



Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.



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Q. 1. Attempt any EIGHT of the following: (8 x 2 Marks = 16 Marks)

(a) Define the terms: (1 mark for each definition)

(i) Balanced Diet: Balanced diet is defined as diet that contains different types of foods in correct proportions so that body demand for amino acids, fats, carbohydrates, minerals, vitamins, other nutrients is sufficed; so that promotion, protection and maintenance of health is done.

(ii) Medical entomology: It is defined as the study of medically important insects (those which transmit diseases)

(b) Name the deficiency disease of following nutrients: (½ mark each)

(i) Vitamin D- Rickets

(ii) Vitamin B1- Beriberi

(iii) Iodine -Goiter/Hypothyroidism

(iv) Protein -Marasmus/Kwashiorkor/Protein energy Malnutrition

(c) Define the terms: (1 mark for each definition)

(i) Nutrition: It is the science of food and its relationship with health.

(ii) Disinfection: It is the process of complete destruction of pathogenic microorganisms applied to non- living objects.

(d) Give long form of following abbreviations: (½ mark for each full-form of acronym)

i) BCG- Bacillus Calmette Guerin

iii) MMR- Measles Mumps Rubella

iii) TT – Tetanus Toxoid

iv) WHO – World Health Organization



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(e) Give 2 examples each of the following: (1/2 mark for each example)

(i) Physical Methods of contraception: Condoms, or vaginal sponge or Diaphragm

(ii) Acid fast bacteria: Mycobacterium tuberculosis and Mycobacterium leprae

(f) What do you know about: (1 mark for each)

(i) Concurrent disinfection: In this the disease agent is destroyed as soon as it is released from the body so that the spread of the disease is prevented.

(ii) Terminal Disinfection: It is the disinfection done at the end i.e. after patient is discharged or is no more.

(g) Define the terms: (1 mark each)

(i) Diabetes mellitus: It is the state of chronic hyperglycaemia caused due to lack of insulin secretion or due to insulin resistance.

(ii) Microbiology: It's the study of microorganisms.

(h) Name different sources of water.

1. Surface Water
2. Rain Water
3. Ground Water

(i) Enumerate various indicators of health (1/2 mark each, any 4 correct indicators)

Different indicators of human health are:

i) Mortality indicators

ii) Morbidity indicators

iii) Disability rates



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- iv) Nutritional status indicators
- v) Health care delivery indicators
- vi) Utilization rates
- vii) Indicators of social and mental health
- vii) Environmental indicators
- viii) Socio-economic indicators
- ix) Health policy indicators
- x) Quality of life indicators

(j) Write causes of air pollution (any 4 causes, 1/2 mark each)

1. Respiration of human beings and animals
2. Combustion of coal, gas, oil etc.
3. Decomposition of organic matter
4. Traffic, industries - which give off dust, fumes, vapours, harmful gases
5. Industrial and domestic combustion of coal, oil and other fuel is the source of smoke, dust, and sulphur dioxide.
6. Chemical industries, textile industries, oil refineries, fertilizer factories etc. contribute to air pollution.
7. Automobiles like heavy and light vehicles, aircrafts, trains and other forms of transport.

(k) Write mode of transmission of (1 mark each)

- (i) Rabies:** Bite or lick of rabid dog/animals (surface infection)



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(ii) Tetanus: Through contamination of wounds with tetanus spores (pin prick, skin abrasion, unsterile instruments etc.)

(I) Classify immunizing agents: (1/2 mark each)

1. Vaccines,
2. Toxoids,
3. Antitoxins,
4. Sera

Q 2. Answer any Four of following: (3 Marks each)

(a) Write sources, functions, deficiency diseases of Vitamin A (1 mark each for sources, functions, deficiency diseases)

Sources: Milk and milk products, eggs, fish, green and orange /yellow vegetables.

Functions: Maintains healthy epithelial tissues, maintains normal vision

Deficiency diseases: Night blindness, Keratinization, Xerophthalmia

(b) Define the term Demography. Explain Demographic cycle. (1 mark definition, 2 marks for explanation of demographic cycle)

Definition: Demography is a scientific study of human population.

Demographic Cycle:

1. There are five stages of Demographic Cycle through which a nation passes.

- 1. First stage (high stationary stage):** It is characterized by high birth rate and high death rate which cancel each other. So the population remains stationary. India was in this stage till 1920.



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2. **Second stage (Early expanding stage):** There is decline in death rate while birth rate remains unchanged. So the population expands. Many developing countries of Asia and Africa are in this stage.
3. **Third stage (Late expanding stage):** Death rate declines further and birth rate begins to fall. Yet there is increase in population since birth rate exceeds deaths. India appears to have entered this stage.
4. **Fourth stage (Low stationary stage):** Low birth rate and low death rate so the population becomes stationary.
5. **Fifth stage (Declining stage):** Population begins to decline as birth rate is lower than death rate.

(c) **Enumerate determinants of health. Explain any one.(2 marks for enumeration and 1 mark for explanation of any one determinant.)**

1. **Heredity**
2. **Environment**
 - a. Internal environment
 - b. External environment
3. **Life Style**
4. **Socio-economic conditions**
5. **Health Services**

1. Heredity

The genetic makeup of an individual is unique and it can not be changed. A number of diseases are of genetic origin

E.g. Mental retardation, Diabetes. Hemophilia etc.



2. Environment

Health of a person depends on the internal environment and External environment.

Internal environment: refers to the coordinated, harmonious functions of every component (system) of the body, which is known as homeostasis in the body.

External environment: refers to all the things in the surrounding of the individual to which he is exposed for e.g. air, water, climate etc. Environment has direct impact on the physical, mental and social well-being of those living in it.

3. Life Style:

It is the way people live. It reflects the social values, attitudes and activities of an individual. It is composed of cultural and behavioral patterns and lifelong personal habits like smoking, alcoholism etc. Health requires healthy lifestyles. Many diseases are associated with lifestyles. E.g. Obesity, heart diseases. Diabetes etc.

4. Socio-economic conditions:

Health status is significantly determined by the socioeconomic levels which are primarily determined by economic status, education, occupation, and political system.

5. Health Services:

The term health services cover a wide spectrum of personal and community services for treatment of disease, prevention of illness and promotion of health. The purpose of health services is to improve the health status of population.

e.g. (1) Immunization, general screening programmes for infectious diseases. Family planning programmes.

(2) Adequate supply of safe drinking water, proper sanitation.



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(d) Define nosocomial infections. Write prevention and control of nosocomial infections

Nosocomial Infections :(1 ½ marks)

Hospital acquired or nosocomial infections are the infections acquired by the patients after they have been admitted to the hospital and prior to the hospital admission, the patient do not have the said infection. Common nosocomial infections include infections of urinary tract, respiratory tract, alimentary tracts, wound infections, skin infection, septicemia etc.

Control and Prevention: (1 ½ marks)

To achieve this, a committee needs to be appointed in the hospital and they need to monitor following aspects on regular basis

- i) Cleanliness in the hospital
- ii) Proper sterilization of instruments and maintaining aseptic conditions wherever required
- iii) Controlling overuse of antibiotics
- iv) Maintaining Health and hygiene of hospital staff
- v) Avoiding water, food contamination
- vi) Proper isolation of infectious patients

(e) Write First Aid for shock. (1/2 mark for each point)

1. Take the patient to a well-ventilated area.
2. Disperse the crowd tactfully so as to provide proper ventilation and relief from fear and anxiety to the patient.
3. Keep the patient in supine (lying down) position with head lowered and turned to a side. Raise the legs slightly up, so as to improve the circulation.



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4. If there is difficulty in breathing, raise the head and chest of the patient, loosen the clothing around chest and neck.

5. Keep the patient warm with a blanket.

6. Immediately shift the patient to the hospital.

(f) Write importance (1 Mark) and procedure (2 Marks) for Gram Staining

Importance: It's a differential staining procedure and helps to identify different types of bacteria.

The Gram stain is commonly used differential staining technique for bacteria.

Procedure:

Prepare the smear and follow the steps.

Steps

i) Flood the slide with crystal violet solution for up to one minute. Wash off briefly with tap water (not over 5 seconds). Drain.

ii) Flood slide with Gram's Iodine solution, and allow to act for about one minute. Wash off with tap water. Drain.

iii) Remove excess water from slide and blot, so that alcohol used for decolorization is not diluted. Flood slide with 95% alcohol for 10 seconds and wash off with tap water. Drain the slide.

iv) Counter stain with safranin solution for 30 seconds. Wash off with tap water. Drain and blot dry.

v) All slides of bacteria must be examined under the oil immersion lens.

Q.3 Answer any FOUR of following (3 marks for each question)

(a) Define blindness. Write causes, prevention and control of blindness.



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(Definition 1 mark, Causes 1 mark for any two points, prevention and control of blindness 1 mark)

Definition:

Blindness is defined as ' visual acuity of less than 3/60 (Snellen) or its equivalent.'

OR

Inability to count the fingers at a distance of 3 meters

Causes:

- i) Vitamin A deficiency due to malnutrition and disease like measles can extremely weaken the vision.
- ii) Cataract, glaucoma, trachoma and other eye infections are common causes.
- iii) Congenital disease, tumour of eye, retinal detachment, diabetes , hypertension , and diseases of nervous system.
- iv) Persons working in industries and mines as occupation get eye injuries often.
- v) Use of infected kajal and treatment by quacks can also lead to blindness.

Prevention and control :

- i. Improving nutrition particularly related to Vitamin A intake.
- ii. Proper and timely treatment of infectious diseases of eye.
- iii. Improving safety measures and working conditions at occupation places.
- iv. Regular eye checkup of children in schools followed by health education helps to prevent blindness.



(b) Enlist different methods of isolation of bacteria. Explain any one.

(Enlisting methods 1 mark, Explanation of any 1 method 2 marks.)

Methods of Isolation of Bacteria:

- 1) Streak plate method
- 2) Pour plate method
- 3) Spread plate method
- 4) Single cell isolation by Micromanipulator

Description of method for Isolation of pure Culture:

(Any one of the following methods for 2 marks)

Following methods are commonly used to isolate bacteria from a mixture.

i) Streak Plates Method

A plate of solid medium (nutrient agar) is allowed to dry in an incubator for about 30 min to dry the surface. Then by using bent wire which has been sterilized by heating directly on the flame, is dipped in an inoculum. With this wire the inoculum is streaked across the surface of the agar medium so that individual cells become separated from each other. The inoculum can be streaked on the agar surface by methods as shown in the following figures. These plates are incubated at 37°C for about 18-24 hrs, after which individual colonies can be observed on the agar surface.

ii) Spread Plates Method

A drop of diluted sample of culture specimen is placed on the surface of an agar medium, and this drop is spread over the entire surface using a sterile bent glass rod. These plates are

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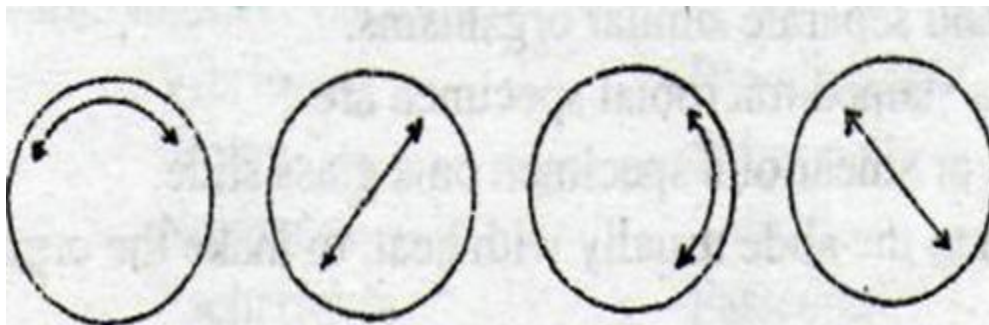
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incubated at 37°C for about 18-24 hrs, after which individual colonies can be observed on the agar surface.

iii) Pour Plates Method:

In this method the initial suspension of the culture is diluted to a concentration of about 100 microbes/cm³. This diluted specimen (1ml) is pipetted out in the empty petridishes and mixed with nutrient agar by moving gently in the directions as shown in the figure.



The temperature of agar is not allowed to exceed 45°C to avoid damage to the microorganisms. After solidification the plates are incubated. In this procedure the colonies will grow both on and below the surface, because some of the cells are trapped within the agar medium when it solidifies.

iv) Single cell isolation by Micromanipulator:

- i) The hanging drop preparation of specimen is prepared.
- ii) The needle of micromanipulator is inserted in hanging drop.
- iii) By pointed tip of needle of micromanipulator single isolated cell of bacterium is lifted and taken out.
- iv) Needle tip with isolated single cell is dipped in sterile growth medium and this tube is incubated at appropriate incubation conditions.



(c) Write about hormonal contraceptives.

(Mechanism of action of hormonal contraception 1 mark, methods available 1 mark, any two advantages or disadvantages 1 mark)

Mechanism of action:

1. Inhibition of ovulation:

The combined oral pill produces contraceptive effect by preventing release of ovum from ovary which is achieved by blocking the secretion of gonadotropin by pituitary gland, which is necessary for ovulation.

2. Preventing implantation by altering endometrium so that it is not conducive for implantation

3. Reducing transportation of sperms by making cervical mucous thick.

Methods:

1. Oral pills —

Combined pills with oestrogen and progesterone such as Mala- N and Mala-D.

Progestogen only pill with small amount of Norethisterone or Levonorgestrel.

Post-coital pill or emergency contraceptive pills

2. Depot (slow release) formulations —

Injectables

subcutaneous implants

vaginal rings.

Advantages :

i) Very effective reversible method



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- ii) Method is safe and easy to use
- iii) Does not interfere sexual pleasure.
- iv) Regulates menstrual cycle and decreases menstrual blood loss.
- v) Protects women from anemia from minimizing blood loss.

Disadvantages:

- i) Headache may start where previous history is not of headache
- ii) Depression (sometimes severe) and mood changes.
- iii) Nausea and vomiting
- iv) No protection against Sexually Transmitted Diseases.
- v) Weight gain.

(d) Describe various methods of small scale purification of water:

(3 methods, 1 mark each)

Small scale purification of water:

Methods available are as below.

a) Boiling:

- i) It is most suitable and satisfactory water purification method on household basis.
- ii) It kills all bacteria and almost all spores, cyst and ova; to give purified water.
- iii) Water should be boiled preferably in same container, in which it is to be stored to avoid contamination during storage.

b) Chemical disinfection:



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This can be achieved by using different preparations which act by liberating chlorine in water. They include bleaching powder or chlorinated lime, chlorine solution, high test hypochlorite (HTH) or perchloron which is calcium compound containing 60 - 70 percent available chlorine, chlorine tablets.

Apart from these compounds iodine and potassium permanganate. Can be used for disinfection of water.

c) Filtration : i) In houses water can be filtered using ceramic filter like Berkefeld filter, Katadyn filter and Pasteur –Chamberland filter. ii) Filter candles remove bacteria from water but not viruses. iii) Impurities in water can clog filter candles so periodic cleaning by scrubbing and boiling is required.

(e) Write First Aid treatment for snake bite. (Any 6 points, ½ mark each)

First Aid for snake bite is:

- i) Assure the patient.
- ii) Apply firm pressure over bitten area to delay poison absorption.
- iii) Apply broad firm bandage or tourniquet (if available) above bitten area to delay circulation of blood with poison. Such bandage/tourniquet (i. e. pressure applied) should be loosened for 90 sec. after every 10 min.
- iv) Immobilize bitten area to minimize venom spread through blood circulation.
- v) Make cross incision 1 cm long and ½ cm deep over mark of bite, to allow blood with venom to flow out. Such blood with venom may be sucked and spitted out by first-aider.
- vi) Clean the wound (i.e. bitten area) by sterile saline or clean water and cover it with sterile dressing or unused cloth.
- vii) Hospitalize patient as quick as possible for administering antsnake venom..

(f) Discuss in detail Noise Pollution



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(Noise definition 1 mark , health effects any two points 1 marks, prevention and control any 2 points 1 mark)

Noise-Definition: It is defined as unacceptable sound i.e. the sound not pleasant to hear.

OR

It is defined as wrong sound at wrong place at wrong time.

Health Effects of Noise:

A) Auditory Effects:

- i) Whistling and buzzing sounds in ears.
- ii) Feeling of fatigue.
- iii) Temporary hearing loss which may lead to deafness.

B) Non-auditory Effects:

- i) Difficulty in concentration
- ii) Annoyance
- iii) Decreased efficiency
- iv) Physiological changes as – Headache, hypertension, increased heart rate, sweating, nausea, giddiness, sleep disturbances etc.

Prevention and control:

- a) Control of noise at source: It can be achieved by segregating noisy machines and, by using mufflers or other noise reducers to machines.
- b) Control of transmission: This can be achieved by building enclosures and covering walls with sound absorbing material.



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c) Protection of exposed persons : It is recommended for all workers who are consistently exposed to noise louder than 85 dB in the frequency band above 150 HZ. Periodical audiogram checkups, use of ear plugs, ear muffs are also essential.

d) Education: Education of people through available media is required to highlight the importance of noise as a community hazards.

Q.4. Answer any FOUR of the following. (3 marks for each question)

(a) Define hypertension. Write causes, prevention and control of hypertension.

(Definition 1 mark, causes any 2 points ½ mark each, prevention and control any 2 points ½ mark each)

Definition:

Hypertension is defined as “a systolic pressure equal to or greater than 140 mm of Hg and/or a diastolic pressure equal to or greater than 90 mm of Hg.”

Causes:

- 1.Life style factors such as High fatty diet, high salt intake, smoking, alcoholism
- 2.Age and heredity
- 3.Disorders such as renal or endocrine.
- 4.Pregnancy

Prevention and control :

1. Primary type :

- i) Less salt intake
- ii) Restriction of saturated fats in diet
- iii) Weight reduction and exercise promotion



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iv) No tobacco smoking and reduced alcohol consumption

v) Avoiding stress

vi) Health education and self-care

2. Secondary type:

i) Early detection and lowering blood pressure below 140/90

ii) Proper and regular use of medicines

(b) Explain natural history of diseases and its phases.

(Explanation 1 mark, prepathogenesis 1 mark, pathogenesis 1 mark)

Natural history of diseases signifies the way in which the disease evolves over time from the earliest stage to its termination as recovery, disability or death.

Its phases are:

1. Prepathogenesis:

This refers to the period before the onset of the disease . The causative agent has not yet entered the host, but the factors which favour the interaction with the human host already exist in the environment. Interaction of environment, agent and host is necessary to initiate the disease process.

2. Pathogenesis: It begins with the entry of the disease causing agent in the susceptible human host. This initiates cycle of events like: incubation of the causative microbe for a specific period of time in the host, its multiplication and subsequent tissue and physiological changes.

(c) Name various methods of solid waste disposal. Explain any one.

(Names of any 4 methods 1 mark, explanation of any 1 method of the following methods 2 marks)



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Methods of solid waste disposal:

- i) Dumping
- ii) Sanitary landfill or Controlled tipping
- iii) Burning or Incineration
- iv) Composting
- v) Burial

i) Dumping: Dry refuse is mainly dumped in low lying areas which help not only in disposal but also in reclamation of land. By action of bacteria, the volume of the refuse decreases considerably in volume and is converted gradually into humus. It is not an ideal method. It causes public nuisance, attracts insects and animals. It causes air and water pollution.

ii) Controlled tipping or sanitary landfill : This is the most satisfactory method of refuse disposal. In this method a trench is dug. The refuse is compactly dumped in these pits and at the end of each working day is covered with earth, when trench is full, again it is covered with earth and compacted. In this method the chemical and bacteriological processes decompose the refuse into simple substances with generation of heat. The refuse is fully decomposed at the end of 6 months and can be used as manure.

iii) Incineration or Burning: Refuse can be disposed of hygienically by burning. It requires special equipment called as incinerator. It is a hollow cylinder made of metal, the refuse is put on the land and covered with the incinerator. Hospital refuse which is particularly dangerous e.g. infectious material is best disposed off by burning.

iv) Composting : It is a method of combined disposal of refuse and night soil. The basic principle is, when the refuse and night soil (excreta) are dumped in pit and covered with earth there is anaerobic decomposition. The heat produced during decomposition kills the organisms and ultimately compost is obtained, which is used as manure. In a big trench, layers of 15 cm refuse alternating with 5cm layer of excreta are placed on one another till it is full.

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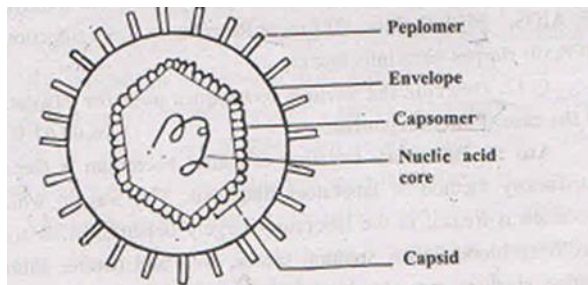
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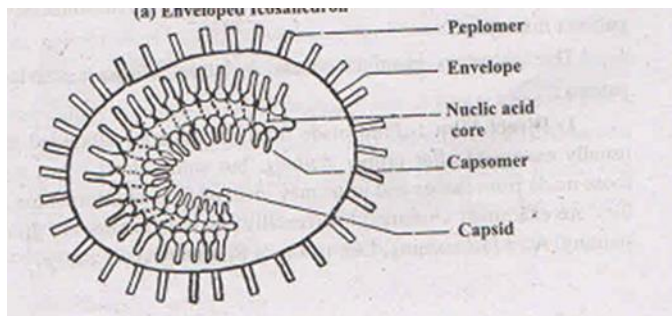
v) **Burial:** Small trench is dug and refuse is put in it and covered with earth every day and when full, it is covered with earth and another trench is used. It is useful as short term method.

(d) Describe structure of virus with the help of a labeled diagram

(1 mark for labeled diagram and 2 marks for any four structural features).



OR



General Structural Features:

- 1) Virus is ultramicroscopic entity on boundary of living and nonliving.
- 2) It does not possess the cellular organization.
- 3) Structurally it possesses a protein coat called 'capsid', enclosing nucleic acid at central core.
- 4) Capsid is made up of structural units called capsomers, where each capsomer is made up of 7 to 8 monomers.
- 5) Virus carries centrally located nucleic acid, either DNA or RNA but never the both.



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6) Virus particle may be 'enveloped' or naked i.e. without envelop. Envelop may show projections called spikes.

7) Virus may show icosahedral (cubical) form or helical (rod like) form of structure.

(e) Give disinfection procedure for

i) Faeces and urine (1 ½ mark)

ii) Sputum (1 ½ mark)

i) Faeces and Urine Disinfection:

- a. Faeces and urine collected in an impervious container are equally mixed with 8-10 % bleaching powder solution 50 gm/ltr for disinfection.
- b. Alternatively 10% crude phenol is used .
- c. If both these are not available 5% cresol and 10% formalin is added and kept for 2 hrs.
- d. If no disinfectant is available boiling water in equal volume can be used. v)
Container itself is disinfected using 2-3% cresol solution or by steaming.

ii) Sputum Disinfection :

- a. Sputum is collected in paper cups and disinfected by burning in case when amount is small.
- b. Sputum in large amount is disinfected by boiling under pressure 20 lbs.for1 and 1 and ½ hrs and then is buried.
- iii) Readymade paper cups can be given carrying 5% cresol solution to spit sputum into it and after 2 hrs. contact period and then cups are buried .or disposed by burning.

(f) Explain Back Pressure Arm lift method



(Following points of answer for 3 marks)

Back Pressure Arm lift method i.e. Holger Nilsen Method is CPR to revive patient's respiration and heart working. It includes following steps -

- i) Place victim's facedown with one hand on other and head tilted on a side.
- ii) Kneel at victim's head and place your hands on his/her back so that palms are by shoulder/armpit level.
- iii) Move forward to exert steady even pressure, by your hands.
- iv) Immediately pull arms of victim upward towards you until you feel tension at his/her shoulders.
- v) Lower the arm and repeat complete procedure about 12 times in a minute.
- vi) If two persons are giving first aid, second person can keep victim's head tilted a side (jaw jutting out).
- vii) Mouth of victim should be cleaned prior to such first aid given and during while also.

Q.5 Answer any FOUR of following : (12 marks)

Write causative agent, symptoms, prevention and control of: (3 marks each, Causative agent 1 mark, Symptoms 1 mark, Prevention and Control 1 mark)

(a) TUBERCULOSIS

Causative agent:

Tuberculosis is a communicable disease caused by bacteria called Mycobacterium tuberculosis.

Symptoms:

- 1.Cough for more than 2 weeks
- 2.Fever



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3.Weakness

4.Loss of weight

5.Loss of appetite

6.Chest pain

7.Blood in sputum.

Prevention and Control:

1. Early detection of cases by i) microscopic examination of sputum ii) chest x-ray,iii) Mantoux test.
2. Preventive treatment with INH or INH plus ethambutol.
3. Combination treatment for complete duration.
4. Isolation
5. Immunization with B.C.G vaccine
6. Balanced diet and health education

(b)Poliomyelitis

Causative agent :

It is caused by polio virus. There are three type of polio viruses namely type I, II, and III.

Symptoms :

An attack of polio begins with fever, sore throat, headache and stiffness of neck. In a few cases it leads to foot drop and flaccid paralysis of limbs.

Prevention and control :

- 1.Immunization with oral polio vaccine.



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2. Notification and isolation of the patient.
3. Proper disposal of urine and feces.
4. Protection of water sources and supply of safe drinking water.
5. Immunization with oral polio vaccine.

(c) HEPATITIS

(Hepatitis A or Hepatitis B, any of these two can be considered)

HEPATITIS A (HAV)

Causative agent: It is also known as infectious hepatitis. It is caused by hepatitis A virus.

Symptoms: Fever, chills, headache, weakness and jaundice.

Prevention and Control:

Safe disposal of excreta

Prevention of contamination of water, wood and milk.

Passive immunization with human normal immunoglobulin.

HEPATITIS B (HBV)

Causative agent: It is also known as serum hepatitis. It is caused by hepatitis B virus.

Hepatitis B infection can lead to liver cancer.

Symptoms: Fever, chills, headache, weakness and jaundice.

Prevention and Control:

1. Screening of blood donors for HBV infection.
2. Proper sterilization of needles and syringes.



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3. Immunization with hepatitis B vaccine.

(d) MALARIA

Causative agent:

Malaria is communicable disease caused by a parasitic protozoa belonging to the genus plasmodium.

Symptoms: Periodic chills and fever, enlargement of spleen and secondary anemia.

Prevention and control:

1. Early diagnosis through examination of blood smears.
2. Immediate notification to health authorities.
3. Hygienic measures like good drainage this will prevent stagnation of water where mosquitoes breeding takes place.
4. Destruction of mosquitoes by spraying DDT or kerosene.
5. Prevention of mosquito bite by rubbing mosquito repellents or using mosquito nets.
6. Treatment with antimalarial drugs like quinine and chloroquine.
7. Health education about proper drainage and related sanitary measures.

(e) TRACHOMA

Causative agent:

Trachoma is a chronic infectious disease of the conjunctiva and cornea. It is caused by Chlamydia trochomatis.



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Symptoms: Trachoma produces inflammation and scarring of the conjunctiva. This lead to inward deviation of eyelashes and lid margin. The eyelashes produce abrasion of the cornea which results in corneal ulcer. Ultimately it leads to blindness.

Prevention and control:

1. Mass treatment of all people with drugs like sulfonamides and tetracycline.
2. Surgical correction of eyelid deformities.
3. Environmental sanitation like fly control, safe water supply, improvement of personal and general hygiene.
4. Health education about cleanliness of family members and the environment.

(f) AIDS

Causative agent:

AIDS (Acquired immune deficiency syndrome) also called as slim disease is predominantly a sexually transmitted disease. It is a fatal illness caused by a retrovirus known as human immune-deficiency virus (HIV).

Symptoms:

- i. Weight loss (10% of body weight).
- ii. Chronic diarrhea of more than a month's duration.
- iii. Prolonged fever (either intermittent of constant) of more than a month's duration
- iv. Persistent cough of more than a month's duration.
- v. Generalized pruritic dermatitis.
- vi. Recurrent herpes zoster infection.
- vii. Oropharyngeal candidiasis.



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- viii. Generalized lymphadenopathy. The presence of generalized Kaposi's sarcoma meningitis is sufficient by themselves for the diagnosis test.

Prevention and control:

1. Screening of blood donors for AIDS.
2. Screening of high risk groups like prostitutes and drug addicts.
3. Use of disposable syringes for injection.
4. Avoid indulgence in multiple sex partners, avoid oral, anal sex.
5. Use of contraceptive device like condom.
6. Generating awareness through health education about AIDS, its problems and method of prevention.

Q.6 Answers any FOUR of the following. (16 marks)

(a) Define Fertility. Write about various factors which affect fertility.

Definition (1 mark)

Fertility is the actual bearing of children.

Factors affecting fertility (3 marks, any six factors i.e.1/2 marks each)

The following are important factors which regulates fertility

1. **Age at marriage:** Early marriage is a 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.



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2. **Duration of married life:** Maximum child birth occurs in the first 15 yrs of married life. So efforts for family planning must be concentrated only during these early years of married life.
3. **Spacing of children:** spacing between births reduces fertility rates.
4. **Education:** Educated women give birth to lesser number of children when compared to illiterates.
5. **Economic status:** Fertility decreases with an increase in per capital income. therefore economic development is considered to be the best contraceptive.
6. **Caste and religion:** In some religions and castes fertility is found to be higher than other.
7. **Nutrition:** It has an indirect effect .Well fed societies show lower fertility rate.
8. **Family planning:** It is an important factor which can lower fertility.
9. **Other factors:** Cultural and social factors like position of women in society, values of children, customs and beliefs, widow remarriage, industrialization.

b) Explain the terms :(2 marks each)

i) Physical health

ii) Social health

i. Physical health:

Physical health is the perfect functioning of the body i.e. a state in which every cell and every organ is functioning at optimum capacity and in perfect harmony with the rest of the body.

Physical health is indicated by various signs like good complexion, clean skin sweet breath, good appetite, sound sleep etc.

ii. Social health:

Social health is defined as the “quantity and quality of an individual’s interpersonal ties and the extent of involvement with the community”. Social health takes into account that every



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individual is part of a family and of wider community and focuses on social and economic conditions and well-being of the “whole person” in the context of his social network.

c) Define cancer. Write causes, prevention and control of cancer.

Definition : (1 mark)

Cancer is an abnormal and rapid growth of cells and tissues; it can invade distant tissues or organs. It can lead to death if grows beyond the stage of removal.

Causes of Cancer :(1 ½ marks, any three causes can be considered)

The major factors responsible for development of cancers are :

i)Tobacco: Tobacco smoking or chewing is the major cause of cancer of mouth, pharynx, oesophagus, larynx, lungs, urinary bladder, pancreas.

ii)Alcohol: A significant percentage of all cancers are because of consumption of alcohol. Excessive consumption of alcoholic beverages is associated with esophageal and liver cancer, Rectal cancer is observed to be because of consumption of beer.

iii) Dietary Factors: Diet plays an important role in the development of gastrointestinal cancers.

Some relation has been observed between :

1. Stomach cancers -smoked fish,
2. Dietary fibers -intestinal cancers,
3. Beef -bowel cancer
4. High fat diet -breast cancer.
5. Food additives, coloring agents are suspected to be the causative agents.



iv) Occupational Exposures: Exposure to various chemicals like benzene, arsenic, cadmium, chromium, vinyl chloride, asbestos, polycyclic hydrocarbons etc. are responsible for about 1-5% of all human cancers.

v) Viruses: Many viruses have been found to be responsible for cancers.

Hepatitis B is causally related to hepatocellular carcinoma.

Cytomegalovirus (CMV) is suspected to be an oncogenic agent'

Human papilloma virus (HPV) is suspected for cervical cancer.

Human T-cell leukaemia virus is associated with about T-cell leukaemia.

Hodgkins disease is also believed to be of viral origin.

vi) Others: Numerous environmental factors such as sunlight, radiation, air and water pollution, pesticides are related to cancer.

Prevention and control: (1 ½ marks, any three points can be considered i.e. ½ mark for each point)

1. Avoiding known carcinogenic agents like tobacco and alcohol
2. Personal hygiene can decrease the incidence of cancer. e.g. cervix cancer.
3. Control of air pollution is an important measure.
4. Health education to create awareness about cancer.
5. Establishment of cancer detection centres for early diagnosis.
6. Old age person must be motivated for regular and periodical check up.



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d) Define immunization. Write about national immunization schedule.

Definition: (1 mark)

Immunization is the process of protecting large number of population by producing immunity or resistance in the body by means of immunological agents (vaccines).

National immunization schedule :(3 marks)

Each country has its own immunization schedule based on their local needs. The Indian version of National Immunization Schedule to protect the children against six vaccine-preventable diseases -Diphtheria, Whooping Cough, Tetanus, Polio, Tuberculosis, Measles.



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Beneficiaries	Age	Vaccine	No.of doses and route of administration.
Infants	6 weeks to 9 months	DPT Polio (OPV) BCG	3 intramuscular 3 oral 1 intradermal
Children	9 to 12 months	Measles	subcutaneous
	16 to 24 months	DPT (I booster) Polio (I booster)	1 intramuscular 1 oral
	5-6 years	DT (II booster) Typhoid	1 intramuscular, (Two doses if not immunized previously) 2 subcutaneous.
	10 years	Tetanus toxoid Typhoid	1 intramuscular 1 subcutaneous
Pregnant women	16 to 36 weeks of pregnancy	Tetanus toxoid	1 Intramuscular 1 subcutaneous. 2 intramuscular.



e) Write function and deficiency disease of

i. Iron- (2 marks)

Functions: (1 mark)

1. It is necessary for synthesis of hemoglobin.
2. It is essential for the formation of various enzymes.
3. It is required for brain development and muscle activity.
4. It is needed for the regulation of body temperature.
5. It has central function in oxygen transport and cell respiration.

Deficiency disease: (1 mark)

Deficiency of iron leads to anemia. Also leads to impaired immunity and decreased resistance to infection.

ii. Calcium :(2 marks)

Functions (1 mark)

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 transforms light into electrical impulse in the retina.
6. It forms a component of several enzymes.



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Deficiency disease: (1 mark)

Deficiency of calcium leads to Rickets in children and Osteomalacia in adults. It also leads to delayed blood clotting.

f) Define fracture.name type of fracture and First Aid Treatment for fracture.

Definition: (1 mark)

Breaking or Cracking of the bone is called as Fracture.

Types of fractures: (1 mark)

- a) Simple Fracture (Closed Fracture)
- b) Compound Fracture (Open Fracture)
- c) Complicated Fracture
- d) Comminuted fracture

First Aid Treatment for fracture :(2 marks)

- i. Control bleeding if any by applying pressure bandage.
- ii. Cover all wounds with sterile dressings.
- iii. Immobilize the fracture parts immediately by using bandages or splints. (It is a support for a broken bone like wooden plank, Cardboard, Metal etc.)
- iv. Immobilization is important to prevent pain, further damage, to support to tissues which are ordinarily supported by that bone and to accelerate rapid healing of that bone.
- v. During immobilization of broken bone used adequate padding in the natural hollows.