



SUMMER– 15 EXAMINATION

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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) Name the vitamin causing following deficiency diseases: (½ mark each)

- (i) Rickets is caused by deficiency of vitamin D
- (ii) Night Blindness is caused by deficiency of vitamin A
- (iii) Scurvy is caused by deficiency of vitamin C
- (iv) Pellagra is caused by deficiency of vitamin Niacin / Nicotinic acid / Nicotinamide

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

(i) Disease: It is defined as a definite morbid process having a characteristic train or pattern of symptoms, where it may affect the whole body or any body part and cause, pathology and course of it may be known or unknown.

(ii) Health :" It is a complete state of physical , mental and social well-being and not merely an absence of disease or infirmity" where this statement is amplified as " and the ability to lead socially and economically productive life".

(c)Write the role of pharmacist in promoting family welfare / planning.

The pharmacist can play role in promoting family welfare/planning by following ways:

(Any 4 of the following points, ½ mark for each point)

- 1.Explain importance Small Family norm.
- 2.Tell about proper spacing of children.
- 3.Guide males about contraceptive devices for use available for them.
- 4.Guide females about contraceptive devices for use available for them.



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5. Guide in general about health care and proper nutrition of “would be mother”.
6. Can guide about bad effects of population explosion the country is facing and so the importance of population control.
7. Guide people about communicable and non-communicable diseases.
8. Can advise community about preventive measures of some common diseases.

(d) Name the arthropod transmitting following diseases: (½ mark each)

- i) Plague is transmitted by Rat flea
- ii) Kala Azar is transmitted by Sand fly
- iii) Cholera is transmitted by House fly
- iv) Malaria is transmitted by female anopheles mosquito

(e) Give the emergency treatment for shock

The emergency treatment for shock is : **(Any 4 of the following points, ½ mark each pont)**

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.
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.



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6. Immediately shift the patient to the hospital.

(f) Name the causative agent of the following diseases: (1 mark for each)

i) Rabies is caused by virus named Lyssa virus type 1, serotype 1

ii) Chickenpox is caused by virus named Varicella Zoster Virus [V-Z Virus] OR Human (alpha) herpes virus 3.

(g) Name the disease due to following causative agent: (1 mark for each)

i) Treponema palladium causes disease called Syphilis

ii) Bordetella pertusis causes disease called Whooping cough (Pertussis)

(h) Write prevention and control of Coronary Heart Diseases

The preventive measures for Coronary Heart Diseases are: **(Any 4 points, ½ mark for each point)**:1. Take diet that gives just sufficient calories and lowering the intake of cholesterol.

2. Control salt consumption (from all sources) to less than 5 gm/day.

3. Take brisk walk about 3.5 km in about 35-40 minutes daily.

4. Do not smoke tobacco, if you do , leave tobacco smoking completely

5. Avoid drinking alcoholic beverages.

6. Control and manage mental stress by meditation and yoga exercises.

7. Undergo periodic/annual medical examinations and follow precautions as advised by

physician. 8. For the symptoms as chest pain, frequent fatigue, palpitation or breathlessness take medical advise immediately.



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(i) What do the following acronyms stand for?

(½ mark for each full-form of acronym)

- i) HIV- Human Immuno-deficiency Virus
- ii) TT- Tetanus Toxoid
- iii) RNA – Ribose Nucleic Acid
- iv) STD – Sexually Transmitted Disease

(j) What is ‘Balanced Diet ’? (2 marks)

Balanced Diet : Balanced diet is such diet that contains different types of foods in correct amounts and proportions so that body demand for amino acids, fats, carbohydrates, minerals, vitamins, other nutrients and energy demand of body is sufficed; so that promotion, protection and maintenance of health is done. (1mark)

(k) Define ‘ Fertility ’and name the four factors affecting fertility

(Fertility definition 1 mark, mentioning any 4 factors 1 mark).

‘ Fertility’ is defined as the ability to produce offsprings or children.

Factors affecting fertility are –

- 1) Age of marriage
- 2) Duration of married life
- 3) Spacing of children
- 4) Education

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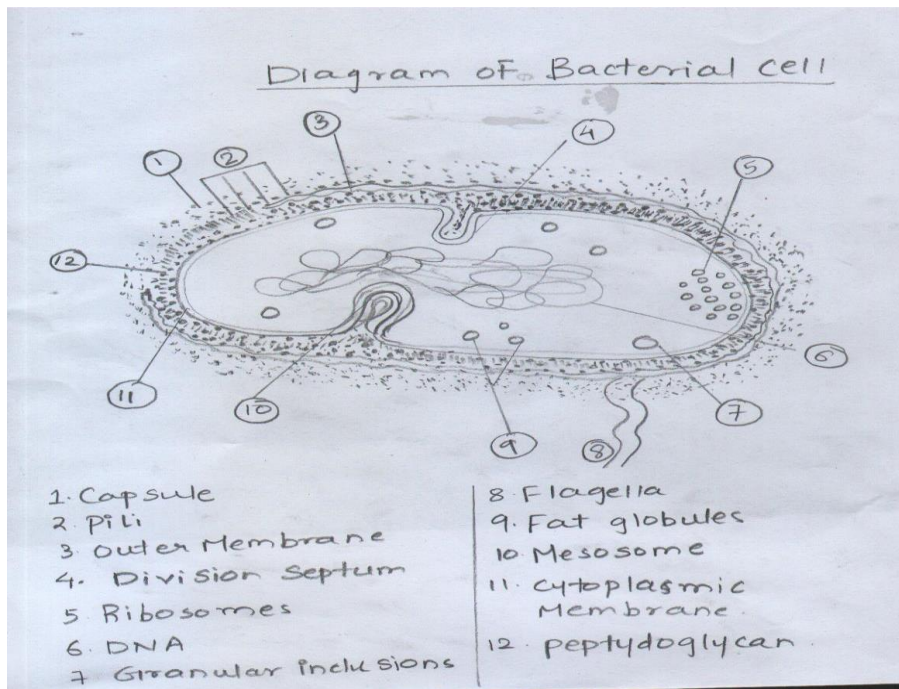
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- 5) Nutrition
- 6) Economic status
- 7) Cast and religion
- 8) Family planning
- 9) Other factors which are physical, social and cultural factors as place of woman in society, widow remarriage, breast-feeding, housing, etc.

(1) Draw well labeled diagram of Bacterial cell.





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Q. 2. Attempt of any FOUR of the following:

(4 x 3 Marks = 12 Marks)

(a) Name various indicators used for measurement of health and explain mortality indicators.

Different Indicators of human health are as(**Any 5 indicators from the following list 1 Mark**)

- i) Mortality indicators
- ii) Morbidity indicators
- iii) Disability rates
- 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



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Mortality Indicators: The important mortality indicators are as follows.(Explanation of any 4 of the following for 2 marks)

- 1) Crude death rate: It is defined as number of deaths per 1000 population per year in a given community.
- 2) Life expectancy: life expectancy at birth is defined as average no. of years that will be lived by those born alive in to population.
- 3) Infant mortality indicator: it is the ratio of deaths under one year of age in a given year to the total no. of birth in the same year, usually expressed as rather per 1000 live birth.
- 4) Child mortality rate: no. of deaths at age 1 to 4 years in a given year per 1000 children in that age group at the midpoint of the year concern.
- 5) Maternal mortality rate: it indicates proportion of deaths among women of reproductive age.
- 6) Disease specific mortality: these are the rates due to specific diseases. For e.g. mortality rate due to cancer, cardiovascular diseases etc.

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

(i) Physical health: It 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 body.

(ii) Social health: It implies harmony and integration within the individual, between each individual and other member of society and between individuals and the world in which they live.

(iii) Mental health: it is defined as a state of balance between the individual and self confidence, self control and has respect for others.



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(c) Define Immunity. Discuss its types.(Immunity definition 1 mark , explanation of any 2 types of the following for 2 marks)

Immunity is defined as “ ability to produce and possess specific protective antibodies or the cellular mechanism , as a result of previous infection or immunization or body conditioned so by such previous experience as to respond sufficiently to prevent infection or clinical illness or both , after exposure to a specific infectious agent”. **OR**

The power of the body to resist the effects of invasion of pathogens is known as immunity

Types of Immunity:

1. Active Immunity:

i) It is immunity developed after infection or by specific immunization and usually associated with presence of antibodies or cells with specific action on infectious organism or its toxin.

ii) It is developed after clinical or subclinical infection or following immunization and it is humoral or cellular type.

iii) Here antibodies i.e. immunoglobulins of 5 types are produced as IgG, IgM, IgE, IgD and IgA (Ig i.e. immunoglobulin). The antibodies work to destroy antigens. This is called humoral immunity.

iv) The other type , cellular type active immunity works mainly against Mycobacteria , Salmonella , Candida and many viruses.

v) It is long lasting, less expensive , with least side effects and characterized by memory mechanism ; as compared to passive immunity.

2. Passive Immunity: i) When antibodies produced in one body (human or animal) are transferred to another to induce protection against disease, it is called as passive immunity.

ii) Passive immunity is effective immediately as ready-made antibodies are given to human.



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iii) It is rapidly established, it is of very short duration, possesses no memory mechanism and may show side effects; are some disadvantages.

3. Herd Immunity:

i) It is level of immunity or resistance of a community or a group of people to a particular disease on background of past experience of a disease.

ii) Herd immunity develops in the community because of immunizations, infections and subclinical infections.

iii) The continuous or on-going immunization program can keep up the herd immunity at a very high level.

(d) Classify vitamins and write sources of Vit. C. (Classification with example 2 marks, Sources of Vit. C 1 mark)

Vitamins are classified on their solubility criterion as :

1) Water soluble vitamins – these are B complex group vitamins as B1, B2, B3, B6, B12, Niacin, vitamin M (folic acid) and vitamin C.

2) Fat soluble vitamins – these are vitamins A, D, E and K

Sources of Vitamin C – Amla is most rich source of vit. C. Guava is the second most rich source of vit. C.

Some other sources of vit. C are fresh citrus fruits, leafy green vegetables and germinating pulses. Fresh meat and milk carries vit. C but in very small amounts.



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(e) Write the elements of Minor Surgery and dressings.

The 'Elements of Minor Surgery and Dressings' include mainly:

(Enlisting for 1 mark)

- 1) Common surgical instruments
- 2) Glass and plastic instruments
- 3) Rubber instruments
- 4) Sutures and ligatures with suturing needles
- 5) Dressings

(Any 4 of the following points for 2 marks)

- 1) Common surgical instruments- These include 'towel clips'(different types), ' forceps' viz. sponge holding forcep, Cheetle'sforcep, artery forcep, etc. 'scissors' as curved, straight, special type, etc.; along with scalpels, needles and needle holder.
- 2) Glass and plastic instruments- These include mainly the BD syringes as Tuberculin syringe, All glass syringe, Leurlock syringe, etc.
- 3) Rubber / PVC - These include Surgical gloves, urinary catheters, Ryle's tube, etc.
- 4) Sutures and ligatures- Sutures are any material used to sew or stitch together tissues until healing occurs. Types : Main two types as-
 - a) Absorbable: These are absorbed in the tissue. These can be i) Surgical gut or catgut, ii)Collagen sutures and iii) Others as Ribbon gut, Fascia lata, etc.
 - b) Nonabsorbable: These are of types as i) Natural-Silk or cotton or linen ii)Synthetic



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iii)Dermal iv)Metalic as stainless or tantalum, etc.

Needles: These are of different types as – Straight, Round shaft curved, Triangular shaft curved, Flat shaft curved, etc.

5) Dressings- It is term applied to wide range of materials used for dressing of wound

These are of different types as: Primary, Absorbents, Bandages, Adhesive types and Protective.

There are different “antiseptics” commonly used as- AF Lotion, Eusol, Magsulf solution, Tincture benzoin, Tincture iodine.

(f)Write the First Aid treatment given in snake bite.

First Aid for snake bite is :(**Any 6 points, ½ marks each**)

i) Assure patient about his/her life being saved.

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) Immobilise 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 and polyvalent antisnake venom can be given , 20 ml by IV route , immediately after hospitalization after taking sensitivity test.

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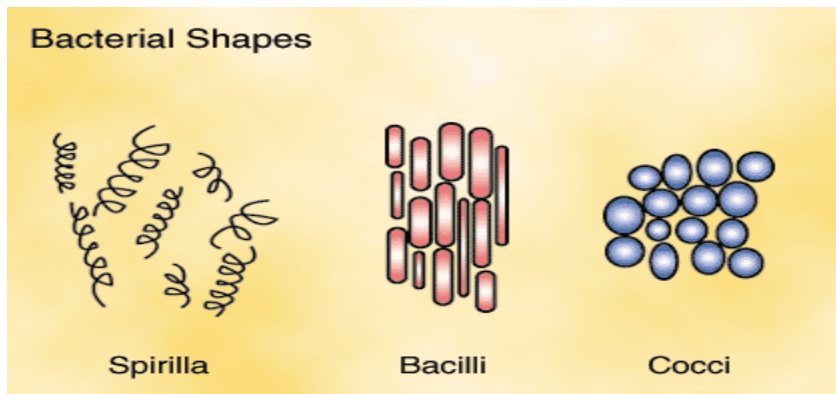
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Q 3. Attempt any Four of the following. (4 x 3 marks = 12 marks)

(a) Classify bacteria depending upon their shape.

Classification of bacteria on the basis of shapes (1mark for each class with diagram)

1. Spherical-Spherical cells are called Cocci
2. Cylindrical or rod like bacterial cells are called bacilli.
3. Spiral or helical bacteria look like corkscrews are called spirilla.



(b) Define staining (1 mark) and explain Acid Fast staining. (2 marks)

Definition:

Staining is defined as imparting colour to the specimen with the purpose of its identification.

Acid Fast Staining: It is one of the common differential staining technique used for the bacteria. The method used is Ziehl and Neelson Method commonly used for TB bacteria.

Smear Preparation: Transfer a loopful of the liquid culture to the surface of a clean glass slide, and spread over a small area and form a film. Allow the film to air dry. Fix the dried film by passing it briefly through the Bunsen flame two or three times without exposing the dried film directly to the flame. **(1/2 marks)**

Steps for staining: (1 and ½ marks)

- i) Flood the slide with carbol fuchsin over the smear for 5 mins .Wash the smear with water.
- ii) Put 20% sulphuric acid for one minute and then throw it out.Wash the slide with water.
- iii) Now put methylene blue for 30 seconds.Wash the slide with water.Dry the slide and observe it under oil immersion lens. Acid fast bacteria and stained pink or bright red.These organisms do not lose their red color after washing with acid.eg TB bacteria. Hence the name Acid fast bacteria.

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(c) Define noise (1 mark) and state ill effects of noise.(2 marks)

Noise can be defined as an unwanted sound i.e. a wrong sound, in the wrong place, at the wrong time. **(1 mark)**

Effects of noise on human health.(any 4 points for 2 marks)

Auditory Effects:

1. Auditory fatigue, decreased hearing ability
2. Deafness which may be temporary or permanent.

Non-auditory effects:

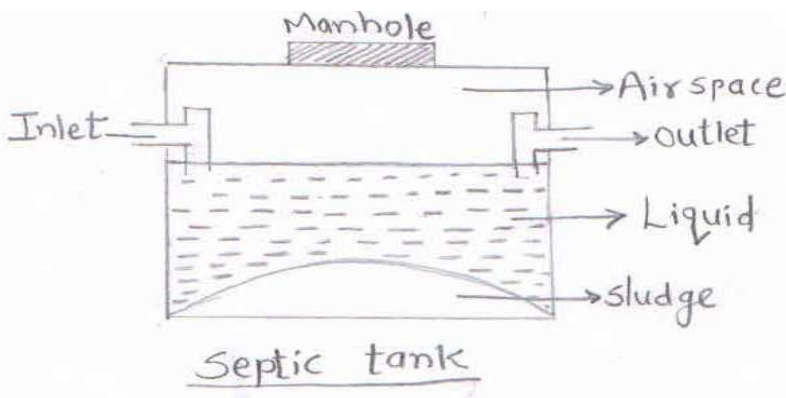
3. Speech interferences due to noise produced by air traffic, industry etc
4. Anger, irritability which is a psychological response.
5. Lack of mental concentration, decreased efficiency
6. Physiological changes like rise in blood pressure heart rate, respiratory rate.

Hedache, Giddiness, nausea, fatigue, insomnia

(d) Discuss design (2 marks i.e. 1 mark for explanation and 1 mark for diagram) and mechanism (1 mark)) of Septic tank.

Design: It is a tank in which the household waste and excreta can be disposed of .It is a suitable method for a small group of houses and institutions.

Septic tank is usually rectangular in shape with length 1.5 to 2 times the breadth and the depth is 1.5 to 2 meters. A septic tank should have minimum capacity of 200,000 liters. There is an inlet and outlet pipe above the water level. A cover of cement concrete is provided at the top with man hole in the center and the man hole is covered with another lid.





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Mechanism: The mechanism in the working of septic tank is anaerobic digestion of the contents. The heavy solid settles down and decomposed by anaerobic bacteria which cause reduction in its volume and is made harmless. The solid at the bottom is sludge. The fats rise to the surface and is passed out. Supernatant liquid contains microorganisms, and is allowed to be collected in trenches. It spreads in soil and organic matter gets oxidized. This is aerobic decomposition.

(e) What are the major sources of water pollution? (2 marks) How water pollution can be prevented?(1mark)

The sources of water pollution: (2 marks, any 4 of the following)

1. Sewage- its waste water which contains decomposable organic matter and pathogenic microorganisms
2. Industrial and trade waste which contains toxic chemicals
3. Agricultural pollutants which contains pesticides and fertilizers
4. Physical pollutants like radioactive substances
5. Usage by human beings for animal washings,bath,washing of clothe etc

Prevention of water pollution (1 mark) can be done by **purification of water**. On **small scale**, purification methods are boiling, use of filters, use of chlorine tablets/solution etc and large scale purification is either Slow (Biological) Sand filtration or Rapid (Mechanical) sand filtration methods.

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

(i)Incubation period: It is the time period between an entry of the infectious agent and the appearance of the symptoms.

(ii)Epidemiology is the study of the distribution and determinants of health related events and diseases in the population and also the application of this knowledge to control health problems.

(iii)Antiseptic: They are defined as substances which destroy or inhibit the growth of microorganisms and are used for living beings



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Q 4. Attempt any Four of the following:

(4 x 3 marks = 12 marks)

(a) Write causes (1 and ½ marks) and preventive measures (1 and ½ marks) of Cancer.

Causative factors: (Any 3 of the following)

1. Bad habits such as consumption of Tobacco and alcohol
2. Dietary factors
3. Occupational exposures to carcinogenic chemicals
4. Viruses
5. Customs and life styles
6. Environmental factors

Preventive measures: (Any 3 of the following)

1. Try to avoid and protect against known carcinogenic agents like chemicals , drugs , radiations .
2. Avoid bad habits such as tobacco and alcohol
3. Maintain Personal hygiene
4. Immunization against Hepatitis B, Cervix cancer
5. Early detection and prompt treatment of precancerous lesions
6. Cancer awareness.

(b) Classify the method of family planning with example. (3 marks)

Classification of family planning methods,

1. TEMPORARY METHODS:

(a) Natural method

Eg: safe period, cervical mucous method,

(b) Chemical method, eg: foam tablet

(c) Mechanical method (Barrier methods) eg: condom, diaphragm.

(d) Hormonal method eg: using oral contraceptive drug.

(e) Intrauterine devices (IUDs): Copper T, Lippes Loop



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2. PERMANENT METHODS:

(a) Vasectomy for male

(b) Tubectomy for females.

(c) **Give three advantages (1 and ½ marks) and three disadvantages (1 and ½ marks) of oral contraceptives**

Advantages:

1. Convenient and reliable method
2. Medical supervision is not necessary once medical advice has been taken and the pills prescribed by doctor are being taken.
3. It does not interfere with sexual pleasure.

Disadvantages :(any 3)

1. These pills may cause side effects in some women such as headache, weight gain, abdominal pain, excessive bleeding, blood clotting tendency, increased blood pressure etc
2. Chances of failure high if not taken as per the schedule
3. 100% compliance required in following its schedule
4. Pills do not provide any protection against Sexually transmitted diseases

(d) Name the methods for large scale purification of water (1 mark) and explain “Slow Sand Filtration” for purification. (2 marks)

Methods of Large Scale Purification of Water: **(1mark)**

1. Biological or Slow Sand filtration
2. Mechanical or Rapid Sand Filtration



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Slow sand filtration is a method which uses supernatant raw water, a bed of graded sand, an under drainage system and filter control valves. Under ideal conditions, the filter reduces bacterial count by 99.9 percent.

The steps of a slow sand filter are as follows:

- 1. Supernatant raw water:** The supernatant water above the sand bed measures in depth 1-1.5 meters. It provides an opportunity for natural purification by oxidation and sedimentation; secondly water is forced by the gravity downwards to facilitate filtration.
 - 2. Graded sand bed:** The sand bed is the most important component as this is filtering the water. This consists of sand of different particle sizes and the thickness. The finest sand is on the top and comparatively coarse sand is below that. Water percolates through the beds very slowly and during this is subjected to mechanical straining, sedimentation, adsorption, oxidation and bacterial action. This filter is called as **biological filter** because the surface of the sand gets covered with slimy growth (vital layer or biological layer), which consists of thread like algae and numerous forms of life including plankton, diatoms and bacteria. This vital layer removes organic matter, holds back bacteria and oxidizes ammoniacal nitrogen into nitrogen and helps in yielding bacteria free water
 - 3. Gravel support:** Below the sand bed is the layer of gravel which supports the sand bed. The upper part consists of fine gravel and in the lower part is coarse gravel.
 - 4. Underdrainage system:** Just below the coarse gravel there is a network of porous or perforated pipes.
 - 5. A system of filter control valves:** All the above components are placed inside a box called as a filter box. The walls of the box are made of stones, bricks or cement. The whole filtration process is controlled by filter control valves so that filtered water is available at a desirable rate.
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(e) What are Hospital Acquired infections? (1 and ½ marks) Describe prevention and control of it. (1 and ½ marks)

Hospital Acquired (Nosocomial Infections): (1 and 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 and 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



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(f) Write disinfection procedure for (1 mark each)

i) Dead bodies:

Bodies of the patient who have died with serious infectious diseases may be cleaned with a suitable disinfectant and stored in mortuary till cremated. If the bodies are to be preserved for the purpose of dissection by medical student, they are preserved in formalin.

ii) Faeces and urine

Agents suitable for disinfecting urine and faeces are:

- | | | |
|---------------------|-----------|-----|
| 1) Bleaching powder | 50gm/lit | 5% |
| 2) Crude phenol | 100ml/lit | 10% |
| 3) Cresol | 50ml/lit | 5% |
| 4) Formalin | 100ml/lit | 10% |

If the above agents are not available milk of lime can be used. Even a bucket of boiling water added to the faeces, kept covered until cool can be used.

iii) Room: The floors and hard surfaces of the rooms can be disinfected with chemical agents like phenol, formalin, bleaching powder etc.



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Q.5 Give the causative agent, Mode of transmission and Prevention of any FOUR of the following diseases. (4 x 3 Marks = 12 marks)

(1 mark causative agent, 1 mark mode of transmission and 1 mark for prevention)

a) Leprosy:

Causative agent:

Leprosy (Hansen's disease) is a chronic infectious disease caused by *Mycobacterium leprae*.

Transmission:

1. Leprosy is mainly transmitted by direct or indirect contact of an infected patient.
2. Sometimes it is transmitted by droplet infection through nasal and oral secretion of the patient.
3. Fomites also can transmit the infection.

Prevention and control:

1. Detection of cases of leprosy and tracing the contacts especially children of the patient's house.
2. Prevention of contact between the patient and other normal persons, especially children.
3. Preventive treatment (Chemoprophylaxis) with dapsone.
4. Selective isolation or hospitalization of the patient showing acute reactions or complications.
5. Treatment of infected patients with dapsone.
6. Rehabilitation of the patient with suitable work. Social and psychological rehabilitation is also necessary.



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b) AIDS:

Causative agent

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

Transmission

1. Sexual transmission by vaginal, anal or oral sex.
2. Blood contact through transfusion of contaminated blood and blood products.
3. Maternal – foetal transmission through placenta.
4. Contaminated needles and syringes.

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 sterile needles and syringes for injection.
4. Avoiding promiscuous sexual contact.
5. Use of contraceptive devices like Nirodh.
6. Treatment with antiviral agents
7. Health education about AIDS its Problems and methods of prevention.

c) CHOLERA :

Causative Agent: Cholera is a Communicable disease caused by *Vibrio cholera*.

Transmission: Cholera is transmitted by

1. Faecal contamination of water
2. Contamination of foods by i) improper storage ii) handling iii) Flies iv) insects
3. Direct contact through contaminated fingers while handling excreta and fomites



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Prevention and control:

1. Early detection of suspected cases and bacteriological examination of stools for confirmation
2. Notification to the local health authority
3. Isolation in hospital or treatment center
4. Treatment which involves rehydration of patient and administration of antibiotics like tetracycline
5. Disinfection of stools, Vomitus, clothes, bedding, rooms and utensils
6. Quarantine for a period of 5 days
7. Sanitary measures like water control fly control and disposal of excreta
8. Prevention by cholera vaccine especially during fairs and festivals
9. Health education stressing the importance of food hygiene personal hygiene and water hygiene.

d) Tuberculosis:

Causative agent: Tuberculosis is communicable disease caused by a bacteria called Mycobacterium tuberculosis

Transmission: Tuberculosis is mainly an airborne infection, it is transmitted by droplet infection and droplet nuclei. Coughing generates large number of droplets of all sizes. It is also transmitted by fomites such as dishes or other articles used by tuberculosis patient.

Prevention and control

1. Early detection of cases by i) Microscopic examination of sputum ii) chest x-ray iii) Montoux test
2. Preventive treatment (chemoprophylaxis) with INH (Isoniazid) or INH + ethambutol
3. Complete Treatment of infected patients with suitable anti TB drugs
4. Immunization by BCG Vaccination
5. Teaching the patients cough etiquettes eg Use of handkerchief/tissue while coughing
6. Importance of boiling milk should be taught to patient.



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e) Influenza:

Causative agent:

Influenza is an acute respiratory tract infection. It is caused by influenza virus.

Transmission: It is by droplet infection or droplet nuclei created by sneezing, coughing or talking. The virus enters through the respiratory tract.

Prevention And Control

1. Use of vaccine
2. Notification of the cases
3. Early Detection, diagnosis and treatment
4. Isolation of patient
5. Covering mouth with handkerchief/tissue
6. Washing hands with soap/sanitizers
7. Not touching mouth and eyes without washing hands
8. Checks at airports
9. Health education

f) Plague

Causative agent: Plague is an infectious disease transmitted to man by infected rat fleas.

It is primarily a zoonotic disease. The causative agent is *Yersinia pestis* which is present in the bubo blood, spleen, and liver of infected persons.



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Transmission: Plague is epizootic in rats. The fleas feed on rats,. The infected rats die and then the fleas leave the rats. When healthy rats runs away the fleas starve. So they bite human beings who are thus infected. The bacilli which are regurgitated or excreted in the faces of fleas may enter through abrasions

Prevention and control:

1. Control of cases by early diagnosis, notification .isolation ,treatment and disinfection of sputum and discharges
2. Control of fleas with insecticides like DDT OR BHC
3. Control of rodents with rodenticide and by tapping
4. Vaccination with haffkines anti-plague vaccine
5. Chemoprophylaxis with tetracycline or sulphonamides
6. Health education about plague and the involvement of rodents.

Q. 6 Attempt any FOUR Of the following: (4 x 4 Marks = 16marks)

(a) Explain natural history of disease (1 mark for explanation of each phase i.e. total 2, diagram 1 mark and importance 1 mark)

The natural history of disease consists of two phases.

1. Prepathogenesis – the process in the environment.
- 2.Pathogenesis – the process in human beings

Prepathogenesis

This is the phase before the onset of disease in human beings. The disease agent has not yet entered but the factors needed for its interaction with the human host are already present in the environment. Potentially, we are all in the prepathogenesis phase of many diseases.

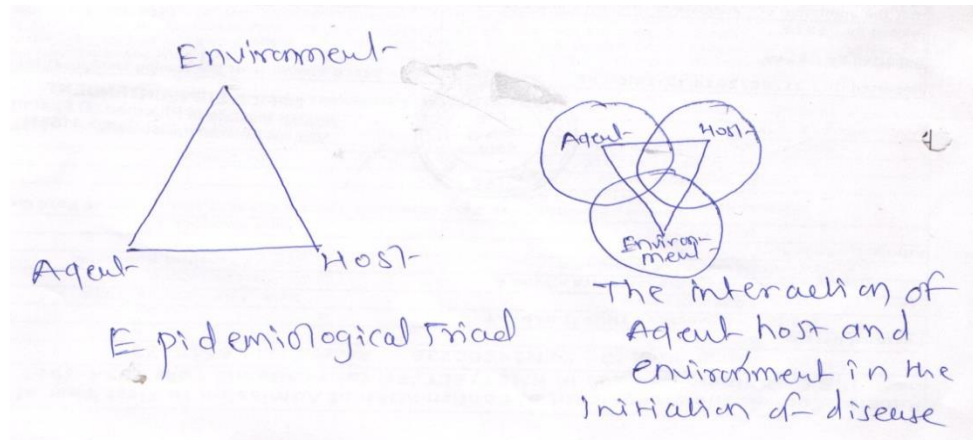
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Diagram



The causative factors of disease are AGENT, HOST and ENVIRONMENT. These three factors are referred as epidemiological triad. The mere presence of these three factors is not sufficient to initiate a disease. An interaction of all these three factors is necessary to initiate the disease process. In prepathogenesis phase, the disease agent is already present but it has not entered man.

Pathogenesis

This phase begins with the entry of disease agent into man (host). There is a certain interval of time before the onset of clinical signs and symptoms of the disease. This period is called incubation period. During this period the disease agent multiplies and induces tissue and physiological changes.

Incubation period is followed by early prepathogenesis. During this period, the signs and symptoms are not clear-cut. This is followed by latepathogenesis when there are clear-cut signs and symptoms. The final outcome of the disease may be recovery, disability or death.

Importance of natural history: Each disease has its own natural history: but it is not necessarily the same in all individuals. If the phase of natural history is known appropriate level of prevention can be applied.



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(b) Give the advantages and disadvantages of condoms (2 marks for advantages and 2 marks for disadvantages)

Advantages:

1. Inexpensive. Safe, easy to use and reliable.
2. Affords protection against STD and AIDS.
3. No side effects.
4. Light, compact and easily disposable.

Disadvantages:

1. Due to incorrect use, it may slip of or tear during coitus.
2. It interferes with sex sensation locally.

(c) Write sources and deficiency disease of vit B1 AND VIT. B12 (1 mark for source of each and 1 mark for deficiency of each)

Sources of Vit B1:

Peas, Beans, Oat meal, pea nuts, Vegetables and fruits.

Beri-Beri can be prevented by eating well balanced diet rich in vit. B1 e.g. parboiled and undermilled rice.

Deficiency:

1. Beri beri a symptom complex with characteristic neuropathy
2. Wernickes encephalopathy characterized by confusion, ophthalmoplegia ,nystagmus, tremors and mental retardation



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Vit. B12:

Sources:

Non vegetarian foods like meat, beef ,liver kidney oysters,eggs and milk

Also present in vegetarian foods like leguminous plant in small amount.

Deficiency:

1. Megaloblastic anemia
2. Defective maturation of RBC

(d) Define the term vaccine. Write national immunisation schedule. (1 mark definition and schedule 3 marks)

Defination:

Vaccine is a preparation containing an antigen which stimulates the production of specific antibody.



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IMMUNISATION SCHEDULE:

The following is the immunization schedule for children:

Age	Immunisation
0– 15 days	Oral polio and BCG
6 th week	DPT and Oral polio
10 th week	DPT and Oral polio
14 th week	DPT and Oral polio
9 th Month	Measles vaccination
18 th Month	Booster dose of DPT. Booster dose of oral polio
5 years	DT and typhoid
10 years	Tetanus toxoid and typhoid
15 years	Tetanus toxoid and typhoid

**(e) Define artificial respiration. Explain Mouth to mouth artificial respiration- (Kiss of life).
(1 mark definition and 3 marks for explanation)**

Definition: Artificial respiration is the act to restore the breathing of unconscious patient.

Mouth to mouth artificial respiration- (Kiss of life)

After making sure that the airway is clear, the patient is turned onto his back. After knealing by his side, the nose is pinched with one hand and the chin bent forward with the other. After



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taking a long breath, the mouth is kept over that of the patient blow air into the mouth of victim with the help of your mouth. Remove your mouth from victim's mouth and let expiration occur.

Repeat the procedure rapidly. In an adult patient 12 breathing per minute should be given.

Q.6 f) Write causative factors, prevention, care and control of diabetes mellitus (2 marks for causative factors and 2 marks prevention, care and control)

DIABETES

The important causes of diabetes are :(**Any 4 of the following**)

1. Pancreatic diseases, defect in the synthesis of insulin or decrease in the number of beta cells.
2. Heredity is also a contributing factor for diabetes.
3. Sedentary life style and lack of exercise.
4. Diet rich in carbohydrates and fats.
5. Obesity is a known risk factor for diabetes.
6. Infections with viruses like rubella and mumps.
7. Social factors like occupation, marital status, education, economic status and changes in life style.

Prevention and control:(Any 4 of the following)

1. Maintenance of normal body weight by exercise and dietary habits (adequate protein intake and intake of dietary fibre).
2. Avoidance of risk factors like smoking, alcohol and oral contraceptives.
3. Treatment with insulin or oral ant diabetic drugs.
4. Self-care like checking urine and blood sugar level. adherence to diet and drugs and attending periodic check – ups.
5. Diabetic clinics which can be established for diagnosis and management of diabetes.