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Provincial Department of Education - Sabaragamuwa

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BIOLOGY II

09

E

II

## Part A – Structured Essay

Answer all questions

1. (A)

I. What is the nature of the first evolved organism on earth?

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II. Name three problems which occur due to over exploitation of natural resources.

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.....

III. Explain the following characteristics of organisms.

a) Adaptation : .....

.....

b) Development ; .....

.....

c) reproduction : .....

.....

IV. Write the hierarchicl levels of organization of living things in order.

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V. State the answers from the organism *Methanococcus*

a) Name the cell wall composition .....

b) State the number of types of RNA polymerase.....

c) State the nature of membrane lipids .....

VI. Why is kingdom Protista considered as a polyphyletic group?

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(B)

I. The following diagram shows an asexual reproductive structure of a fungi phylum. For which phylum of fungi, that structure is a characteristic feature?



II. What is the asexual reproductive structure which is produced by the above mentioned phylum?

III. The followings are structures that can be seen some phyla of kingdom Animalia.

- a) Tentacles   b) Clitellum   c) Cilia   d) Setae   e) Excretory pores in body surface

From the above, name the structures that can be seen in the following animals.

i. Earth worm : .....

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ii. Planaria : .....

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iii. Hook worm : .....

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iv. Squid : .....

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IV. Name adaptations of birds for flying.

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V. What is the major difference of scales in between chondrichthyes and osteichthyes.

(C

I. Name a phylum which belongs to evolutionary advanced non vascular plants and state genus name of a tree that belongs to the mentioned phylum.

II. Chlorophyte algae lack key traits of land plants. State those traits

III. Why doesn't the sperms of seeded plants need motility?

IV. Answer the questions regarding shoe flower.

a) Number of flower parts:.....

b) Number of openings in pollen grains : .....

V. The followings show some characteristic features of plants belong to kingdom Plantae. Name the plants in which those characteristics are seen.

a) Name a plant that belong to the phylum in which the leaf blade of the compound leaves are feathery.

b) Bearing strobili.

c) Gymnosperms which have vessels in xylem.

d) Monocot plant in which seeds develop inside the chambers.

(02) (A)

I. State four basic functions of connective tissues in animals.

II. What is the element that cause chlorosis in young leaves?

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.....

III. state two environmental stresses that affect for closing of stomata during day time.

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IV. In the experiment of finding water potential in raw potato strips, state the steps that you are going to follow in order.

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(B)

I. what are vitamins?

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II. state the vitamin that cause the following deficiency symptoms.

a) Beriberi .....

b) Birth defects.....

III. a) state three reason to consider lungs and efficient respiratory surface.

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.....

.....

b) state the vital capacity in men and women.

Women – .....

men – .....

IV. what is the normal value of each of the followings in healthy adult person.

a) Heart beats per minutes.....

b) Normal blood glucose level.....

c) Tidal volume .....

V. Name an animal phylum in which the following respiratory pigments are found.

a) Haemoerythrin – .....

b) Haemocyanin – .....

(C)

I. Name the part of the autonomic nervous system that affect for the following activities.

a) Inhibits emptying of bladder.....

b) stimulate activity of pancreas.....

c) Accelerates heart beat .....

II. Name the two afferent components of peripheral nervous system.

.....

III. Name the factors that affect for maintaining the resting membrane potential of a neuron.

.....

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.....

IV. Name the three phases of action potential.

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(03) (A)

I. Give two facts that describe how the following secretions protect the epithelium of skin and mucous membranes.

Tear.....

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Mucus – .....

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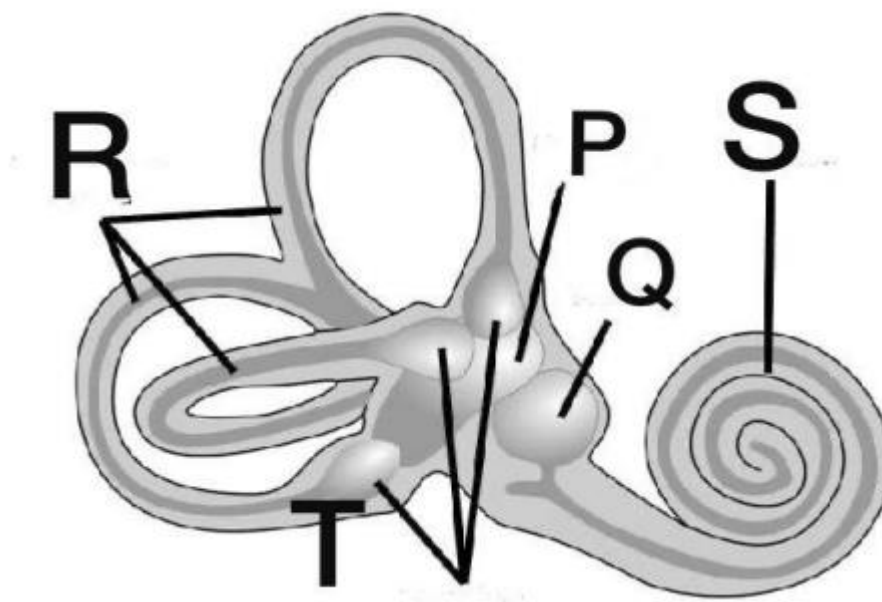
II. Name the largest and more potent phagocytic cell in human body.

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III. Name three instances in which antibodies are given passively for artificially acquired passive immunity.

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IV. a) Name the P,Q,R and S parts of the following diagrams.



b) Name the structures in the above diagram that is important for the following tasks.

i) perceive position with respect to gravity.....

ii) detect angular movements.....

V. In which lobe of the cerebrum, hearing area is located?

.....

(B)

I. Name a type of sense that is identified by the following sensory receptors.

a) Ruffini corpuscles – .....

b) Rods – .....

c) Merkel discs – .....

d) Specific hair cells in the organ of corti. ....

II. Name two hormones that are secreted from the posterior pituitary.....

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.....

III. Name two hormones produced in the adrenal medulla that affect for increasing the heart beat and the blood pressure.

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.....

IV. Name a disease, that is an endocrine disorder as well as an autoimmune disease.

.....

V. Name four heat gain mechanisms that is important to increase temperature.

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.....

(C)

I. State three importance of asexual reproduction.

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II. Name the cell type that present in connective tissue near to seminiferous tubule and name a hormone that secrete from those cells

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.....

III. What is menopause?

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IV. State the way of controlling the birth from the following birth control method.

a) Condoms .....

b) IUD ( Loop) .....  
.....

V. Name three method that are used to identify birth disorders during pregnancy.

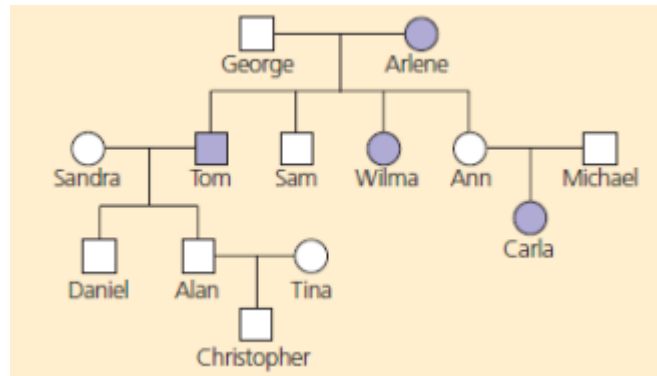
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(04) (A)

I. Find out whether the reason for dimples on cheek is due to dominant allele or recessive allele.

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II. The following pedigree chart shows the inheritance of bio chemical disorder called alkaptonu. Darken symbols show the affected ones. In accordance with the following pedigree chart, find out the phenotypes of George, Sam ann and Cristopher. (Consider “A” as the dominant allele and “a” as the recessive allele. The reason for the disease is homozygous state of the recessive allele.)



a) George — .....

b) Ann - .....

c) Cristopher - .....

d) Sam —.....

III. In a population, the genetic disorder, phenyl alkaptonuria occur at one time per 1000 births. If the reason for the disorder is a recessive allele, find out the frequency of recessive allele

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IV. What is the dominant allele frequency in that population.

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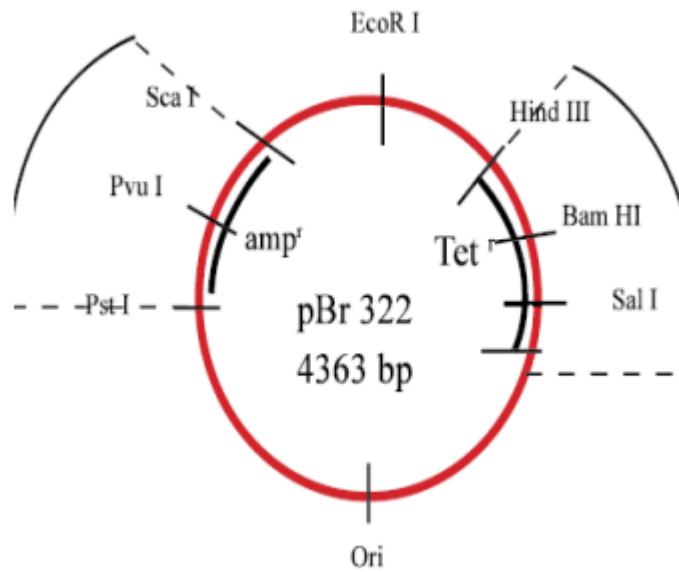
V. What is the frequency of the heterozygotes in the population.

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(B)

I. Answer the questions regarding the following restriction map of the plasmid.



- a) restriction enzyme that isolate *E.coli* - .....
- b) Antibiotic resistant gene – .....
- c) Number of base pairs - .....

II. How DNA sequencing is important in biology?

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.....  
.....

III. Name two specially DNA sequences that can be seen in YAC vector

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IV. What is meant by protein trafficking

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V. Name the four levels of the architecture of eukaryotic chromosomes.

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(C)

I. Name the ecosystems of Sri Lanka in which the following plants are found,

a) Gal veralu -.....

b) Hal -.....

c) Veera -.....

d) Heerassa -.....

e) Bulu -.....

f) Pangirimana-.....

II. What is mean by in situ conservation?

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III. What is a biome?

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IV. What are the two factors that decide the type of the biome in a desired area

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V. What are the influences of global warming and climatic change.

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## **Part B**

### **Essay**

- (01) Describe the chemical nature and functions of lipids
- (02)   a) What are plant growth regulators?  
      b) Describe the functions of plant growth regulators.
- (03)   a) Describe the relationship between the metabolic producers and excretory products  
      b) Explain the diversity of excretory structures of animals.
- (04)   a) Describe the structure of human heart  
      b) Discuss the consequences of blockage of coronary arteries.
- (05)   a) While describing the functions of major enzymes and other proteins that are important for replication of prokaryotic DNA, explain the mechanism of DNA replication
- (06) Write short notes
- a) incomplete dominance.
- b) structure of chloroplasts.
- c) effects of climate change