers for vasectomy & tubectomy
- He should motivate the peoples towards the family planning
- He should remove the fear & misconcepts about family planning from the mind of peoples

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Q.4 Define family planning & explain various methods of family planning.

Definition: Family Planning means to plan & limit the size of the family in accordance with the social, economic and health conditions, so as to ensure that the family is happy both physically & mentally.

Methods of family planning

I. Temporary Method

- **Natural Method**
  - a) Sexual abstinence method
  - b) Coitus interruptus
  - c) Safe period method
  - d) Basal body temperature method
  - e) Cervical mucus method
  - f) Prolonged lactation method
  - g) Vaginal washing method
- **Spacing Method**

a) Barrier contraceptives (Mechanical Methods)

- Condom
- Diaphragm
- Intrauterine devices

b) Chemical methods

- Foam tablets
- Contraceptive pills & jellies
- Soluble tablets
- Oral contraceptives

II. Permanent Methods (Sterilisation Method)

a) **Vasectomy (MALE STERILISATION):** In this method, a piece of vas deferens of about 1 cm length is removed after clamping. The ends are ligated and then folded back on themselves and sutured .Now the cut ends face away from each other.

Advice after vasectomy

1. The patient should be told that he is not sterile immediately after operation .He is sterile only after 30 ejaculations.
2. He must use contraceptives till aspermia is established.
3. He must avoid cycling or lifting heavy weights for 15 days.

COMPLICATIONS OF VASECTOMY:

1. Operative complications like hematoma and infections.
2. Sperm granuloma accompanied by pain and swelling.
3. Spontaneous recanalisation.
4. Psychological disturbances like loss of sexual vigor, impotence, fatigue.

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b) Tubectomy (Female sterilization): It is done by two procedures:

MINILAPROTOMY: It is a modification of abdominal tubectomy.It is a very simple procedure done under local anaesthesia.It requires a very small abdominal incision of 2.5 to 3 cm in length .It is a safe, efficient and easy procedure with less complication.

Laproscopy: It is done through abdominal approach with a specialized instrument called "laproscope". The abdomen is inflated with gas (carbon dioxide, nitrous oxide or air).Then the instrument is introduced into the abdominal cavity tovisualise the fallopian tubes. The tubes are occluded with fallop rings (or clips).

Advantages of laparoscopy are short operating time, shorter stay in the hospital, and a small scar, rarely puncture of large blood vessels and other complications may occur.

d) **Medical termination of pregnancy**

CHAPTER -4
FIRST AID

Definition: The aim of the first aid to preserve life, promote recovery and prevent injury until medical aid is obtained. The responsibilities of first aider end as soon as medical aid is available. But he must be prepared for further assistance to the doctor if required.

Scope of first aid:

- Diagnosis
- Treatment
- Disposal

Q.1 Write the first aid treatment of Shock?

Shock is condition which occurs due to loss in circulating blood volume.

First Aid:

1. Reassurance of the patient.
2. The patient is laid down with raised legs if there vomiting.
3. If there is interference with breathing the patient is placed in the three quarter prone position.
4. Cloth around the neck and chest are loosened.
5. The patient is covered with blanket.
6. Crowding should be avoided for proper ventilation and supply of air.
7. Any drink hot or cold should be avoided.
8. Associated injury should be treated.
9. Nothing is given by mouth and something should be not allowed
10. Take him to the hospital or expert help is summoned.

Q.2 Write the first aid treatment of Snake bite

Ans: They are the salivary glands of the snake. In case of snake bite there are usually two puncture wounds with or without Scratches.

Sing and Symptoms: There is a violent burning pain at the site of the bite other symptoms are swelling, bleakness, giddiness and twitching.

First Aid:

1. **Tourniquet:** A tourniquet is applied proximal to the site of bite. It should not be too light so as to obstruct lymphatic flow. The tourniquet must be loosened every ten minutes for 30 seconds.
2. **Clearing:** The site of bite must be cleaned with a cotton or cloth and must be covered with a sterile cloth.
3. **Local Incision:** Super- facial incisions of not more than 5mm in depth are made at the site of the bite. The blood is squeezed out from the site of bite. Later it is sucked by mouth or suction pump.
4. **Assurance:** It is necessary to assure the patient and give him confidence.
5. **No Sleep:** The patient is not allowed to sleep. He may be given coffee or tea. We should not be given alcohol because at stimulates metabolism and increases circulation.

Medical Treatment: The medical treatment consists of giving specific Anti- venoms

Q.3 Write the first aid treatment of Wounds

Ans: Wounds are four types:

1. **Abrasions:** Which are made by rubbing or scraping.
2. **Incised Wound:** They are sharp cuts that tend to bleed.
3. **Lacerated Wound:** They are irregular wounds associated with tissue damage.
4. **Puncture Wound:** Caused by dagger or knife. They are deep wounds.

The first aid treatment involves the following steps. The first aider should wash his hands before dealing with the wound.

Q 4. Write the first aid treatment of Fractures.

Ans.First aid treatment of fractures:

1. Fracture of clavicle: 1.The upper arm of the injured side is bandaged to the side of the chest.

2. The upper limb of the injured side is supported by a triangular sling.

3. Pulse is felt on the injured side, to make sure there is no interference with circulation.

4. Facture of scapula: A firm triangular sling. A board bandage around the upper arm.

5. Fracture of humerus: It is a serious fracture .It may lead to injury to blood vessels in the elbow. It is treated by padding the arm and supporting in a triangular sling.

4. Fracture neck of radius: A triangular sling.

5. Fracture of radius and ulna: well-padded splint with a triangle sling to support the limb.

6. Fracture of the pelvis: The legs should be bound together .the patient should be moved in a stretcher. Speedy evacuation to hospital is necessary.

Q 5. Write the first aid treatment of Burns.

Ans.First aid treatment of burns:

1. Put out the fire: The first step is to extinguish burning clothing and to cool the burn. The victim should not run around, since it encourages the flame to spread rapidly .He must lie down to smother the flames. He must be wrapped in a blanket or rug. Water can be poured over him both to cool the skin and to extinguish the cloths. Ice water should be used.

2. Shock: The patient should be kept lying down and reassured. If the patient complains of thirst, he may be given fluids. Suitable oral fluid is two pints of water containing a teaspoonful each of salt and sodium bicarbonate. This may replace salt loss. Oral fluids should not be given if the patient is unconscious.

3. Maintenance of airway: Person trapped in a burning building may develop oedema of the face and a respirated complication due to fumes. Maintenance of airway is the first priority in these cases and these patients must be removed to the hospital without delay.

4. Prevention of infection: The first aider should avoid touching the burn or he should wash his hands.

5. Dressing the burn: Lotions' ointments or antibiotic creams should not be applied .Burnt clothing should not be removed and blisters should not be broken. The burnt area may be covered with a prepared dry sterile dressing, clean lint or freshly laundered linen. Firm bandages may be applied except in case of blisters where light bandage is applied

Q 6. Write the first aid treatment of Heart attack.
Ans.
First aid treatment of heart attack:
1. If there is no pulse, cardiopulmonary resuscitation must be commenced immediately.
2. Nothing should be given by mouth.
3. Unconscious patient with pulse and breathing should be placed in recovery position. Airway must be maintained.
4. Conscious patient must be placed sitting at 45 degrees and should not be laid flat. Legs should not be raised since it may increase venous return and thus strain the heart.
5. Clothes must be loosened and the patient reassured.
6. Movements must be limited as much as possible.
7. Medical help must be summoned immediately.

Chapter-5
ENVIRONMENT AND HEALTH

Q1. Write the sources of water?
Ans . The major sources of water are:
1) Rain water: Rain water is pure initially, it receives impurities from the atmosphere such as dust, shoot, suspended matter, and microbes, gas normally it is not pathogenic. Rain water, if properly collected and stored, is a safe water.it is soft as it contained no mineral salts in it. It is suitable for cooking, washing and bathing.it is soft and liable to corrode lead pipes and thereby cause lead poisoning.

2) Surface Water: Rain water on reaching the ground, or the melted snow from hills begins to flow as a river, canal, stream, lake or pound and is called surface water .since it may travel a long distance, it contained suspended materials .it is collected in large reservoirs or settling tanks. Subsequently water is filtered and sterilized further by chlorination or other methods to make it suitable for drinking.

3) Rivers: Upland surface water runs on the slide of hills, slopes and valleys and is taken off as water supply before it forms big stream s and rivers .An upland water is safe because it is pure rain water which has travelled a short distance.it needs purification by filtration and sterilization by chlorination or by running through a bed of fine sand before final storage.

4) Ground Water: Wells and springs are important sources of ground water .an ideal well should be tapped in a good soil and should be tapped in a good soil and should be at least 200 ft. Away from possible contamination source .no washing of cloths, utensils, and bathing of persons be allowed near a well. Well water may be treated with a solution of 1 part of freshly prepared lime to 4 parts of water or bleaching powder, or potassium permanganate solution.
5) Seawater: Distilled sea water is used for drinking purposes. For aeration of the distilled water it may be passed through a long column of wood charcoal, subsequently it is tasty and can be used for drinking purpose.

Q2. Write the short note on water pollution.
Ans.
Water pollution: water is said to be Polluted if it is contaminated with
1. Dissolved gases like H_2S, CO_2, NH_3 and N_2.
2. Dissolved minerals like sodium, calcium and magnesium salts.
3. Suspended impurities like clay, sand and mud.
4. Micro-organisms and organic matter.

Sources of pollution: water may be polluted by:
1. Sewage containing organic matter and pathogenic agents.
2. Industrial and trade waste (containing chemicals).
3. Agricultural pollutants (containing fertilizers and pesticides).
4. Physical pollutants (like heat and radioactive materials).

Hazards of pollution:
1. Chemical Hazards: Due to direct effect on humans or indirectly due to contamination of aquatic life used as food (fish).
2. Biological Hazards: Water borne diseases like bacterial, viral and protozoal diseases.
Prevention of pollution:
1. Education and legislation to prevent the release of pollutants into water sources.
2. Conventional and special water treatment or purification.

Water pollution law: water prevention and control of pollution act was passed in 1974.The act is a comprehensive piece of legislation.it provide legal deterrent action against water pollution it permits the constitution of 1.Central water board 2.state water board 3.joint water board. These boards have powers to control water pollution.

Q3. Discuss various steps involved in water purification?
Ans.
Purification of water: Impure water may be purified by one of the following methods:
A) Natural
1) Pounding or storage
2) Oxidation and settlement.

B) Artificial
1) Physical: a) Distillation b) Boiling
2) Chemical: b) Precipitation b) Disinfection or sterilization.
3) Filtration: a) Slow sand filtration b) Rapid mechanical filtrations c) Domestic

Natural Methods of storing water helps in settling down of suspended particles. Use of a co-agulant like aluminums sulphate (ALUM) in the concentration of 13-50 mg/lit. Is suggested most of the suspended and colloidal matter settles down in the process Oxidation with potassium per magnate at a concentration of 5 parts per million are advisable.
Artificial methods of distillation are used in chemical laboratories. Boiling removes solid materials like chalk, gases, organic matter are microbes' .It is adapted as a precautionary measure in the presence of an epidemic of water –borne diseases.

Following chemicals are used for disinfecting water in the concentrations indicated along with.

1) Alum 13-50 mg/lit
2) Copper sulphate 0.1 to 0.25 ppm
3) Calcium oxide 80 mg/lit
4) Chlorine 0.5 ppm as bleaching powder
5) Bromine 3.6 mg/lit
6) Iodine 2 ppm
7) Potassium permanganate 5ppm.

Use of filtrations removes suspended matter, the ova, cysts spores and bacteria .Slow sand filters use layer of bricks, broken stones, pebbles, coarse and fine sand. The process of filtrations is slow .it may take about 3 days for new bed of filter to be active .Rapid mechanical filters may be of pressure or gravity type .they are quick and filter about 450-600lit/24 hrs.

Q 4. Write a note on chlorination.

Ans.

CHLORINATION: It is the addition of chlorine to filtered water for further purification. It is the cheapest and most reliable methods of purification. Chlorination is a supplement and not a substitute for sand filtration.

Advantages:

1. It kills pathogenic bacteria.
2. It oxidizes iron, manganese and H_2S.
3. It destroys taste and odour producing constituents.
4. It destroys algae and similar organisms.
5. It aids coagulation.

MECHANISM OF ACTION: When chlorine is added to water, hydrochloric and hypochlorous acids are formed . Hcl is neutralized by the alkalinity of water. Hypochlorous acid ionizes to form hydrogen ion and hypochlorite ion.

$H_2O + Cl_2$ ---------- HCL+HOCL

HOCL ---------- H+OCL

The disinfectant action of chlorine is mainly due to hypochlorous acid and to a small extent due to hypochlorite iron.

Principal of chlorination:

1. Clearance of turbidity
2. Chlorine demand
3. Break point
4. Residual chlorine
5. Contact period.

Method of chlorination: Usually is done with chlorine gas .for this equipment called Peterson's chloroformed is used. Chlorine gas is the best choice since it is cheap, quick in action, efficient and easy to use. Sometime chlorination is done with chloramine and perchloron

Q5. Write a note on septic tank.
Ans.
USE OF SEPTIC TANK: Septic tank is a water-tight masonry tank into which household sewage is admitted for treatment. Excreta and liquid wastes from individual houses, groups of houses or institutions can be let into it.

DESIGN FEATURES: The design of a septic tank is as follows:
1. It may contain 1 or 2 chambers depending on requirement.
2. Minimum capacity is 500 gallons length is twice the breadth. Depth is 5 to 7 feet. Liquid depth is 4 feet. Air space between cover and level of liquid must be 1 feet.

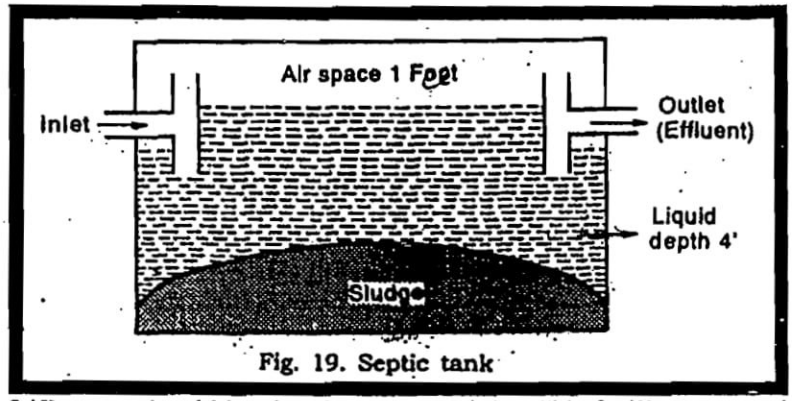

Fig. 19. Septic tank

3. Bottom should be slopping towards inlet. This facilitates retention of solids.
4. Inlet and outlet pipes must be submerged.
5. Cover must be made of concrete and it must have a manhole.

Q.6 Write a note on Sewage and its treatment.
Ans:
Sewage: It is a waste forms a community containing solid and liquid excreta. It is derived from houses, street and industries. It contains 99.9% water and 0.1% solids.
Method of Sewage Treatment: It is involves two steps:

- ❖ Primary Treatment.
- ❖ Secondary Treatment.

- **Primary Treatment:**
  - ❖ **Screening:** Sewage is passed through a metal screen. It removes large objects like pieces of wood, Garbage and dead animals.
  - ❖ **Grit Chamber:** Then, the Sewage passed through Grit Chamber such as sand and gravel.
  - ❖ **Primary Sedimentation:** Latter, the swage through a large primary sedimentation tank. Organic matter sattel down and it is called Sludge.
- **Secondary Treatment:**
  The sewage from the primary sedimentation tank contains organic matter and living organisms. It is treated by either:
  - ❖ Trickling filter method
  - ❖ By activated Sludge process.

Q 7. Name the Various diseases spread by Housefly and Mosquito.
Ans:
Housefly: These are the commonest of all insects living to man. They transmit a number of diseases like Diarrhoea, dysentery, cholra etc.

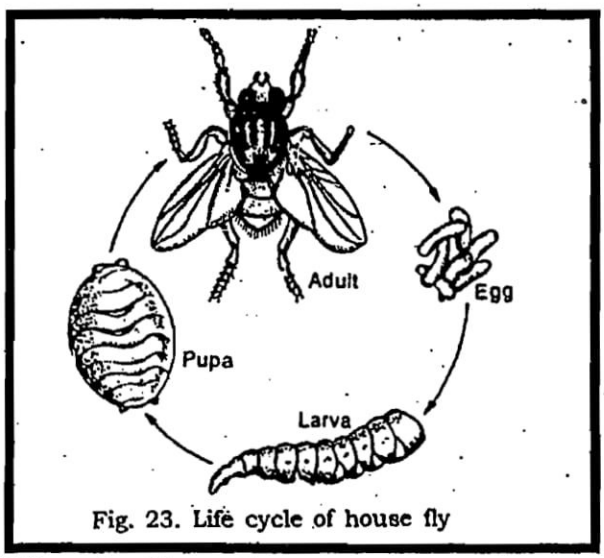

Fig. 23. Life cycle of house fly

Life cycle of housefly:
The four stages involves in the life cycle of housefly are: Egg, Larva, pupa and adult.
Egg: The female lays 120 to 150egg. at one sitting. The eggs are 1mm. long. They are white in colour. The eggs Hatch in 180 to 24 hours.
Larva: The larvae are white, segmented and footless. They are 1 to 2mm in length at birth.
Pupa: Dark brown in Colour. The pupa stage lasts for 3 to 6 days.
Adult: It develops from the pupa. A fly lives for 15-20 days.

Mosquito:
Life cycle of Mosquito: The four stages involved in the life cycle of Mosquito.
Egg: Eggs are laid on the surface of water. 100 to 250 egg at a time.
Lava: It is free swimming.it feeds Bactria and vegetables matter.
Pupa: It is the resting stage. It lasts for 1 to 2 days and does not feed.
Adult: When the development is completed, the skin of the pupa splits and an adult mosquito Emerges.

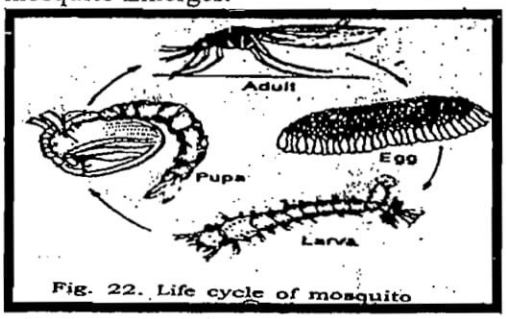

Fig. 22. Life cycle of mosquito