



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

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.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

Q. No.	Sub Q. N.	Answer	Marking Scheme
Q.1	a)	<p>Answer any EIGHT of the following</p> <p>Define Health Education: (2 Marks)</p> <p>Health Education is educating public in general, individually or in masses communicating information given by experts on health aspects, diseases, drug abuse etc. so that people lead healthy life in all dimensions of human health as covered by WHO , in the interest of public welfare.</p> <p>OR</p> <p>Health Education is the process that informs motivates and helps the people to adopt and maintain healthy practices and life styles, advocates environmental changes if needed to facilitate this goal, conducts professional training and research towards the same end.</p> <p>Enlist any 4 indicators of health: (2 Marks for any 4 indicators)</p>	8X2=16 M
	b)	<p>Different Indicators of human health are as –</p> <p>i)Mortality indicators</p> <p>ii)Morbidity indicators</p> <p>iii)Disability rates</p> <p>iv)Nutritional status indicators</p> <p>v)Health care delivery indicators</p> <p>vi)Utilization rates</p> <p>vii)Indicators of social and mental health</p>	



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

- vii) Environmental indicators
- viii) Socio-economic indicators
- ix) Health policy indicators
- x) Quality of life indicators

c) State functions of fats. (2 Marks for any 4 functions)

The functions of Fats are:

1. It is most rich source of energy for the body.
2. It stores and transports fat soluble vitamins as Vit. A, D, E and K.
3. It provides thermal insulation to body as it is bad conductor of heat.
4. It protects important organs by surrounding them and absorbing mechanical shocks.
5. One gram of fats upon complete oxidation provides 9.1 KCal energy.
6. It in form of myelin sheath provides coat for white nerve fibers.
7. It forms storage form of energy as sub-dermal fats.

d) Enlist water soluble vitamins. (2 marks for any 4 vitamins)

The water soluble vitamins are :

- B1 (Thiamine),
- B2(Riboflavin) ,
- B3 (Niacin),
- B5 (Pantothenic acid),
- B6 (Pyridoxine) ,



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

B7 ((Biotin),

B12 (Cobalamine) ,

Vitamin M (folic acid) and

Vitamin C (Ascorbic acid)

e) Define the term demography and fertility.

i) **Demography** is the scientific study of human population. It is mainly concerned with (1) changes in population size, (2) the distribution of population. (1 Mark)

ii) **Fertility** is defined as the ability to bear the children **OR**

The ability to produce offspring or children. (1 Mark)

f) Classify the hormonal contraceptives: (2 Marks)

Classification of Hormonal Contraceptives :

1. Oral pills :

a. Combined pills

b . Progestogen only pill

c . Once-a-month pill (long acting)

d . Post-coital pill

2. Depot (slow release) formulations :

a. Injectables

b. Subcutaneous implants

c. Vaginal rings



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

g) Enlist the contents of " First Aid Kit ".(2 Marks)

The " First Aid Kit " ideally contains at least -

- i) Sterile gauze pieces
- ii) Bandages of different sizes
- iii) Adhesive plasters of different sizes
- iv) Scissors and forceps
- v) Antiseptics e.g. Dettol , Spirit, Mercurochrome
- vi) Silver sulfadiazine cream.(Antiseptics)
- vii) Some medicines as Analgesics, Antibiotics, Packets of O.R.S.

h) Define the term Microbiology.(2 Marks)

Microbiology: It is the study of microorganisms with respect to their cytology, physiology, reproduction and useful activities or harms caused.

OR

Microbiology is the study of microscopic organisms It is derived from three greek words - mikros ("small"), bios ("life") and logos (science")

i) Enlist any 4 communicable diseases.(2 Marks)

Chicken pox, Measles, Influenza, Diphtheria, Pertussis, Tuberculosis, Amoebiasis, Typhoid, Paratyphoid, Poliomyelitis, Hepatitis, Plague, Malaria, Filariasis, AIDS, Gonorrhoea, Syphilis, Leprosy, Tetanus.

j) What are the characteristics of cancer? (2 Marks for any 4 characters)

The characters of cancer are -



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

1. Hyperplasia i.e. tendency of uncontrolled purposeless proliferation.
2. Metastasis i.e. tendency of spreading from one place to other place.
3. Unusual presence of polychromatic granules and other cell inclusions.
4. A lump or hard area in the breast.
5. A change in a wart or mole.
6. Unexplained loss of weight.
7. A swelling or sore that does not heal.
8. Blood loss from any natural orifice.
9. Excessive loss of blood during menstruation or outside the usual dates.
10. A persistent change in digestive and bowel habits.

k) Define Immunity (2 Marks)

Immunity is defined as any means of host defences to prevent entry of the germ in body and/or recognize, destroy and eliminate any foreign material so as to protect body against disease.

OR

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

l) Define Antiseptic with 2 examples.(Definition 1 Mark and 1 Mark for 2 examples)

Antiseptic is a substance that arrests or prevents the growth of microorganisms by inhibiting their activity without necessarily destroying them.

Examples - Dettol, Tr. iodine, AF lotion, Eusol, Spirit, Mercurochrome solution, etc.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

Q.2	<p>Answer any FOUR of the following :</p> <p>a) Give an account on determinants of Health. (3 marks for explanation of any 3 determinants)</p> <p>Determinants of Health: These are all those factors, which affect positively or negatively various aspects of health of individual and society.</p> <p>Health determinants are:</p> <ul style="list-style-type: none">(i) Heredity(ii) Life style,(iii) Environment(iv) Socioeconomic conditions(v) Health and Family welfare services <p>i) Heredity:</p> <p>The genetic makeup of an individual is unique and it cannot be changed. A number of diseases are of genetic origin.</p> <p>eg. Mental retardation, Diabetes.</p> <p>(ii) 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.</p> <p>(iii) 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</p>	4X3=12 M
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MODEL ANSWER

SUMMER– 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

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.

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

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

Write classifications of food.

b)

Classifications of food :

A) Based on Origin or Source as – (1.5 Marks)

1. Food of Animal Origin (Non – vegetarian Source) – e.g. Eggs, Red muscle meat, Liver, Kidney, Fishes, Prawns, Lobsters, Crabs etc.

2. Food of Vegetable / Plant Origin (Vegetarian Source) – e.g. Cereals, Pulses, Millets, Leafy vegetables, Fruits, Roots, Tubers, Berries etc.

B) Based on Predominant Function or Role –(1.5 marks)

1. Body Building Foods – Milk, Meat, Poultry, Eggs, Fish, Pulses, Ground nuts, etc.

2. Energy Giving Foods – Cereals, Sugars, Ripened fruits, Roots, Tubers, Fats and Oils etc.

3. Protective Foods (Providing minerals and vitamins)– Vegetables, Fruits, Milk, Non-veg foods



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

c) Write a note on ‘cold chain storage of vaccines.’ (3 Marks)

Vaccines are biological products and can lose their potency if not stored appropriately.

The vaccines should be stored at low temperature starting from the manufacturer to the point of use. The maintenance of temperature throughout the transportation, storage and up to administration is called the cold chain. The cold chains maintenances are necessary because on exposure to high temperature vaccines lose potency and their life is shortened. All the vaccines have different heat sensitivities. Oral polio vaccines is most sensitive to heat, next in order are measles, BCG, DPT, DT and TT.

If polio and measles vaccines are to be stored for a longer period as in the state or district storage center it can be kept at a temperature below 0 ° Celsius or in the freezer compartment of the refrigerator, but it should not be repeatedly frozen and melted. DPT, DT, TT and BCG should not be frozen. No vaccine should be exposed to direct sunlight.

Devices used to maintain cold chain: Refrigerators, Walk in coolers, ice bags, Thermocol Boxes, Freezers etc.

d) Write in detail different stages of demographic cycle.(3 Marks)

Demographic Cycle : It comprises of following 5 stages –

i) First Stage: It is “High Stationary Stage “. The feature of this phase is both natality i.e. birth rate and mortality i.e. death rate are very high. Both cancel each other keeping population steady. India was in this phase till 1920.

ii) Second Stage: It is “ Early Expanding Stage “. Here mortality starts falling down but birth rate remains same i.e. higher. As a result population starts increasing. At present African and South Asian countries are in this phase.

iii) Third Stage: It is “ Late Expanding Stage “. Her mortality continues to fall but birth rate also started decreasing. But yet Natality remains higher than Mortality. So population continues to increase. China, India, Singapore are at this stage.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

iv) Fourth Stage: It is “ Low Stationary Stage “. It is also called Zero Growth stage as Natality equals Mortality and both are lowered. So net population growth is zero.

Many developed countries have reached this stage in last 20 years.

v) Fifth Stage: It is “ Negative Growth Stage “. Here Mortality is higher than Natality. So there is decline in population size. Reasons behind are advancement in medical science and facing problems of population increase. Germany and Hungary are presently at this stage.

e) **Enlist the methods of contraceptives with examples**

(Temporary methods 2.5 Marks Permanent methods 0.5 Mark)

Following are the methods of contraception available at present –

A) Temporary Methods

1. Barrier methods

(a) Physical methods : i) Condom ii) Diaphragm iii) Vaginal sponge

(b) Chemical methods : i) Foams ii) Creams iii) Suppositories iv) Soluble films

2. Intra – uterine device (IUDs)

(a) Non-medicated IUDs : Loops as Lippes loop

(b) Medicated IUDs :

i) Metal containing IUDs : Copper- 7, Copper T – 200, T.Cu- 380 A or Ag

ii) Hormone containing IUDs : Progestasert

3. Hormonal methods

(a) Hormonal pills :

i) Combined pill : Mala –N , Mala –D



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

- ii) Progestogen only pill
- iii) Post coital pill: Tab. Unwanted 72, Tab. I pill 72
- iv) Once a month pill
- v) Male pill
- (b) Slow release preparations
 - i) Injectables : DMPA and NET-EN
 - ii) Subcutaneous implants : Norplant
 - iii) Vaginal rings
- 4. Post conceptional methods
 - (a) Menstrual regulation
 - (b) Menstrual induction
- 5. Miscellaneous methods
 - (a) Abstinence
 - (b) Coitus interruptus
 - (c) Safe period use method
 - (d) Natural family planning method
 - (e) Breast feeding method
 - (f) Birth control vaccine
- B) Permanent Methods
 - 1. Male sterilization (Vasectomy)



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

2. Female Sterilization (Tubectomy)

Write the emergency treatment of shock.(3 Marks)

f)

The emergency treatment of shock is :

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.
6. Immediately shift the patient to the hospital.

Q.3

Answer any FOUR of the following:

4X3=12M

a)

Describe the Resuscitation method in detail.

CPR is most important life saving first aid procedure in patients whose spontaneous respiration has stopped and/or pulse is absent.

CPR can be done by ABC Formula – where –

A – stands for Airway Clearance

B - stands for Breathing

C – stands for Circulation or Cardiac Massage

1) Airway Clearance: (1 mark)

i)Victims' mouth is opened and cleaned by clean cloth by first aider to remove debris, impurities or secretions so as to prevent blocking airway. ii) Now head position of victim is changed so that airway is not blocked by tongue fall- back. iii) Crowd surrounded victim is



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

removed and ventilation for fresh air is increased. iv) Keep patient in position with chin facing upward by lifting neck and push forehead backwards.

2) Breathing –(1 mark)

i) If breathing is stopped, mouth to mouth respiration i.e. artificial respiration is given, after cleaning mouth. ii) First aider should pinch nose of patient tightly by one hand, breath in lungful of air and breath out entire air forcefully in patients' airway by tightly sealing mouth on patients' mouth. iii) Expansion of chest of patient by 2-5cm should be observed that confirms air entering in to victim's lungs. iv) For adult patient such 12 mouth to mouth breathing are given per minute. v) In case if victims' mouth cannot be open due to any reason, mouth to nose artificial respirations should be given by placing mouth on victims' nose.

3) Circulation or Cardiac Massage –(1 mark)

i) If patients' pulse is missing, to revive heart working chest massage is given. ii) It is performed by pressing hard with both hands on victims' chest, two fingers above the lower end of sternum. iii) First aider should exert pressure by heel of hands keeping hands exactly perpendicular to patients' chest i.e. area of compression. iv) Pressure applied should be sufficient so that chest gets pressed by 1.5 to 4 cm. v) Such chest massage is given 60-80 times per minute continuously.

b) Describe different sources of water supply

There are three main sources of water

1. Rain (1 mark): rain is the prime source of all water. Rain water is the purest form of water in nature but it tends to become impure as it passes through atmosphere.

2. Surface Water (1 mark): The surface water originates from rain water. The sources of surface water are

a. Rivers- Many rivers give a dependable supply of water. The river water is turbid in rainy season. The bacterial count is usually high.

b. Tanks- Tanks are large as excavations in which surface water is stored. They are full of



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

silt and colloidal matters. Older tanks may be full of aquatic vegetation. Tanks are subjected to unlimited possibilities of contamination and they are highly dangerous as a source of drinking water

3. Ground water (1 mark): it is the cheapest and most practical means of providing water to small communities they are superior to surface water. It is likely to be free from pathogens and .it usually requires no treatment.

Define Health. (1 Mark) Write the effect of Air Pollution on Health. (2 Marks)

c)

Definition: Health is a state of complete physical, mental and social wellbeing and not only an absence of disease or infirmity.

Effects of air pollution

1. Air pollution causes several effects on health and it has contributed to increase in morbidity and mortality
2. Respiratory tract disorders are common such as asthma, bronchitis and lung cancer.
3. Air pollution also affects respiratory system of animals.
4. It also causes retardation of growth in plants, spotting, burning of leaves etc.

d)

Discuss the purification of water on small scale

Small scale purification of water: Four different methods are generally available. These methods can be used alone or in combinations. **(Any 3 methods, 1 Mark for each method)**

a) Boiling: - Boiling the water for 5 to 10 minutes is a satisfactory method of purifying water for household purposes. It kills bacteria, spores, cyst, ova and yields sterilized water. It also removes temporary hardness. Water should be boiled preferably in same container, in which it is to be stored to avoid contamination during storage.

b) Chemical Disinfection:-Various chemical disinfectants are used.

Bleaching powder OR Chlorinated lime:-It has 33 percent of available chlorine. It is used to disinfect water. The principle of chlorination is to ensure a “free” residual chlorine of 0.5

MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

mg/liter at the end of one hour contact.

Other agents used: chlorinated solution, chlorine tablets (halozone), high test hypochlorite (HTH) which is calcium compound called as perchloron, containing 60-70% available chlorine, Iodine. Potassium permanganate:

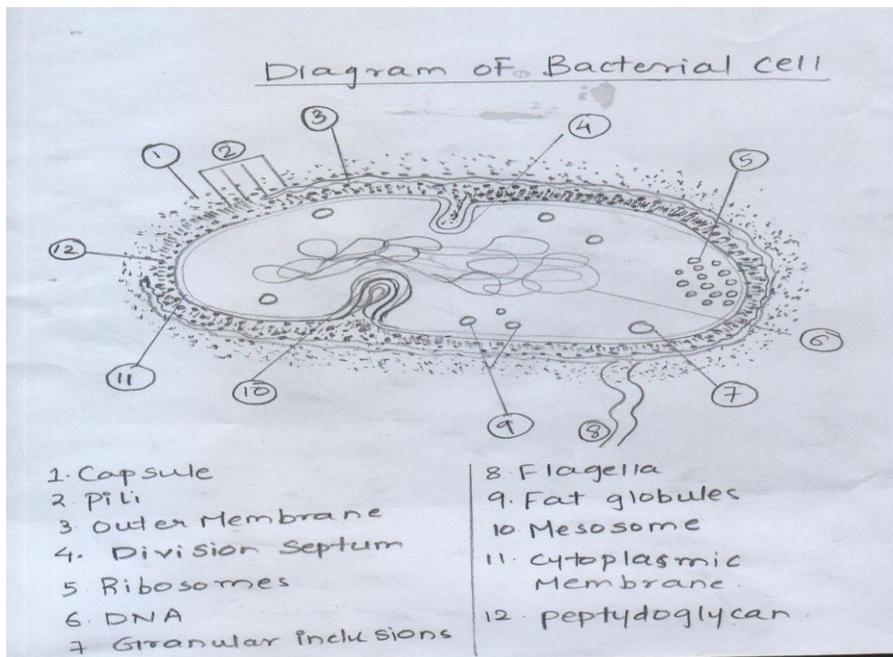
c) Filtration: - Household water can be purified with the help of ceramic filters like Pasteur Chamber land filter, Berkefeld filter and Katadyn filter. These filter candles usually remove bacteria found in drinking water but not filter passing viruses.

Apart from candle filters, on-line filters with bacteria retentive capacity are available which may be incorporated in water line or fitted to tap.

d) Disinfection of wells: - Wells are the main source of water supply in rural areas. This most effective and cheapest way of disinfecting wells is by bleaching powder.

Draw the labelled diagram of bacterial cell. (1.5 marks for diagram,1.5 marks labeling)

e)





MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

f) Write note on types of fungi and fungal infections.

Types of Fungi: (2 Marks)

On the basis of cell morphology, fungi are divided into 4 groups

1. Yeasts
- 2) Yeast like fungi
- 3) Moulds
- 4) Dimorphic fungi

Yeasts and molds are fungi but they differ in their morphology. They are larger than bacteria. Each species has a characteristic shape. Molds are filamentous and multicellular and yeasts are usually unicellular.

2. Fungal Infections: are called as Mycoses. (1 Mark)

1. Superficial Fungal Infections: these are common infections on skin, nails hair etc
2. Deep seated fungal infections: (Systemic mycoses) these infections vary in severity ranging from asymptomatic infections to fatal diseases.
3. Opportunistic fungal infections: These infections occur in patients suffering from diseases such as Cancer, AIDS etc.

MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

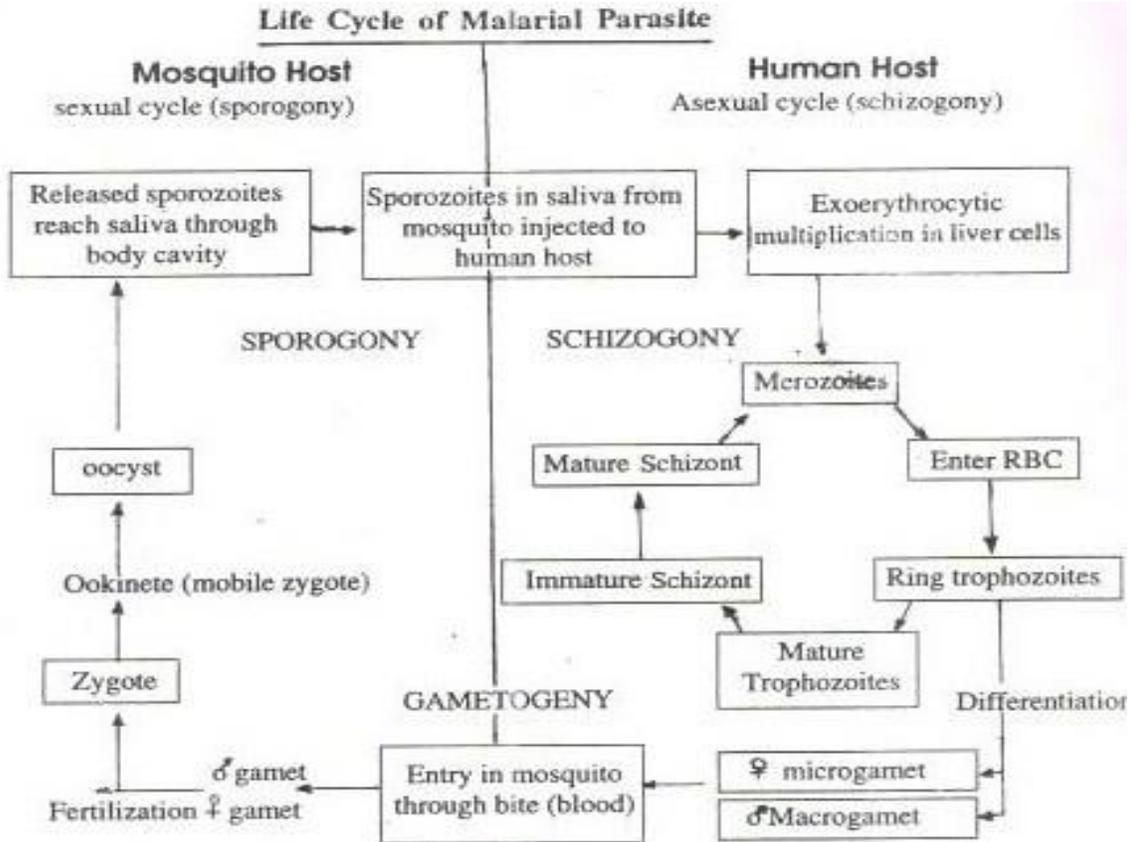
0810

Q.4

Answer any Four of the following:

4 X3=12M

a) Write the life cycle of malarial parasite. (3 Marks)



b) Define Diabetes Mellitus (DM). Write the signs and symptoms of DM.

Definition: Diabetes mellitus is a metabolic disorder characterized by state of hyperglycemia and is developed due to less or lack of insulin. (1 Mark)

Signs and symptoms: (2 Marks)

Polyuria (Frequent urination), polydipsia (Excessive thirst), polyphagia (excessive hunger), delayed wound healing, loss of weight, weakness, fatigue, prone to infections.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

c) Enumerate the risk factors (1.5 Marks) and prevention of coronary heart diseases (1.5 Marks)

Risk Factors:

1. Age
2. family history,
3. Genetic factors.
4. Bad habits such as cigarettes smoking, alcohol
5. Hypertension
6. High blood cholesterol
7. Diabetes
8. Lazy life style, no physical activity
9. Obesity

Preventive Measures:

1. Balanced diet, less fatty, less salty diet
2. Avoid bad habits such as smoking, alcohol
3. Weight control
4. Physical Exercise
5. Annual medical check up
6. Control over diabetes, hypertension



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

d) Discuss modes of transmission of diseases.

1. Direct Transmission (1.5 Marks)

- a) **Direct Contact:** Some infection are transmitted by direct contact from skin to skin, mucosa to skin via sexual intercourse, touching etc. e.g. STDs such as syphilis,AIDS,leprosy.
- b) **Droplet infection:** A spray of droplets of saliva, nasal secretions during coughing, sneezing, speaking or spitting by an infectious disease patient can spread the infections since droplets from patients contain large number of bacteria. E.g. Respiratory infections such as TB, common cold, chicken pox etc.
- c) **Contact with soil:** Direct exposure or contact of the tissue to an infectious agent in the soil can lead to spread of infections. e.g. Tetanus, hookworm infections
- d) **Inoculum into skin** or mucosa: e.g. Rabies by dog bite
- e) **Transplacental transmission:** Infections are transmitted through placenta: eg Syphilis, AIDS, hepatitis B

2. Indirect Transmission: (1.5 Marks)

- (a) **Vehicle Borne:** Spreads through water, milk, food etc. e.g. Typhoid, cholera
- (b) **Vector borne:** Transmission spread through vectors. e.g. Malaria ,dengue
- (c) **Airborne Infection:** Infection spread through dried droplets or dust containing pathogen. e.g. TB, measles
- (d) **Fomite borne infections:** Fomites are objects handled by patients such as through clothes, towels, books etc. Examples: Typhoid. eye and skin infections



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

- e) **What is Epidemiology? Discuss major components of epidemiology.**
- Definition (1 Mark)** 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.
- The epidemiological methods are: **(Description of any two methods for 2 marks)**
1. Descriptive epidemiology
 2. Analytical epidemiology
 3. Experimental epidemiology
- 1. Descriptive epidemiology:** Descriptive studies are concerned with the distribution of disease or health related characteristics in human populations and identifying the characteristics with which the disease in question appears to be associated i.e. Time of the disease occurrence, place where the disease is occurring and who is affected by the disease (population).
- The time distribution means the study of, "when does the disease occur?"
- For example water borne gastrointestinal infections occur more frequently during summer season. Certain diseases occur in a cyclical manner like measles show cyclical trend every 2 to 3 years
- In place distribution we can study the occurrence of diseases in a particular geographical area. There may be difference in occurrence between villages, cities, states, countries.
e.g. Heart diseases are common in developing countries. Guinea worms are more common in Rajasthan than in Jammu and Kashmir.
- Person distribution indicates the persons who get the disease more frequently. The host characteristics can be age, sex, socio-economic status, occupation and other factors.
e.g. whooping cough is common in children. Hyperthyroidism, migraine are more common in females.
- 2. The analytical studies:** These comprise of two distinct types of observational studies
- Case control study
- Cohort study
- From both these study designs one can determine whether a statistically significant association exists between, a disease and a suspected factor and if one exists, the strength of



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

association.

3. Experimental epidemiology

The aims of experimental studies may be as follows:

-To provide scientific proof of etiological or risk factors which may permit the modification or control of those diseases.

-To provide a method of measuring the effectiveness and efficiency of health services for the prevention, control and treatment of disease and improve the health of the community.

-The experimental studies can be conducted in animals or human beings.

What is Disinfection? (1Mark) Describe various methods of disinfections. (Any 2 methods for 2 Marks)

f)

Disinfection is defined as the process of killing infectious agents outside the body by direct exposure to chemical or physical agents.

Types of Disinfection:

(1) Concurrent disinfection :

In this the disease agent is destroyed as soon as it is released from the body, so as to prevent its spread. e.g. concurrent disinfection of urine, faces, vomitus, linen, clothes, dressings, aprons gloves etc. throughout the course of illness.

(2) Terminal disinfection :

When the period of communicability is over or the patient is discharged or died, the bed, furniture, room of the patient is disinfected so as to destroy the microorganisms.

(3) Precurrent or prophylactic disinfection :

This is preventive method. It includes boiling of drinking water, treatment of potable, water with Chlorine, pasteurization of milk, washing hands with soap and water.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

Q.5	<p>Answer any FOUR of the following</p> <p>Discuss Hospital acquired infection. (Definition 1 Mark)</p> <p>a) Hospital acquired infections are defined as 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.</p> <p>Factors responsible for Hospital acquired infection : (1 Mark)</p> <ol style="list-style-type: none">1. Hospital staff suffering from infections.2. Infected hospital staff attending the patient.3. Persons visiting the hospitals to see the patients.4. Due to unsterile surgical instruments, dressing.5. Due to infected syringes and needles.6. Lack of cleanliness7. Decreased resistance power of the patients <p>Prevention and Control of Hospital acquired infection : (1 Mark)</p> <p>To achieve this, a committee needs to be appointed in the hospital and they need to monitor following aspects on regular basis-</p> <ol style="list-style-type: none">1. Cleanliness in the hospital2. Proper sterilization of instruments and maintaining aseptic conditions wherever required3. Controlling overuse of antibiotics4. Maintaining Health and hygiene of hospital staff	4 X3=12M
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MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

5. Avoiding water, food contamination

6. Proper isolation of infectious patients

Write the advantages and disadvantages of condom.

b)

Advantages: (1.5 marks)

1. Very reliable

2. Protection of STDs

3. No side effects

4. Light, compact, easy to store and dispose

5. Easy to use

6. Available free of cost at family welfare centers, low cost
4. Light, compact and easily disposable.

Disadvantages: (1.5 marks)

1. May interfere with sexual pleasure

2. New condom must be used every time

3. May slip off or tear during coitus

4. Failure rate is 14%

Write the first aid treatment for snake bite.(3 Marks)

c)

First Aid for snake bite is:

1. Assure the patient.

2. Apply firm pressure over bitten area to delay poison absorption.

3. Apply broad firm bandage or tourniquet (if available) above bitten area to delay



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

circulation of blood with poison. Such bandage/tourniquet (i. e. pressure applied) should be loosened for 90 sec. after every 10 min.

4. Immobilize bitten area to minimize venom spread through blood circulation.
5. 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.
6. Clean the wound (i.e. bitten area) by sterile saline or clean water and cover it with sterile dressing or unused cloth.
7. Hospitalize patient as quick as possible for administering antisnake venom.

Discuss methods of solid waste disposal. (3 marks for any 3 of the following methods)

d)

Solid waste is disposed off by using following methods.

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.

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.

3. Burning: Refuse can be disposed off hygienically by burning. Hospital refuse which is particularly dangerous is best disposed off by burning.

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



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

organisms and ultimately we get compost, which is used as manure.

5. Burial: It is useful for small scale disposal like camps. In a small trench or pit the refuse is collected and at the end of each day it is covered with 20-30 cm of earth. The contents of the pit may be taken out after 4-6 months and used on the fields.

e) **Enlist staining techniques for bacteria and explain any one. (1 mark for enlisting and 2 marks for description of any one method)**

1. Simple staining
2. Differential staining
 - a) Gram staining
 - b) Acid fast
 - c) Ziehl Neelsen

1. Simple staining

It is also called as monochrome technique. In this method only one stain is used.

Procedure:

Smear is fixed, stain is put, stain is allowed to react for 30 sec to 3 min, wash smear with stream of cool water, dry and examine under oil immersion lens

It is used to study morphology, size, shape of microbes

2. Differential staining

a) Gram staining

Grams staining method is a differential staining method for bacteria.

Procedure:

1. Smear (thin microbial film) is prepared on clean glass slide. Smear is air dried and



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

fixed by gentle heating.

2. Crystal violet solution is applied on smear as primary stain for about 1 to 2 min.
3. Potassium iodide solution (grams iodine solution) is applied on smear for 1 to 2 min. Slide is gently washed with water.
4. Alcohol (95% soln.) now is applied on smear as decolouriser. The secondary stain as counter stain like eosin or saffranin is applied on smear for 20 to 30 sec.
5. Finally slide is washed with water, air dried and observed under oil-immersion lens of microscope.

Observation: Gram positive bacterial cells appear violet colored while Gram negative bacterial cells appear pink colored.

b) Acid fast

1. This method differentiate bacteria acid fast or non acid fast
2. Dyes used- melachite green, methylene blue
3. Acid fast- not decolorized by acid and alcohol
4. Non acid fast- loose stain, decolorized by acid and alcohol

c) Ziehl Neelsen

1. The Ziehl-Neelsen stain is a type of differential bacteriological stain used to identify acid-fast organisms, mainly Mycobacteria tuberculosis and M. Leprae
2. It is a modification of acid fast staining
3. Dye used- Ziehl's carbol fuchsin
4. Decolorization is done by 20% sulfuric acid
5. methylene blue is used as counter stain-



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

6. Acid fast bacteria- appear pink or red
7. Non acid fast bacteria appears- blue, green



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

f) Write a note on Immunisation schedule.(3 Marks)

Each country has its own immunization schedule based on their local needs.

Indian schedule gives protection for children against six vaccines preventable diseases. i.e. Diphtheria, whooping cough, tetanus, polio, TB, measles.

Beneficiaries	Age	Vaccine	No. of doses and route of administration.
Infants	6 weeks to	DPT	3 intramuscular
	9 months	Polio (OPV) BCG	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)	1 intramuscular, (Two doses if not immunized previously)
		Typhoid	2 subcutaneous.
	10 years	Tetanus toxoid Typhoid	1 intramuscular 1 subcutaneous
	16 years	Tetanus toxoid Typhoid	1 Intramuscular 1 subcutaneous.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

Q.6	<p>Write about causative agent, mode of transmission, symptoms and prevention for following infections (any 4):</p> <p>(1 mark each to causative agent, mode of transmission, symptoms and prevention)</p> <p>a) Rabies</p> <p>Causative agent- Lyssa virus</p> <p>Mode of transmission-The virus is secreted in the saliva of affected animals like dogs, foxes, jackals and transmitted to man from these animals by their bites or licks.</p> <p>Symptoms- pain at bite site, fever, headache, muscle aches, sore throat, depression</p> <p>Prevention & Control-</p> <p>Pre- exposure</p> <ol style="list-style-type: none">1. Persons at high risk of exposure should be protected by pre exposure immunization.2. Control of dog population3. Pet dogs should be vaccinated properly. <p>Post- exposure</p> <ol style="list-style-type: none">1. Neutralize the inoculated virus before it can enter the nervous system2. Application of antiseptics3. Suturing of wounds4. local application of antirabies serum around the wound5. Injection tetvac6. Suitable antibiotic if required	4X4=16M
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MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

7. Immunization with antirabies vaccine.

b) Filariasis

Causative agent: Infection with filarial parasites- W. Bancrofti, B. Malayi,

Mode of Transmission: By bite of infected mosquito

Symptoms: Lymphangitis, elephantiasis of scrotum, legs and arms, pulmonary eosinophilia, filarial arthritis.

Prevention & Control:

1. By vector control:- Elimination of breeding places of mosquitoes by sanitation & waste water disposal
2. Chemotherapy – Diethyl carbamazine (DEC)

c) Tuberculosis

Causative agent: Mycobacterium tuberculosis

Symptoms:

1. cough for three weeks or more
2. coughing of blood
3. chest pain
4. unintentional weight loss
5. fatigue

Modes of Transmission: Airborne infection transmitted by droplet from sputum of patient through coughing, sneezing and talking of the patient.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

Prevention & Control:

1. Early diagnosis
2. Treatment for complete duration
3. Isolation of patient
4. Immunization by BCG vaccine
5. Balanced diet and health education

d) Leprosy

Causative agent: Mycobacterium leprae

Symptoms:

1. Hypopigmented patches over the skin.
2. Partial or total loss of cutaneous sensation in the affected area.
3. Thickening of the nerves.
4. Presence of acid fast bacilli in the skin or nasal smear

Mode of 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. It may be transmitted through breast milk of lepromatous mother, by insect vectors or by tattooing needles

Prevention & Control:

1. Detection of cases of leprosy and tracing the contacts especially children of the



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

patient's house.

2. Multidrug therapy for control and cure.
3. Prevention of contact between the patient and other normal persons, especially children.
4. Selective isolation or hospitalization of the patient showing acute reactions or complications. Treatment of infected patients with Dapsone.
5. Rehabilitation of the patient with suitable work. Social and psychological rehabilitation is also necessary.

Typhoid Fever

e)

Causative agent: Salmonella typhi,

Mode of Transmission:

1. Transmitted by faeco-oral route or urine-oral route
2. Contaminated food, water, milk.
3. Indirect transmission through contaminated water, milk, food or through flies.

Symptoms: Continuous fever for 3 to 4 weeks, relative bradycardia, body pain

Prevention & Control:

1. Control of reservoir, control of sanitation
2. Education of people for sanitation and personal hygiene
3. Immunization with TAB vaccine containing S. typhi, S. paratyphi A and S. paratyphi B.
4. Water and milk should be consumed only after proper boiling.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

f) **Chicken pox**

Causative agent- Varicella Zoster Virus

Mode of Transmission-

1. Droplet infection
2. discharge from the ruptured lesion of the skin

Symptoms-

1. Fever
2. Appearance of rash on trunk, face, limbs
3. pustular (filled with pus) lesions

Prevention & Control-

Varicella Zoster immunoglobulin (VZ Ig) is given within 72 hrs of exposure

g) **Cholera**

Causative Agent: Vibrio cholerae.

Symptoms-

1. Diarrhea
2. Nausea and vomiting
3. Dehydration

Mode of Transmission:

1. Spread is mainly by contaminated food, water, milk.



MODEL ANSWER

SUMMER- 17 EXAMINATION

Subject Title: Health Education and Community Pharmacy

0810

2. Human being is the only reservoir of cholera infection.
3. Immediate source of infection is the stools and vomitus of cases and carriers.

Prevention & Control-

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