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**තෙවන වාර පරීක්ෂණය - 13 ශ්‍රේණිය - 2024**  
**Third Term Test - Grade 13 - 2024**

Index No. :.....

**BIOLOGY - II**

**Time : 3 hours**

Extra reading time 10 minutes

**Biology - II - A**

- Answer for all questions.

**Structured essay - Part A**

(01) (A) For the survival of human beings sustainable food production is necessary.

(i) a. What is known as sustainable food production.

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.....

b. What are the methods can be applied, which are based on knowledge in biology.

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.....  
.....

(ii) a. Draw the way of forming a dipeptide in the given space.

b. What is the test that can be used to identify peptide bonds in the laboratory.

.....

(iii) a. What is explained by base pair rule.

.....  
.....

b. Mention an instance which can be happen complementary base pairing between RNA molecules.

.....  
.....

(iv) a. What is measured by resolution power of microscope.

.....

(iv) b. What are the reasons for having high resolution power in electron microscope than light microscope.

.....  
.....  
.....  
.....

(v) a. What is the sub cellular component which synthesizes membrane phospholipids.

.....

b. What are the two types of membrane bounded vesicles contain with enzymes.

.....

(B) (i) a. Mention the steps of leading a proliferation of cells and formation of a tumor.

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.....  
.....

(ii) a. Mention an instance which is transformed the energy in ATP in to mechanical energy.

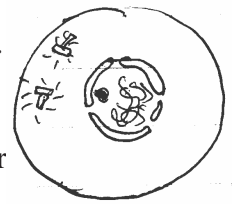
.....

b. What are the proteins which need for above mentioned process.

.....

(iii) a. What is the phase and the stage spent by the above mentioned cell.

.....



b. Mention a reason for selecting that phase and stage as your answer

.....  
.....

(iv) a. Write the principal of limiting factors in photosynthesis.

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.....  
.....  
.....

b. A student is going to measure the rate of photosynthesis by increasing light intensity. what is the instrument which he need ?

.....

- (v) That student took the readings by increasing light intensity. He had selected 15°C and 25°C temperatures, When obtaining readings. If the CO<sub>2</sub> concentration is 0.04% draw the relevant graph which he drawn by using the reading he obtained.

(C) a. What is the organic compound which have been act as enzymes

.....

b. How long ago did plants begin to colonizing the land ?

.....

c. Mention an adaptation possess when colonizing land by plants.

.....

.....

.....

.....

(ii) a. Which characteristics get pass to the next generation according to the theory of Lamarck.

.....

b. A brown thallus was found in marine environment and it was identified as *Sargassum*. Write 02 morphological characteristics that helped to identify that organism.

.....

.....

(iii) a. During the evolution of plants two types of leaves evolved. Mention what are they?

.....

.....

b. Which of the above is the most efficient form of photosynthesis?

.....

(iv) State a similarity of *Aspergillus* and *Mucor* in their sexual reproduction.

.....

(v) a. Name the phylum which are exclusively marine, triploblastic and coelomic.

.....

b. Write the answer related to the phylum you mentioned.

- (i) Circulatory system - .....
- (ii) Skeletal system - .....

(02) (A) (i) a. What is the special ability shown by parenchyma cells.

.....  
.....

b. Mention an instance which above mentioned above mentioned ability is shown ?

.....

(ii) Write 2 advantages of thickening by lignin of vessel elements and tracheids in xylem.

.....  
.....

(iii) What are the types of tissues which produced by vascular cambium

.....  
.....  
.....

(iv) What are know as heart wood and sap wood.

a. Heart wood - .....

b. Sap wood - .....

(v) Which secondary tissue contributes the replacement of epidermis ?

.....

(B) (i) State what is heteromorphic alternation of generation.

.....  
.....  
.....

(ii) What are know as sori ?

.....  
.....  
.....

(iii) Sate what is photomorphogenesis

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.....  
.....

(iv) Who are the organisms that cause biological stress in plants.

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.....

(v) Mention three groups of chemical compound in plants which show resistance mechanisms to biotic stress causing organisms before they attach.

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.....  
.....

(C) (i) State what is epitope

.....  
.....  
.....

(ii) What are antibodies

.....  
.....

(iii) State what is called secondary immune responses.

.....  
.....  
.....

(iv) Mention the immune responses which occurred in below instances.

a. The baby develops the resistance against some infectious diseases due to mother's milk - .....

b. By polio vaccination - .....

c. Treat poisoning from venomous snake - .....

d. BCG vaccine which is used against tuberculosis - .....

(v) Name 3 typical allergy symptoms

.....

(vi) What are known as allergens

.....

(03) (A) (i) Mention the ways of protecting the stomach lining from the digestive action of HCl and pepsin.

.....  
.....  
.....  
.....

(ii) What is known as respiratory pigment

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.....  
.....  
.....

(iii) State 3 functions of human blood.

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.....  
.....  
.....  
.....  
.....

(iv) a. State the reason, why secretion is considered as one of the most necessary process in the process of urine formation.

.....  
.....

b. Mention a substance which secretes passively and 2 substances which secrete actively at the proximal convoluted tubule.

Actively - .....  
passively - .....

(v) a. What is known as Menopause

.....

b. Mention the age usually menopause takes place..

.....

c. State the reason for menopause

.....  
.....

(B) (i) Write 2 conditions in which Mendel's second law of inheritance applies

.....  
.....

(ii) R and Q alleles must be present for the colour of a certain flower. When one of them is destroyed, white flower will be formed consider the below cross.  $RRQq \times RrQq$

a. What is the probability that  $RRqq$  will occur

.....

b. Draw the punnett square corresponding to the cross

c. Write the ratio of coloured flowers to white flowers.

.....

(iii) a. What is polygenic ?

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.....  
.....  
.....

b. Mention a character which inherited according to polygenic

.....

(iv) What is known as plant and animal breeding.

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.....  
.....  
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(v) What is known as inbreeding depression

.....  
.....

(vi) Mention three typical allergy symptoms

.....  
.....  
.....  
.....

(vii) What are allergens?

.....  
.....

(C) (i) State the function of restriction endonuclease in gene technology.

.....  
.....

(ii) What is known as DNA probes?

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.....  
.....

(iii) Mention two ways of labeling can be done in DNA probes?

.....  
.....

(iv) What is the enzyme used in genetic engineering to form a DNA chain from RNA template?

.....

(v) Write three main steps in PCR cycle.

.....  
.....  
.....

(vi) What is the international agreement signed on biosafety to the convention on biological diversity.

.....

(04) (A) (i) State the meaning of below words.

a. Population

.....  
.....

b. Pyramid of number

.....  
.....

(ii) Mention the biome which shows following adaptations

a. Seed germination occurring only after a hot fire.

.....

b. Bearing needle like leaves and conical shape trees.

.....

(iii) a. Write 2 examples for bio diversity hot spots

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.....  
.....

b. What is meant by "extinct"

.....  
.....

c. Name 2 extinct animals.

.....  
.....

(iv) a. State examples for a plant species endemic to Sri Lanka and animal species endemic to Sri Lanka.

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.....  
.....

b. Write 05 most important services provided by bio diversity in maintaining critical environmental functions.

.....  
.....  
.....  
.....  
.....

(v) a. State 2 contribution factors for the ozone layer depletion.

.....  
.....

b. What is the International treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for deletion.

.....

(B) (i) What are know as prions

.....  
.....

(ii) What are the conditions that should be maintained in hot - air sterilization.

.....  
.....

(iii) State 2 characteristics of pathogenic micro-organisms.

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.....  
.....  
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.....  
.....

(iv) a. Name the pathogens that cause given diseases.

\* Tetanus - .....

\* Leptospirosis - .....

.....  
.....

b. Name a viral disease that uses an inactivated vaccine

.....

(v) Write an instance where mineralization helps plants.

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.....  
.....

(iv) Name a species of fungus which cause food poisoning

.....

(C) (i) a. Mention 2 species that are commonly used in freshwater ornamental fish culture in Sri Lanka.

.....  
.....

b. Name 2 common diseases of fresh water ornamental fish species whose causing agent is bacteria

.....  
.....  
.....

(ii) State the 3 basic principles of food preservation.

.....  
.....  
.....

(iii) Name 2 measures to minimize post - harvest losses in domestic food processing.

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.....  
.....

(iv) Biological knowledge is used to control dengue vectors, but there are limitations in that control. What are those limitations.

.....  
.....

(v) Name the parasite of filaria.

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.....

(40 x 2.5)

Essay

**Answer 4 questions only.**

- (01) Explain the regulation mechanism of enzymic activity in cells
- (02) a. Describe the structure of stomata in dicot leaf  
b. Explain the process of stomatal transpiration.
- (03) Describe the structure and function of human vertebral column.
- (04) a. Explain the principles and main steps in purification of industrial waste water  
b. Explain the sliding filament theory
- (05) a. Explain the response of plants for cold stress  
b. Briefly describe the mutations due to alterations in chromosome number.
- (06) Write short notes on the following.
- Conservation
  - Hearing
  - Importance of tissue culture technique