SA II BIOLOGY TEST PAPER I

Question 1 ( 1.0 marks)

Name a plant and an animal source of fat.

Solution:

Plant source of fat − Mustard oil

Animal source of fat − Egg yolk

Question 2 ( 1.0 marks)

Name any two transgenic plants.

Solution:

*Bt* cotton and *Flavr savr* tomato

Question 3 ( 1.0 marks)

Name any two diseases that commonly infect poultry.

Solution:

Bird flu and fowl pox

Question 4 ( 1.0 marks)

What is the name of the causal organisms of typhoid and rabies?

Solution:

Causal organism of typhoid − Bacteria

Causal organism of rabies − Virus

Question 5 ( 1.0 marks)

Mention any two features of phylum Echinodermata.

Solution:

Features of phylum Echinodermata:

(i) The animals have an organ-system level of organisation.

(ii) The animals are made up of three germ layers. Therefore, they are triploblastic.

Question 6 ( 1.0 marks)

Which mode of respiration is found in adult amphibians?

Solution:

Adult amphibians respire through lungs and skin.

Question 7 ( 2.0 marks)

*Complete the table*.

|  |  |
| --- | --- |
| **Disease** | **Causative agent** |
| \_\_\_\_\_\_\_\_\_\_ | *Plasmodium* |
| Typhoid | Bacteria |
| Ringworm | \_\_\_\_\_\_\_\_\_\_ |
| AIDS | \_\_\_\_\_\_\_\_\_\_ |
| Kala-azar | \_\_\_\_\_\_\_\_\_\_ |

Solution:

|  |  |
| --- | --- |
| **Disease** | **Causative agent** |
| Malaria | *Plasmodium* |
| Typhoid | Bacteria |
| Ringworm | Fungi |
| AIDS | Virus |
| Kala-azar | Protozoa |

Question 8 ( 2.0 marks)

*Define the following*.

(i) Mixed cropping

(ii) Intercropping

Solution:

(i) **Mixed cropping** − The practice of growing two or more crops simultaneously on the same land such that the product or waste material of one crop helps in the growth of another crop

(ii) **Intercropping** − The technique of growing crops with different nutritional requirements (e.g., soyabean and maize) in alternate rows, in a definite pattern, to ensure maximum utilisation of nutrients.

Question 9 ( 2.0 marks)

What are air-borne diseases? Give examples.

Solution:

Air-borne diseases are the ones that are transmitted when disease-causing microorganisms are expelled into the air while coughing, sneezing, talking, etc. These microorganisms travel through dust particles or water droplets in air to reach the other individuals.

Some common air-borne diseases are chicken pox, swine flu, tuberculosis, influenza, etc.

Question 10 ( 2.0 marks)

Name two diseases caused by fungi and viruses each.

Solution:

Diseases caused by fungi − Athlete’s foot and ringworm

Diseases caused by viruses − AIDS and swine flu

Question 11 ( 2.0 marks)

What do you think is the importance of biodiversity?

Solution:

Importance of biodiversity:

(i) A wide range of materials such as fibres, dyes, resins are obtained from plants.

(ii) A variety of plants and animals are utilised as sources of food.

(iii) Medicinal plants act as sources of drugs.

(iv) Plants and animals also have a cultural and aesthetic value.

Question 12 ( 3.0 marks)

Answer the following questions.

(i) Give any two differences between a millipede and a tapeworm.

(ii) Name any two phyla of kingdom Animalia consisting of acoelomates.

Solution:

(i)

|  |  |
| --- | --- |
| **Millipede** | **Tapeworm** |
| It has a true coelom. | It lacks a coelom. It is an acoelomate. |
| The body is segmented. | The body is not segmented. |

(ii) Phylum Platyhelminthes and Phylum Coelenterata

Question 13 ( 3.0 marks)

Describe the sub-phylum that lies at the border line between chordata and non-chordata.

Solution:

Sub-phylum Protochordata lies at the border line between chordata and non-chordata. These animals are primitive chordates and have given rise to modern day chordates.

General features of Protochordata are as follows:

* They are exclusively marine animals. They often live in burrows.
* They show an organ system level of organisation and are triploblastic.
* Their body is not segmented and is bilaterally symmetrical.
* Notochord is present in some stages during their lives.
* Body cavity is enterocoelom.

Question 14 ( 3.0 marks)

What are the general means of preventing diseases? Discuss in detail.

Solution:

There are two ways of preventing a disease − general ways and specific ways. General ways are common for most of the infectious diseases. They are, in fact, the general precautions that must be taken in order to prevent diseases. Specific ways, on the other hand, are different for different diseases. Some of the general ways of preventing the spread of diseases are:

Ways to prevent air-borne diseases:

* Staying away from the diseased person
* Wearing a mask when one has to contact a diseased person
* Covering the mouth and nose while coughing or sneezing to prevent the spread of the disease

Ways to prevent water-borne diseases:

* Ensuring proper disposal of sewage
* Ensuring safe drinking water supply

To prevent vector-borne diseases:

* Providing a clean environment, which helps in preventing vectors such as mosquitoes from breeding
* Ensuring proper nutrition as in its absence, the immune system does not function properly

Question 15 ( 5.0 marks)

*Answer the following questions*.

(i) Write a short note on modes of transmission of communicable diseases.

(ii) Write a short note on infectious agents.

Solution:

(i) Communicable diseases spread through the following ways.

(a) **Through air** − The microorganisms that cause diseases such as influenza, chicken pox, etc., are transmitted through air as and when the infected person sneezes or coughs.

(b) **Through water** − The microorganisms that cause diseases such cholera, typhoid, etc., spread through contaminated water containing the faeces of infected individuals.

(c) **Blood to blood contact** − This occurs during blood transfusion, pregnancy, etc. AIDS is transmitted in this way.

(d) **Animal vectors** − Insects carry disease-causing microbes in their saliva and transmit them to the healthy individuals by biting them. Malaria and dengue is spread in this way

(e) **Direct physical contact** − AIDS and syphilis are sexually-transmitted diseases.

(ii) Infectious agents are organisms that cause diseases, e.g., bacteria, fungi, protozoa, viruses and some multicellular organisms.

(a) *Bacteria* − These are unicellular organisms that cause diseases such as typhoid, cholera, etc.

(b) *Fungi* − These are multicellular eukaryotes which are heterotrophic and lack chlorophyll. They cause athlete’s foot, ringworm, etc.

(c) *Protozoa* − These include simple eukaryotic unicellular organisms that cause diseases such as amoebiasis, malaria, kala-azar, etc.

(d) *Viruses* − These are tiny organisms that cannot grow, multiply or reproduce on their own. They are essentially parasites as they need the host’s machinery for multiplying. They cause diseases such as AIDS, jaundice, swine flu, etc.

(e) *Multicellular organisms* − These are parasitic worms. Pinworms, hookworms, tapeworms, etc., come under this category. They cause diseases such as liver rot, anaemia, etc.

SA II BIOLOGY TEST PAPER II

Question 1 ( 1.0 marks)

What is the primary characteristic of the classification of living organisms?

Solution:

The presence or absence of membrane-bound organelles is the primary characteristic of the classification of living organisms. On this basis, organisms are classified as prokaryotes and eukaryotes.

Question 2 ( 1.0 marks)

Name any two common weeds.

Solution:

*Xanthium* and *Parthenium*

Question 3 ( 1.0 marks)

Who invented vaccination for small pox?

Solution:

Edward Jenner

Question 4 ( 1.0 marks)

Which phylum has organisms with a pseudocoelom?

Solution:

Nematoda

Question 5 ( 1.0 marks)

*Fill in the blanks*.

(i) Ascaris is a parasite found in the \_\_\_\_\_\_\_\_\_\_ of human beings.

(ii) *Wuchereria* causes \_\_\_\_\_\_\_\_\_\_.

Solution:

(i) *Ascaris* is a parasite found in the small intestine of human beings.

(ii) *Wuchereria* causes elephantiasis.

Question 6 ( 1.0 marks)

What do you understand by the term ‘symptoms’?

Solution:

The ‘symptoms’ of a disease are the indications that can be felt by the patient on developing a disease.

Question 7 ( 2.0 marks)

*Define the following*.

(i) Classification

(ii) Enterocoelom

Solution:

(i) Classification refers to the identification, naming and grouping of organisms into a formal system based on similarities of internal and external structures or evolutionary history.

(ii) Enterocoelom refers to the true body cavity formed from pouches that are pinched off from the endoderm.

Question 8 ( 2.0 marks)

How do mammals differ from the aves?

Solution:

Mammals differ from the aves because of the presence of the following features.

(i) Milk-producing glands (mammary glands) to nourish their young ones

(ii) Two pairs of limbs for walking, running and flying

(iii) Hair and sweat glands on the skin

Question 9 ( 2.0 marks)

Mention two ways by which diseases can be treated.

Solution:

Diseases can be treated by:

(i) **Reducing the effect of a disease** − In this method, the symptoms of the disease are reduced. It includes taking medicines to bring down fever or to reduce pain.

(ii) **Killing the cause of a disease** − It includes the administration of a relevant microbe-specific medicine which kill the particular microbe responsible for causing the disease.

Question 10 ( 2.0 marks)

What do you mean by composting? How is vermicomposting different from composting?

Solution:

Composting is the process in which organic waste material is decomposed in pits to release nutrients.

When composting is done using earthworms, it is called vermicomposting.

Question 11 ( 2.0 marks)

How does community affect the health of an individual?

Solution:

Various factors affecting a community also affect the individual who is a part of that community. These are:

(i) **Location of the community** − Climate affects the health of a community. For example, in tropical areas, the climate is hot and humid, which promotes the growth of parasites. As a result, diseases are more prevalent.

(ii) **Size of the community** − Due to high population density, a larger population will have more diseases. However, at the same time, it will have more health professionals to deal with the diseases.

(iii) **Development and economy of the community** will also affect the health of the community.

Question 12 ( 3.0 marks)

What do you understand by body symmetry? Give two examples each of animals that are:

(i) Radially symmetrical

(ii) Bilaterally symmetrical

Solution:

Body symmetry is the balanced distribution of duplicate body parts.

If the body of an animal can be divided into two equal parts by any plane, it is said to be symmetrical.

(i) *Animals showing radial symmetry* − Hydra and sea anemone

(ii) *Animals showing bilateral symmetry* − Human beings and prawn

Question 13 ( 3.0 marks)

Explain the hierarchy of classification.

Solution:

(i) The hierarchy of classification was developed by Carolus Linnaeus. It refers to the organisation or classification of organisms in the order of rank or importance.

(ii) According to this system, **kingdom** is the highest rank. It is divided into **phyla** or divisions, which are further subdivided into **classes**. Further divisions include **order**, **family**, **genus** and **species**, in that order.

(iii) Thus, species is the basic unit of classification.



Question 14 ( 3.0 marks)

What are antibiotics? How do they work? How does penicillin act as an effective antibiotic to control bacterial parasites?

Solution:

Antibiotic is a medicine that kills a microorganism by blocking its vital biochemical pathways.

Microorganisms have certain biochemical pathways which are needed for their survival; for example, respiration and enzyme synthesis. Antibiotics bind with the precursors needed for these pathways, and block them. In the absence of essential life processes, the microorganisms are killed.

Penicillin blocks the cell-wall formation in bacterium. As a result, bacterium is killed. Hence, it acts as an effective antibiotic to control bacterial parasites.

Question 15 ( 5.0 marks)

*Answer the following questions*.

(i) Write a short note on treatment of diseases.

(ii) What are air-borne diseases? Explain how these diseases can be prevented.

Solution:

(i) Once a body becomes diseased, it needs to be treated so that the body can regain its strength and efficiency.

A disease can be treated in two ways −

(a) **By reducing the effect of the disease:** In this, the side effects or symptoms of the disease are reduced. This includes consuming medicines to bring down fever, reduce pain, etc., or taking rest to save energy so that the body can focus on healing.

(b) **By killing the cause of the disease:** It includes consuming a specific medicine particular to the disease-causing microorganism. These medicines block the vital biochemical pathways of the microbes (such as respiration and enzyme synthesis). This kills the microorganisms.

(ii) Air-borne diseases are the ones that are transmitted when disease-causing microorganisms are expelled into the air while coughing, sneezing, talking, etc. These microorganisms travel through dust particles or water droplets in air to reach the other individuals.

Some common air-borne diseases are common cold, tuberculosis, swine flu, pneumonia, etc.

**Prevention of air-borne diseases:**

(a) By staying away from the diseased person

(b) By wearing a mask while contacting the sick person

(c) By covering one’s mouth or nose while coughing or sneezing to prevent the spread of infection.