

Name of the Student: _____

Max. Marks : 24 Marks

Time : 24 Minutes

Q1.

In 2014 there was an outbreak of Ebola virus disease (EVD) in Africa.

At the time of the outbreak there were:

- no drugs to treat the disease
- no vaccines to prevent infection.

(a) By March 2015 there were an estimated 9 850 deaths worldwide from EVD.

The number of deaths is an estimate.

Suggest why it is an estimate rather than an exact number.

(1)

(b) Why were antibiotics **not** used to treat EVD?

(1)

(c) After the outbreak began, drug companies started to develop drugs and vaccines for EVD.

A drug has to be thoroughly tested and trialled before it is licensed for use.

Testing, trialling and licensing new drugs usually takes several years.

Draw **one** line from each word about drug testing to the definition of the word.

Word about drug testing

Definition

Dose

Side effects making the person ill

Efficacy

The concentration of the drug to be used and how often the drug should be

given

Toxicity

Whether the drug works to treat the illness

(2)

- (d) The results of drug testing and drug trials are studied in detail by other scientists.

Only then can the results be published by the drug company.

Suggest **one** reason why the results are studied by other scientists.

(1)

- (e) The number of deaths from EVD continued to increase.

The World Health Organization (WHO) decided it was ethical to use unlicensed drugs.

The WHO said unlicensed drugs could only be given to people who gave their permission.

Also, any results had to be shared with other researchers and drug companies.

Some vaccines had shown positive results in animal testing, but the vaccines had not been tested and trialled in humans.

The supplies of the vaccine were low.

At first the vaccines were only used for health workers.

How would the use of a vaccine **reduce the spread** of EVD?

(2)

- (f) Evaluate the use of unlicensed drugs and vaccines during the EVD outbreak.

Give a conclusion.

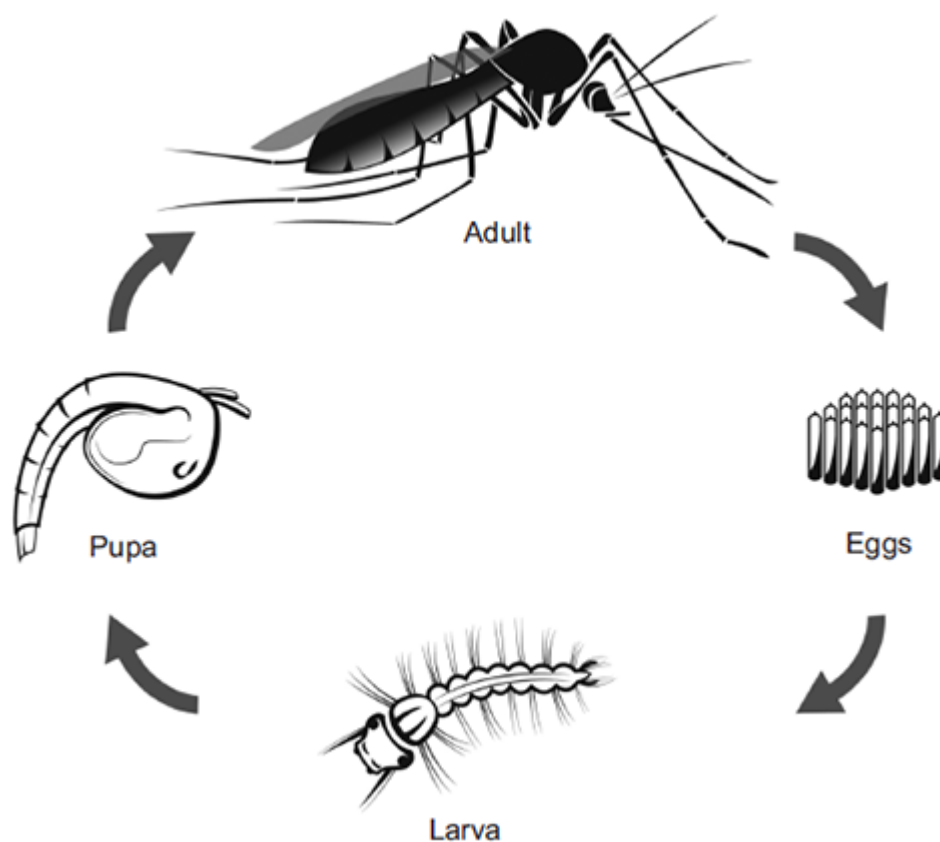
(6)
(Total 13 marks)

Q2.

Malaria is a disease caused by a microorganism carried by mosquitoes.

The microorganism is transferred to humans when adult female mosquitoes feed on human blood.

The figure below shows the life cycle of a mosquito.



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The World Health Organisation estimates that 3×10^8 people are infected with malaria every year.

Scientists estimate that malaria kills 2×10^6 people every year.

The people who are infected with malaria but do not die, may be seriously ill and need health care for the rest of their lives.

- (a) Based on the estimated figures, what percentage of people infected with malaria die from the disease?

(2)

- (b) An internet article states:

- 1 Mosquito larvae are at the start of the food chain for some fish.
- 2 Adult mosquitoes provide food for bats and birds.
- 3 Mosquitoes are also important in plant reproduction because they feed from flowers of crop plants.

- (i) The first sentence in the article is **not** correct.

Explain why.

(2)

- (ii) A company plans to produce genetically modified (GM) adult male mosquitoes. The GM mosquitoes will carry a gene from bacteria. The gene causes the death of offspring before they become adults.

Male mosquitoes do **not** feed on blood.

Scientists are considering releasing millions of adult male GM mosquitoes into the wild.

Do you think scientists should release millions of male GM mosquitoes into the wild?

In your answer you should give advantages and disadvantages of releasing GM mosquitoes into the wild.

(4)

- (iii) Describe the process for creating a GM mosquito.

(3)

(Total 11 marks)