



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 01 / 32

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.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 02/ 32

Q.1 Answer any EIGHT of the following: (2 marks for each question) (8x2 =16)

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

(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, where the cause, pathology and course of it may be known or unknown.

OR

“Disease is a condition of the body or some part or organ of the body in which its functions are disrupted or deranged.”

OR

Any deviation from normal functioning or state of complete physical or mental well-being.

(ii) **Spiritual health:** It is the dimension of human health that connects body physiology with mind, as link between physiology and psychology.

(b) Name the vitamin causing following deficiency disease: (1/2 mark for each)

Disease	Caused by	Deficiency of
(i) Rickets	Vit.D	
(ii) Night Blindness	Vit. A	
(iii) Pellagra	Niacin/ Nicotinic acid	
(iv) Beri-beri	Vit. B ₁ / Thiamin	

(c) Write two advantages and two disadvantages of vasectomy for family planning

Advantages :(1 mark, Any two of the following advantages,1/2 mark each)

1. Failure rate is very less
2. It is permanent method of family planning i.e. no need of regular use of any contraceptive.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 03/ 32

3. No interference in sexual coitus satisfaction

Disadvantages:(1 mark, 1/2 mark each)

1. Chance of spontaneous recanalization and so method failure, though rare.
2. It is terminal method of contraception so no reversal is possible.

(d) Explain “Kiss of life ” for artificial respiration.

“Kiss of life ” for artificial respiration is part of Cardio Pulmonary Resuscitation (CPR) by ABC formula as –

- (i) Before giving “ **Kiss of life** ” i.e. artificial respiration by mouth to mouth way, victims mouth is opened and cleaned thoroughly. This removes debris, impurities and secretions from patient’s mouth and prevents blocking of airway.
- (ii) Then first aider should pinch the nose of the patient tightly by one hand and by tightly sealing mouth on patient’s opened mouth breath out entire air forcefully into mouth of patient.
- (iii) Expansion of chest of patient by 2-5 cm occurs, confirming air entering into the lungs of victim. This should be observed.
- (iv) Such artificial mouth to mouth respirations should be given 12 times per minute.

(e) Name two arthropod borne diseases and two air borne diseases.

(1/2 mark for each disease)

Arthropod borne diseases: Malaria, Filariasis, Dengue fever, Kala-azar, Sleeping sickness, Epidemic typhus, Bubonic plague, Endemic typhus, Tick typhus, Relapsing fever, Q fever (**Any 2 of the these diseases**)

Air borne diseases: Chicken Pox, Measles, Influenza, Diphtheria, Tuberculosis, Leprosy, Human Swine Flu, Pneumonia (**Any 2 of the these diseases**)



Winter- 15 EXAMINATION

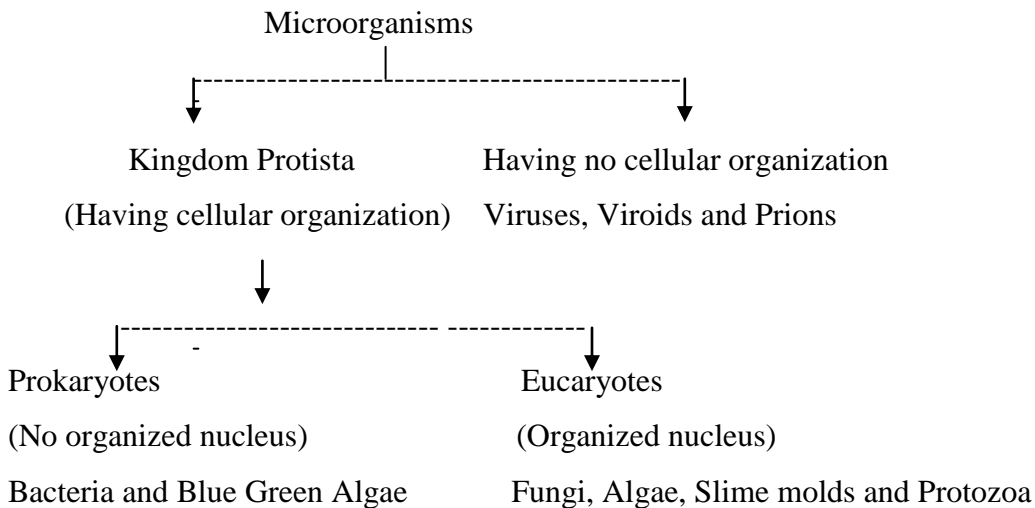
Subject Code: 810

Model Answer

Page No: 04/ 32

(f) Classify micro-organisms

Depending on cellular organization and other features microorganisms are classified below –



(g) Write mode of transmission for Tuberculosis

- (i) Mainly transmitted by droplet infection from sputum of patient.
- (iii) Fomites contaminated by droplet and droplet nuclei carrying tubercle bacilli.
- (iv) By direct contact with patient with close proximity with respect to coughing and sneezing of the patient. (Any 2 of these points)

(h) How hypertension can be prevented and controlled?

Hypertension Prevention and control measures : (Any 4 points,1/2 mark each)

- (i) Reduction in salt and saturated fat consumption through diet
- (ii) Reducing body weight and promoting exercise
- (iii) Restriction or complete stoppage of tobacco smoking
- (iv) Reduction in alcohol consumption
- (v) Avoiding the stress
- (vi) Health education and self-care



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 05/ 32

(i) What do the following acronyms stand for ?

(1/2 mark for each acronym)

- (i) TT – Tetanus Toxoid
- (ii) BCG – Bacillus (of) Calmett (and) Gaurine
- (iii) DPT – Diphtheria Pertussis Tetanus
- (iv) AIDS – Acquired Immuno Deficiency Syndrome

(j) Give two advantages and two disadvantages of Intrauterine devices

Advantages of IUD:

(Any 2 advantages, 1/2 mark for each)

- (i) Once inserted it is effective for a longer duration.
- (ii) It is reversible, safe and effective method
- (iii) There are no systemic side effects
- (iv) No need of continuous motivation or daily administration of contraceptive
- (v) It is a cheaper method.

Disadvantages of IUD:

(Any 2 disadvantages, 1/2 mark for each)

- (i) Heavy bleeding and lumbar pain during menstruation.
- (ii) Pelvic inflammation
- (iii) Uterine perforation
- (iv) Ectopic pregnancy
- (v) Expulsion of IUD
- (vi) Infertility after IUD removal in some cases
- (vii) Chances of cervical cancer and uterine cancer



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 06/ 32

(k) Name one disease each caused due to deficiency of following:

(1/2 mark for each)

- (i) Calcium – Osteomalacia , Osteoporosis
- (ii) Iodine – Simple goitre , Hypothyroidism , Cretinism (cretin dwarfs)
- (iii) Iron – Microcytic /Iron deficiency Anaemia
- (iv) Folic acid – Megaloblastic anemia, Glossitis .

(l) Classify bacteria depending upon their shape

Bacteria depending upon their shape are classified as:

(1/2 mark for each class)

- (i) Cocci- Bacteria spherical or round in shape
- (ii) Bacilli- Rod shaped bacteria
- (iii) Spirilla – Spiral or spring shaped bacteria
- (iv) Vibrios- Comma shaped bacteria

Q 2 Answer any FOUR of the following: (3 marks for each question) (4 x 3 = 12 Marks)

(a) List the various determinants of health and explain any one.

Health determinants are:

(Enlisting 1 mark, at least 4 determinants)

- (i) Heredity
- (ii) Life style,
- (iii) Environment
- (iv) Socioeconomic conditions
- (v) Health and Family welfare services



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 07/ 32

(2 marks for explanation of any one determinant)

i) Heridity:

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

eg. Mental retardation,

Diabetes.

(iii) 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. eg. Obesity, heart diseases.

(iv) 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. Environment has direct impact on the physical, mental and social well-being of those living in it. The environmental factors range from housing, water supply, family structure, stress etc.

(v) Socioeconomic conditions: Health status is significantly determined by the socioeconomic levels which are primarily determined by, Economic status, Education, Occupation and Political system.

(vi) Health and Family welfare services: These 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.

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

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



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 08/ 32

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

(iii) **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.

OR

“Quantity and quality of an individual’s interpersonal ties and the extent of involvement with the community”.

(c) Write the composition of Balanced diet

Composition of balanced diet :(3 marks)

Balanced diet is such diet that contains different types of foods in correct proportions so that body’s demand for amino acids, fats, carbohydrates, minerals, vitamins, other nutrients and energy is sufficed; so that malnutrition is prevented and health is maintained.

It ideally should contain all nutrients in “recommended daily allowance” (RDA) amounts. Balanced diet is cereals,pulses,leafy and other vegetables,roots and tubers,milk,fats and oils,meat and fish,fruits

(d)Classify vitamins and write sources, deficiency symptoms of Riboflavin (Vit. B₂)

(Classification: 1 Mark, Sources: 1Mark, Deficiency symptoms: 1 Mark)

Classification: 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.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 09/ 32

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

Sources of Vitamin B₂ :

Rich Sources : Liver, Red meat, eggs and kidney

Moderate sources : Milk, Milk products, Leafy green, vegetables and beer

Poor sources : Cereals and pulses

Deficiency symptoms of Riboflavin (Vit. B₂) – Corneal vascularisation, Angular stomatitis, cheilosis, orogenital syndrome. **(Any two of these symptoms, 1/2 mark for each)**

(e) Write “ Rule of Nines “ for estimation of percentage of burns. Write emergency treatment for burns.

(Rule of nines 1 mark and any 4 points of emergency first aid for 2 marks, i.e. ½ mark for each point)

“ Rule of Nines” : In adults total percentage of body surface affected by burns can be calculated by rule of nines as – head complete comprises 9 % area, each arm (i.e. upper extremity) complete comprises 9 % area, each leg (i.e. lower extremity) complete comprises 18 % area, torso front or back 18 % and genitalia 1%.

Emergency treatment for burns:

1) Assure casualty of life being saved, casualty if conscious.

2) Burnt area should be cooled by putting plenty of water or cloth soaked in cold water.

3) Remove clothing of casualty by cutting around, if possible.

4) Keep casualty in lie down position.

5) Do not disturb blisters.

6) Cover burnt area by large dressings or clean bed sheet.

7) Antiseptic lotion, ink, oil, flour, baking soda, etc. should not be applied on burnt area. In fact burnt area should not be touched unless it is most necessary.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 10/ 32

8) Ornaments, belt, shoes, etc. should be removed immediately from body of casualty, since if limbs swell, such articles may cause gangrene.

9) If conscious, give to the casualty frequent sips of water.

10) In case of chemical affected burns, to wash-off all chemical wash affected area with plenty of water.

11) If there is delay in hospitalization, normal saline or Ringer lactate solution may be given by IV route. This prevents patient from shock. Suitable analgesic may be given by IV route.

(f) Name type of Fractures and first aid treatment for Fracture.

(Fracture types 1 mark, First aid for fracture 2 marks)

Type of Fractures :

- (i) Simple/close fracture : Bone is broken in two pieces but there is no open wound or injury
- (ii) Compound fracture : Bone is broken with wound (torn skin) caused where broken bone may protrude through wound
- (iii) Complicated fracture : Here in addition to broken bone, injury is caused to surrounding structure as muscle, nerve, blood vessel, joint capsule, visceral organ etc.
- (iv) Comminuted fracture : Feature of such fracture is the bone broken in several fragments or pieces.

First aid treatment for Fracture:

- (i) Do not move fractured part unless required necessarily
- (ii) In case of bleeding wound cover the wound and try to stop bleeding.
- (iii) In case of complicated fracture, restrict the mobility of patient completely as any movement may lead to within body damage or injury.
- (iv) Check level of consciousness and vital parameters as pulse, B.P., respiration and give symptomatic treatment.
- (v) Keep the patient warm
- (vi) Support fracture or dislocation affected area by firm splint, if possible.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 11/32

(vii) Hospitalize patient as quickly as possible.

Q .3 Answer any Four of the following: (3 marks for each) (4x3=12 Marks)

(a) Name the methods for solid waste disposal and explain any one.

Methods of solid waste disposal :(1 mark for naming any 4 methods)

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

Solid waste is disposed off by using following methods.

(Explanation of any one method of the following methods for 2 marks)

1. Dumping: dry refuse is mainly dumped in low lying areas which help not only in disposal but also in reclamation of land. By the 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.

2. 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 the trench is full, again it is covered with earth and is 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.

3. 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 eg Infectious material, is best disposed off by burning.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 12/32

4. 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 a 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 cms refuse alternating with 5 cm layer of excreta are placed on one another till it is full.

5. 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.

(b) State the major ill effects of noise and dim light.

Major ill effects of noise: (2 marks for any 4 points, i.e. 1/2 mark for each)

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.
7. Headache, Giddiness, nausea, fatigue, insomnia

Effects of dim light :(1 mark)

Dim light can create eye strain, which can lead to headache, tiredness, and loss of efficiency.

(c) Define water pollution (1 mark). How water pollution can be prevented and controlled? (2 marks)

Water pollution is defined as the **contamination** of **water** resources such as lakes, rivers, groundwater, ocean etc.

OR

It is the water with altered taste, or water having smell or colour.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 13/32

Prevention and control of water pollution can be done by

1. 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.

2. Avoiding water pollution by protecting water sources from industrial and trade waste, agricultural pollutants, physical pollutants and from washings of animals, bath by humans etc.

(d) Give the method and importance of GRAM staining.

Gram staining Method :(2 marks)

This is widely used differential techniques for bacteria.

Technique:

Preparation of a smear: 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.

Steps:

- i) Flood the slide with crystal violet(violet dye) 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 (A mordant which fixes the dye inside the cell), 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% for 10 seconds and wash off with tap water. Drain the slide.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 14/32

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

Gram –positive bacteria retain the violet colour of methyl crystal violet and –appear violate.e.g.staphylococci,streptococci,pneumococci,C.diphtheria,B.antrasis.

Gram negative bacteria lose the crystal violate and get washed with alcohol and are stained with red dye safranine and appear red,e.g.gonococci,meningococci,E.coli,Styphi.

Importance :(1 mark)

By this method, not only the shape,size and other structural details are made visible, but the bacteria can be grouped into Gram positive and negative bacteria. Most of the bacterial infections are caused by these two types of bacteria which can be identified by this method.

(e)With the help of neat labeled diagram, describe the structure e of Bacteria.

Labelled diagram 2 marks and description 1 mark

The structure of any ideal bacterial cell consists of an outer layer cell envelope which is differentiated into an outer rigid cell wall and beneath it, a cytoplasmic membrane which is also called as plasma membrane. Inside the cell envelope lies the protoplasm. The protoplasm comprising the cytoplasm, cytoplasmic inclusions such as ribosomes, mesosomes and the nuclear body. In addition to these essential components some bacteria may contain additional structures. Sometimes a bacteria is enclosed into a viscid layer which may be loose layer or organized as a capsule some bacteria also possess filamentous appendages at their surface these appendages can be flagella (organ of locomotion) and fimbriae (organ of adhesion).The bacterial nuclei can be

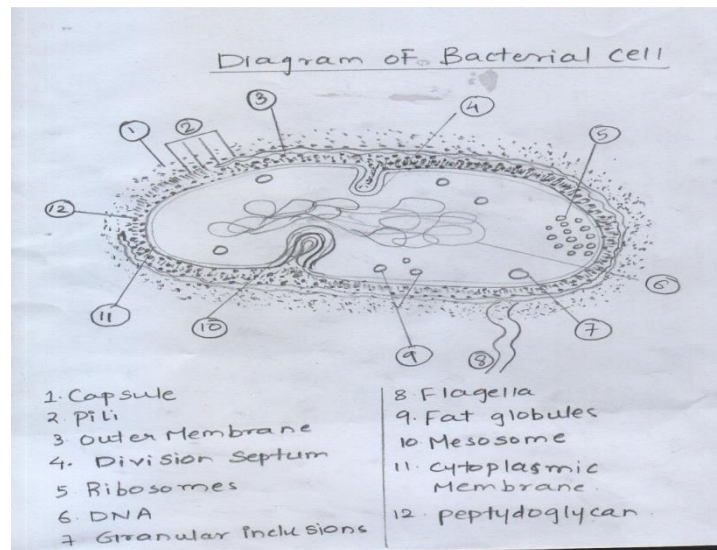
Winter- 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 15/32

seen with electron microscope and appear as oval or elongated bodies generally one per cell.



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

- (i) **Dead bodies:** After cleaning the body, it is preserved in disinfectant solution such as formalin
- (ii) **Linen:** Linen is washed with soap and water or with disinfectant such as cresol. Then boiled for 20-30 minutes or autoclaved or ionising radiations are used in some cases
- (iii) **Urine:** After collecting urine, it is mixed with disinfectant such as bleaching powder, phenol, cresol, formalin or quick lime and kept for 2 hours.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 16/32

Q.4 Answer any Four of the following: (3 marks for each) (4x3=12 Marks)

(a) What is Hypertension? Give causes and preventive measures for Diabetes mellitus.

Hypertension: (1 mark)

Hypertension means high blood pressure. The normal blood pressure of an adult is 120/80 mm Hg- systolic /diastolic. The systolic blood pressure higher than 140mm Hg and /or diastolic blood pressure greater than 90 mm Hg is said to be hypertension.

Causative factors for Diabetes: (1 mark, any four of the following)

The basic cause is absolute or relative deficiency of insulin or inability of the body to available insulin produced by the beta cells of pancreas.

- a. Pancreatic disease: defect in the synthesis of insulin or decrease in the number of beta cells.
- b. Heredity
- c. Sedentary life style: Lack of exercise.
- d. Diet: Rich in carbohydrate and fats
- e. Obesity
- f. Viral infections: This may lead to beta cells destruction.
- g. Stress

Measures for prevention –care of diabetes: (1 mark, any four of the following)

Though diabetes cannot be cured it can be effectively controlled by adopting following measures:

- a. Maintenance of normal body weight by exercise and dietary control.
- b. Regular checkup of urine sugar and blood sugar should be done.

Winter- 15 EXAMINATION

Subject Code: 810

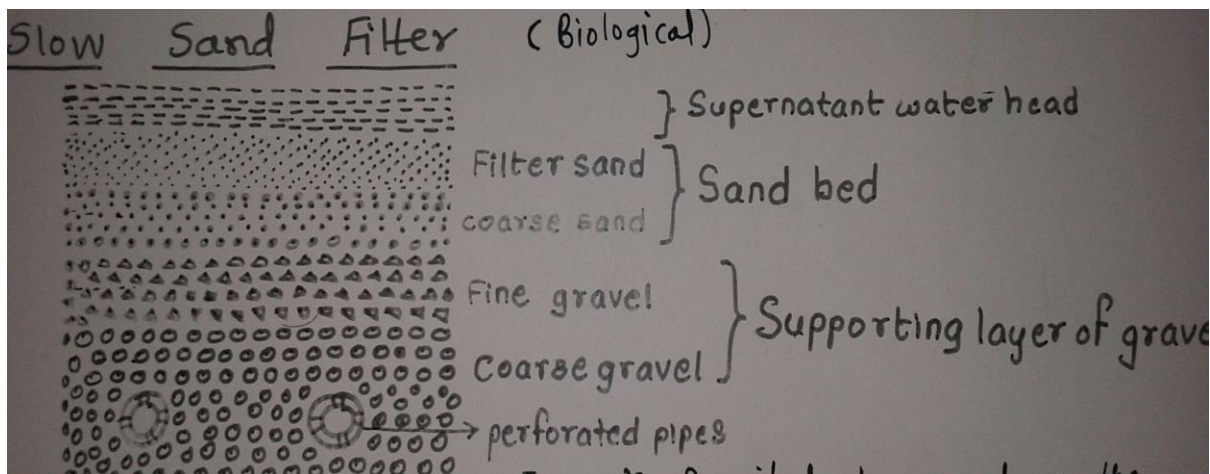
Model Answer

Page No: 17/32

- c. Personal hygiene including care of feet and skin should be taken care of.
- d. Treatment with insulin and oral antidiabetic agents like Tolbutamide, Glipizide, Glibenclamide etc.
- e. Since NIDDM appears to be linked with sedentary life style, over nutrition, obesity, correction of these may reduce the risk of diabetes and its complications.
- f. Alcohol should be avoided, as it indirectly increases the risk of diabetes.
- g. Subjects at risk should avoid diabetogenic drugs like oral contraceptives

(b) Discuss the slow sand filter for purification of water.

(Description 2 ½ marks, Diagram ½ mark)



Schematic representation of the slow sand filter bed

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 metres. 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



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 18/32

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.

(c) What are Hospital Acquired Infections? Write prevention and control of Nosocomial infections.

Hospital Acquired 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.

Prevention and Control of Nosocomial infections: (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



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 19/32

- 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

(d) Define the terms: 1 mark each definition.

(i) 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.

(ii) Immunity: The power of the body to resist the effects of invasion of pathogens is known as immunity

(iii) Incubation Period: It is defined as the time lapse between the entry of disease agent and appearance of the first symptom of the disease.

(e) What is Demography and explain population problem in India.

Demography :(1 mark)

It is the scientific study of human population. It is mainly concerned with (i) changes in population size, (ii) the distribution of population. These three phenomena are related to fertility, mortality, marriage, migration and social mobility; commonly known as demographic processes.

Population Problem of India :(2 marks)

India has only 2.4 % of total land area of the world and possesses more than 16. % of total world population. Present population of India is about 125 crores. The population growth causes following consequences on the society



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 20/32

Biological consequences : Young population is growing tremendously. This causes a great pressure on paediatric care, education and health and other such facilities.

Economic consequences : Population adversely affects the rate of per capita income. Majority of India's total population lives below poverty line. Poverty is one of the important causative factor in the epidemiology of diseases.

Social consequences : More population means less job opportunities, inadequate education facilities, increased illiteracy, inadequate and poor housing facilities, overcrowding which can lead to deterioration in law and order situations.

Health consequences : Malnutrition, inadequate medical facilities can cause higher death rates in infants and children. There can be high maternal deaths. Increased population leads to increased industrialization, which finally causes pollution problems.

(f) Define the term Fertility. Explain various factors affecting fertility.

Fertility :(Definition 1 mark)

Fertility means the ability to produce off springs or children.

Factors affecting fertility (2 marks for any 4 of the following factors, each factor carries ½ mark)

1. Age at marriage- The fertility data on national scale reveals that females who marry before the age of 18 gave birth to larger number of children than those who marry later. Lesser the age of marriage, higher the fertility.

2. Duration of married life-

It has been observed that 10-25 percent of all births occur within 1-5 years of married life,

50-55 percent of all births within 5-15 years of married life, but after 25 years of married life it is very low. This data suggests that family planning efforts should be concentrated in the first few years of married life.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 21/32

3. Spacing of children-

Postponement of births or spacing of children significantly declines the fertility rate.

4. Education-

Literacy helps to decline the fertility rate. It has been observed that the total fertility rate is more among illiterate than among the literate.

5. Economic status-

There is inverse relationship between economic status and fertility rate. Higher the per capita income of the family, lesser is the birthrate. The world population conference in fact stressed that "Economic development is the best contraceptive."

6. Religion and caste-

Some religions and castes have higher fertility than the others. For example: Muslims have higher fertility rate than Hindus and Hindus have higher fertility rate than Christians. Amongst Hindus, lower castes seem to have a higher fertility rate than higher castes.

7. Nutrition-

The economic status and nutrition are directly related to each other. But there is indirect effect of nutrition on fertility rate. All well fed societies have low fertility and poorly fed societies high fertility rate.

8. Family planning-

Family planning is an important and key factor in reducing the fertility.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 22/32

Q.5 Give the causative agent, Mode of transmission and Prevention of any FOUR of the following. (3 Marks each) (4x3=12)

a) Influenza

Causative agent: (1 mark)

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

Mode of Transmission: (1 mark)

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

Prevention : (1 mark)

There is no specific treatment for influenza. Bed rest is advised until fever subsides, analgesic - antipyretic like paracetamol 0.5-1gm every 6 hours can be given. Antiviral drugs amantadine, rimantidine can be given for the treatment and prophylaxis of influenza. The currently available influenza virus vaccine - Trivalent can be used for immunization.

b) Cholera

Causative Agent: (1 mark)

Cholera is a Communicable disease caused by Vibrio cholera.

Mode of Transmission: (1 mark)

1. Spread is mainly by contaminated food, water, milk.
2. Human being is the only reservoir of cholera infection.
3. Immediate source of infection is the stools and vomitus of cases and carriers.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No:23/32

Prevention: (1 mark)

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

c) Leprosy

Causative agent: (1 mark)

Mycobacterium leprae.

Mode of Transmission: (1 mark)

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: (1mark)

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.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 24/32

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.

d) Gonorrhoea

Causative agent: (1mark)

Gonorrhoea caused by Gonococci. Gonorrhoea affects the mucous membranes of urethra, ano-rectal mucosa & conjunctiva. It also affects membranes of vagina, cervix & distant organs like joints, valves of the heart & ocular apparatus.

Mode of Transmission (1 mark)

It is transmitted through sexual intercourse with an infected partner

Prevention : (1mark)

1. Detection of cases & tracing the contacts.
2. Screening of special groups like army personnel, industrial workers, blood donors etc..
3. Treatment with procaine penicillin or penicillin with probenecid.
4. Social therapy like preventing prostitution & rehabilitation of prostitutes..
5. Health education about sexually transmitted diseases & their problems.

e) Whooping Cough

Causative agent: (1mark)

It is an infectious disease caused by Bordetella Pertussis .

Mode of Transmission: (1 mark)

The source of infection is infected patient. The disease spreads by droplet infection & through fomites.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 25/32

Prevention : (1mark)

1. Early diagnosis by bacteriological examination of noses & throat secretions.
2. Isolation of contacts & cases.
3. Treatment with erythromycin.
4. Active immunization with pertussis vaccine or DPT vaccine
5. Passive immunization with hyper immunoglobulin.

f) Plague

Causative agent: (1mark)

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

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

Mode of Transmission : (1 mark)

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 : (1 mark)

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.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 26/32

Q.6 Answer any FOUR of the following: (4 marks for each question) (4x4=16 Marks)

a) What is Disease agent? Classify them.

Definition- (1 Mark)

Disease agent: The disease agent is defined as ' a living or non- living substance or the excessive presence or absence of a force which may initiate or perpetuate a disease process'.

Classification- (3 Marks)

1. **Biologic agents:** They are living organisms such as bacteria viruses, protozoa and fungi.
2. **Nutrient agents:** They are proteins, fats, carbohydrates, vitamins and minerals. Any excess or deficiency of these nutrients can result in diseases.
3. **Physical agents:** They are exposure to heat, cold pressure, electricity , radiation etc.
4. **Chemical agents:** They may be
 - a) Exogenous (Present outside) such as fumes, dusts, metals, gases, etc.
 - b) Endogenous (Produced in the body) such as urea, uric acid, ketones etc.
5. **Mechanical agents:** Various mechanical forces may result in injuries (like crushing, tearing, sprains) and even in death.
6. **Social agents:** They are poverty, smoking, alcohol, drug abuse , unhealthy life-styles, social isolation etc.



Winter- 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 27/32

b) Define first Aid & Write the first aid treatment for snake bite.

Definition- (1 Mark)

It is defined as essential and emergency treatment given to the accident victim or patient with sudden illness before medical help becomes available.

First aid treatment for snake bite-(3 Mark)

First aid treatment is the measure taken by the victim or associates soon after the bite before medical treatment is given. When facilities for medical treatment are accessible, the victim must be shifted without delay.

The first aid measures are:

1. Lay the patient down. Give him an assurance as he is frightened.
2. Do not allow him/her to move the bitten part, as the movement may favour faster absorption of poison into systemic circulation.
3. Apply a constricting band, cloth or tourniquet above the fang mark to prevent the spread of poison to other parts of the body through veins and to prevent the flow of blood towards the heart.
4. Wash the wound with soap and water.
5. Make a sharp crosswise cut over the bitten area and allow to bleed by squeezing the area.
6. Suck out the poison with a suction pump or by mouth carefully and spit it out. Be sure that there are no ulcers.
7. If breathing ceases give artificial respiration.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 28/32

8. The patient should be shifted to a hospital as early as possible, where antsnake venom serum 20 ml is given intravenously immediately after sensitivity test, further doses are repeated every six hours till symptoms disappear.

c) Write the classification of Family planning methods with examples. (4 Marks)

A] Temporary methods (spacing methods)

1] Barrier methods:-

a] Physical methods :

Example:- condom,diapharm,vaginal sponge.

b] chemical methods :

Example:- foams,creams,paste,jelleys,suppositires.

c] combined methods :

2] Intra uterine devices (IUD)

a] First generation IUDs : Lippes loop

b] Second generation IUDs : copper T,copper 7,nova T,Multiload devices.

c] Third generation IUDs: progestasert.

3] Hormonal methods :**oral pills**-i) combined pill ii) progestogen pill iii) post coital pill

iv) once a month pill v) male pill

Depot formulation: i) Injectables ii) subdermal implants iii)vaginal rings

4] Postconceptional methods

5] Miscellaneous

B] Permanent methods (terminal methods)

1] Male sterilization- Vasectomy

2] Female sterilization-Tubectomy-i) Laproscopy ii) Minilaprotomy



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 29/32

d) Classify food and write functions of carbohydrates and proteins.

Classification of Food: (2 Marks)

According to source:-

- 1] Vegetable foods: e.g. rice, wheat
- 2] Animal foods: e.g. meat, egg, fish

According to function:-

- 1] Body builders:e.g. meat, milk, fish
- 2] Energy yielders:e.g. cereals, sugars
- 3] Protective's:e.g. vegetables , fruits.

According to chemical nature:-

- 1] Proteins
- 2] Fats
- 3] Carbohydrates
- 4] Vitamins
- 5] Minerals

Functions of Carbohydrate : (1 Mark)

1. They are main constituents of diet.
2. They are the main source of energy(4 k cal per gram.)
3. They are essential for the oxidation of fats.
4. They are required for the synthesis of some non-essential amino acids.

Functions of Proteins:- (1 Mark)

1. Body building, repair and maintenance of tissues.
2. maintenance of osmotic pressure.
3. Synthesis of antibodies, plasma proteins and hemoglobin.



Winter- 15 EXAMINATION

Subject Code: 810

Model Answer

Page No:30/32

e) Write the types, causative factors and preventive measures of cancer.

Types Of Cancer : (1 Mark)

Cancer can occur at any site or tissue in the body. Common types of cancer are:

- i. Oesophagial cancer
- ii. cancer cervix
- iii. lung cancer
- iv. breast cancer

Causes of cancer: (1 ½ marks)

Environmental Factors: 80-90% of human cancers are due to environmental factors. The major factors responsible for development of cancers are :

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

b.Alcohol: About 3% 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.

c.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 fibres -intestinal cancers,
- 3.beef -bowel cancer
- 4.high fat diet -breast cancer.
- 5.Food additives, coloring agents are suspected to be the causative agents

d.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.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 31/32

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

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

Preventive measures of cancer :- (1 ½ marks)

1. Avoiding known carcinogenic agents like tobacco and alcohol.
2. Personal hygiene can decrease the incidence of cancer e.g. cancer cervix.
3. Control of air pollution is an important measure.
4. Health education to create awareness about cancer. The warning signs of cancer are swelling or sore, unexplained weight loss, hoarseness of voice, excessive menstrual bleeding, a lump in the breast etc. by way of health education, people with above symptoms must be motivated for early diagnosis and early treatment.
5. Establishment of cancer detection centres for early diagnosis.
6. Old age persons must be motivated for regular and periodical check-up.
7. Provision for after care and rehabilitation of cancer patients.



Winter– 15 EXAMINATION

Subject Code: 810

Model Answer

Page No: 32/32

f) Define the term “Immunisation” Write the immunisation schedule.

Definition: (1 Mark)

Immunisation is defined as a ‘Production of immunity or resistance in the body by means of immunological agents.

IMMUNISATION SCHEDULE :(3 Marks)

The following is the immunization schedule for children:

Age	Immunisation
O – 15 days	Oral polio and BCG
6 th weak	DPT and Oral polio
10 th weak	DPT and Oral polio
14 th weak	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