



**QUESTION 1: MULTIPLE CHOICE (COMPULSORY – All Students MUST answer this question)**

Indicate your response to this question by writing down the letter corresponding to your chosen answer among those given in each sub-question.

- i. The World Health Organisation package of Oral Rehydration Solution includes materials that are important in prevention of hypovolemia. Which one of the components below is added in order to prevent hypovolemia?
  - A. Sodium chloride
  - B. Potassium chloride
  - C. Glucose
  - D. Sodium bicarbonate
  - E. Water
  
- ii. Which one of the tuberculosis treatment drugs is NOT a first line drug?
  - A. Rifampicin
  - B. Cycloserine
  - C. Isoniazid
  - D. Pyrazinamide
  - E. Ethambutol
  
- iii. Which method is commonly used as a correct standard diagnostic method to confirm infection with tuberculosis in Swaziland?
  - A. GeneXpert
  - B. Microscopy
  - C. Culture
  - D. Chest X-ray
  - E. Clinical (history and symptoms)
  
- iv. Hepatitis Type C is transmitted from person-to-person through
  - A. coming in contact with the faeces of someone infected with Hepatitis A during anal-oral contact
  - B. contact with contaminated razors, needles, body-piercing equipment, or manicure or pedicure tools
  - C. sexual contact with an HIV-infected person
  - D. faeces in contaminated water
  - E. ingestion in contaminated food
  
- v. The immunisation schedule of polio is:
  - A. Birth, 6 months, 9 months and 18 months
  - B. Birth, 6 months, 14 weeks, 18 months
  - C. 6 months, 10 months, 18 months and 5 years
  - D. Birth, 6 months, 10 weeks, 14 weeks, 18 months, 5 years

- E. Birth, 6 months, 10 weeks, 18 months, 5 years
- vi. Which one of the following interventions CANNOT prevent infection with typhoid?
- A. Eating hot and steaming food
  - B. Avoiding eating raw vegetables and fruits
  - C. Getting vaccinated
  - D. Washing hands carefully with soap and water after using the toilet
  - E. Taking lots of flavoured ice which can replace lost fluids
- vii. Which one of the following is NOT a vaccine preventable disease?
- A. Traveller's diarrhoea
  - B. Tuberculosis
  - C. Typhoid
  - D. Mumps
  - E. Measles
- viii. Which one of the statements below is NOT true?
- A. Tuberculosis is an opportunistic infection
  - B. Swaziland has the highest number of people infected with tuberculosis in the world
  - C. Night sweats is a symptom that may suggest infection with tuberculosis
  - D. Maintaining a good knowledge of HIV status is essential to prevent infection with tuberculosis
  - E. Alcoholism is a predisposing factor for tuberculosis infection
- ix. Which one of the following is NOT true about sexually transmitted infections (STIs) and pregnancy?
- A. STIs can cause a woman to go into labour too early
  - B. Many STIs can be passed from mother to baby during pregnancy
  - C. STIs may cause still birth among pregnant women
  - D. STIs may cause low birth weight of babies
  - E. All the statements above are true.
- x. Ringworm of the head is called:
- A. tinea pedis
  - B. tinea barbae
  - C. tinea capitis
  - D. tinea cruris
  - E. tinea unguium

[20 marks]

**QUESTION 2**

Tuberculosis (TB) is a major infectious disease responsible for 8 million cases and 2 million deaths annually.

- a. With respect to tuberculosis (TB), write **T** (for true) or **F** (for false) in each of the following statements.
  - i. *Mycobacterium tuberculosis* is slow to grow or divide and slow to die (1)
  - ii. Everyone who has the TB bacillus in the body will show with symptoms. (1)
  - iii. TB kills more than 5 000 patients per day globally. (1)
  - iv. All patients of tuberculosis are also infected with the human immunodeficiency virus (HIV). (1)
  - v. Multi-drug resistant TB refers to strains resistant to Rifampicin and Isoniazid only. (1)
  - vi. A *Mycobacterium tuberculosis* strain in a large bacterial population consisting of strains resistant to rifampicin, isoniazid and pyrazinamide can be successfully treated by a multi-drug therapy consisting of all three drugs. (1)
- b.
  - i. Define drug-resistant tuberculosis. (2)
  - vii. Explain how drug-resistant tuberculosis develops. (2)
  - viii. Write down three health related factors that contribute to the development or spread of drug resistant tuberculosis. (3)
- c. List three methods by which tuberculosis is transmitted from an infected to a susceptible human host. (3)
- d. Discuss TB control services in Swaziland under the DOTS initiative. (4)

**[20 marks]**

**QUESTION 3**

- a. Cholera is a very deadly disease that has the potential to kill the victim within early onset of symptoms.
  - i. Name the causative agent of cholera. (1)
  - ii. Explain briefly the method by which the pathogen that causes cholera causes disease. (2)
  - iii. What symptoms would lead to suspicion of cholera in a patient? (3)
  - iv. Explain why cholera has the potential to kill it's victim within a short time. (2)
- b. Suppose you are an Environmental Health Officer stationed at Lavumisa in Swaziland, an area adjacent to northern KwaZulu-Natal in South Africa and you receive information that there has been an outbreak of cholera in northern KwaZulu-Natal. What strategies would you put in place at the primary, secondary and tertiary level to prevent importation and reduce morbidity and mortality due to the disease in your area of jurisdiction? (12)

**[20 marks]**

**QUESTION 4**

- a. *Escherichia coli* has 6 serotypes responsible for disease in humans 90% of epidemic reported globally have been due to only one of these serotypes.
- Name the serotype responsible for most epidemics due to *Escherichia coli* globally. (1)
  - Explain how this serotype causes disease in an infected individual. (2)
  - Describe briefly the symptoms that are likely to lead to suspicion of infection with the *Escherichia coli* serotype in an individual. (3)
  - Clearly describe two ways by which epidemic of human infections with *Escherichia coli* commonly occur. (4)
  - Describe a detailed programme you may put in place as an Environmental Health Officer in charge of a community to prevent occurrence of outbreaks and epidemics due to *Escherichia coli*. (6)
- b. Enterotoxigenic *Escherichia coli* (ETEC) causes disease in children 0 – 3 years through production of two types of toxins. Name these toxins. (2)
- c. Explain why ETEC epidemics commonly occur in children 0 – 3 years. (2)

**[20 marks]****QUESTION 5**

- a. Food-borne illnesses characteristically results in one type of epidemic in communities.
- Name two organisms commonly responsible for food-borne epidemics other than *Staphylococcus aureus*. (2)
  - For each of the organisms listed in (i), give two examples of foods that are likely to be involved in the transmission of infections to humans. (4)
- b. A group of Environmental Health Officers from Swaziland visit Mtunzini, an Environmental Education Centre in South Africa, where they also take part in a one day picnic. On return to Swaziland, 80% of the EHOs suffer from symptoms of food-poisoning and the laboratory identifies *Staphylococcus aureus* from all those involved in the outbreak.
- Describe two methods by which the EHOs might have acquired *Staphylococcus aureus* poisoning. (4)
  - What symptoms are likely to lead to suspicion of infection with *Staphylococcus aureus*? (2)
  - Name one precaution you may suggest to the EHOs to reduce the chance of occurrence *Staphylococcus aureus* infections in future picnics they may undertake. (2)
- c. The refectory at the Mbabane Campus of the University of Swaziland is graded **D** by the Municipal Council of Mbabane because of the existence of practices that are likely to result in transmission of food-borne illness among its clientele. Design a programme or process that you are likely to follow as an Environmental Health Officer assisting the Mbabane Campus refectory to improve its grading to the highest level **A**. (6)

**[20 marks]**

**QUESTION 6**

- a. Dermatophytosis is an infection of three types of tissues.
- i. Name the three tissues affected during dermatophytoses infection. (3)
  - ii. Describe the method of diagnosis used for dermatophytoses. (3)
  - iii. One of the most common dermatophytes is *Tinea pedis*. Explain how infection with *Tinea pedis* is acquired. (2)
  - iv. What advice would you give to a young boy for him to avoid acquiring *Tinea pedis* infection? (2)
- b. Opportunistic mycoses have become important in the last few decades in humans.
- i. List three organisms that are common causes of opportunistic infections in man besides *Cryptococcus neoformis*. (3)
  - ii. List three groups of people besides those with HIV infection, in which opportunistic infections are a problem. (3)
  - iii. Explain how infection with *Cryptococcus neoformis* may be acquired. (2)
  - iv. What advice would you give to an HIV+ patient with a CD4+ T cell count of less than 200/mm to prevent disseminated cryptococcosis? (2)

**[20 marks]****QUESTION 7**

- a. Untreated chlamydial infections can lead to development of complications both in men and women.
- i. What is the incubation period of Chlamydial infection? (1)
  - ii. List three symptoms that are likely to show in a woman with chlamydial infection. (3)
  - iii. Write down TWO complications that may develop from untreated chlamydial infection in man. (2)
  - iv. Write down FOUR complications that are likely to develop from untreated chlamydial infections in women. (4)
- b. Despite its devastating impact, Mother-to-child transmission (MTCT) of syphilis is preventable and curable.
- i. What are the effects of 'congenital syphilis' on the child? (3)
  - ii. Describe a strategy you may recommend to your community for the prevention of mother-to-child transmission of syphilis. (3)
  - iii. Describe two methods a woman in the child-bearing age group may use to prevent infection with syphilis or reduce chances of infection. (4)

**[20 marks]**