

Part A - Structured Essay
Answer all questions on this paper itself.
(Each question carries 10 marks.)

1. (A) (i) What is the most abundant group of biological molecules on earth?

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(ii) Name the nitrogen containing structural polymer found in exoskeleton of some animals.

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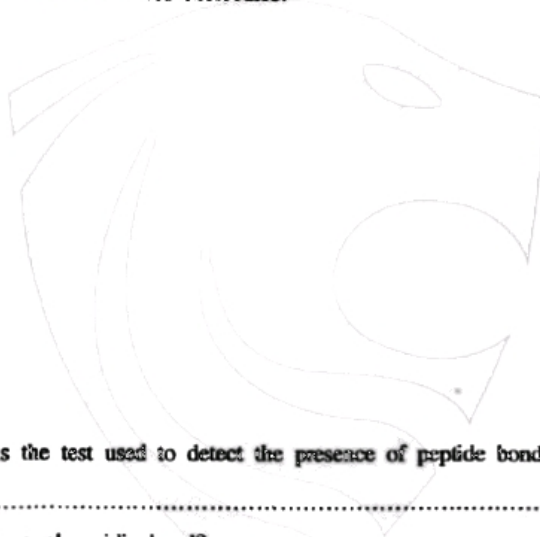
(iii) (a) Name a reducing disaccharide.

.....

(b) Name a non-reducing disaccharide.

.....

(iv) (a) In the space given below, show using suitable diagrams, how a peptide bond is formed between two amino acid molecules.



(b) What is the test used to detect the presence of peptide bonds in proteins?

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(v) (a) What is a glycosidic bond?

.....

(b) Name two biological compounds containing glycosidic bonds.

.....

(vi) What are the three major chemical constituents of a nucleotide?

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(vii) Name three nucleotides and state one function of each of them.

Nucleotide

Function

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- (B) (i) State benefits of a systematic classification in the study of organisms.

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- (ii) What are the molecular level criteria used in the classification of organisms?

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- (iii) Arrange the major taxa used in the classification of organisms in the order of increasing number of common characteristics.

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- (C) (i) State the common characteristics of viruses.

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- (ii) Some characteristics of phylum Echinodermata are given in column 1 of the following table. Indicate the presence of these characters in each of the animals listed in columns 2-5 using a (✓) mark in the appropriate cage.

Character	Sand dollar	Sea cucumber	Sea urchin	Brittle star
Flat body				
Presence of arms				
Mouth and anus at opposite sides/ends of the body				

2. (A) (i) State the types of asexual reproduction seen in the following organisms.

- (a) *Paramecium* :
- (b) *Plasmodium* :
- (c) *Hydra* :
- (d) *Spirogyra* :
- (e) *Agaricus* :

(ii) State the advantages of asexual reproduction.

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(iii) Write in the correct column, the diploid and haploid cells seen during spermatogenesis of man.

Diploid

Haploid

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.....

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(iv) Name the hormones involved in spermatogenesis of man and state the endocrine glands that secrete each of them.

Hormone

Gland

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(B) (i) What is menopause?

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(ii) State the age range of normal healthy women at which menopause occurs.

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(iii) What is the reason for menopause?

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(iv) What is the disorder of the skeletal system associated with menopause?

.....

(C) (i) Name three vegetative propagules of plants widely used in agriculture for asexual propagation. Give one crop as an example for each propagule.

Propagule

Name of crop

.....

.....

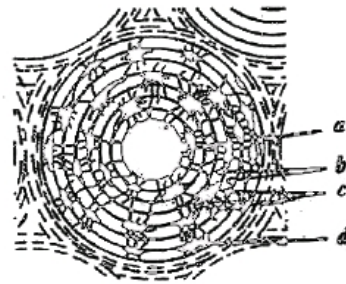
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(ii) (a) What is meant by totipotency in plants?

(b) State two uses of tissue culture other than micro-propagation of plants.

(iii) State major features seen in the life cycle of angiosperms which can be considered as evolutionary adaptations for land habitat.

3. (A) Questions A(i) – A(iv) are based on the diagram given below.



(i) What is the structure shown in the above diagram?

(ii) Name the structures labelled as a – d in the above diagram.

a b
c d

(iii) Name the two main types of cells found in the structure shown in the above diagram and state the main function of each of them.

Type of cell

Main function

(iv) What are the structures found in a?

(B) (i) What is known as a fontanelle in humans?

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(ii) Name the main fontanelles found in humans.

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.....

(iii) State the main functions of fontanelles.

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(iv) What are known as sinuses in the cranium?

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(v) Name the cranial bones that do not contain sinuses.

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(C) (i) Give three examples for chlorinated hydrocarbon pesticides.

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(ii) State the impacts of chlorinated hydrocarbon pesticides.

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(iii) What are the different types of national reserves found in Sri Lanka?

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4. (A) (i) What features of microorganisms are beneficial in using them in microbial industries?

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(ii) Give one example each for microbial industries which use the following.

- (a) Microbial cells :
- (b) Microbial metabolic end-products :
- (c) Microbial processes :
- (d) Genetically modified microorganisms :

(iii) State three types of microbial associations of soil microorganisms and roots of higher plants.

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(iv) State three specific roles of soil microorganisms with reference to promoting plant growth.

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(v) Name the three major steps in water treatment in an urban water treatment plant and state one function of each step.

Step	Function
.....	
.....	
.....	

(B) (i) What is meant by the following terms used in protein synthesis?

- (a) Transcription :
-
- (b) Translation :
-

(ii) What is the role of r-RNA in protein synthesis?

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(iii) (a) What is a codon?

.....

(b) How many codons are present in the genetic code?

.....

(iv) Which of the molecules involved in protein synthesis contain each of the following?

(a) Anticodon :

(b) Codon :

(v) Name the two major enzymes used in recombinant DNA technology and state the main function of each of them.

Enzyme

Main function

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(vi) What are the two events unique to meiosis that contribute to the production of genetic variation in daughter cells?

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(vii) At what stage of cell division does each of the following occur?

(a) Replication of chromosomes

(b) Division of centromere

(c) Arrangement of chromosomes on the equatorial plate

(d) Re-formation of nuclear membrane

(C) (i) What is the gas released in light reactions in photosynthesis?

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(ii) What is the source of this gas?

.....

(iii) State the two major factors that affect photosynthesis.

.....

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(iv) Name the two products of light reactions that are used for the synthesis of carbohydrates in dark reactions of photosynthesis.

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(v) (a) What is the function of RuBP carboxylase enzyme in photosynthesis?

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(b) Where is this enzyme located?

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සියලු ම හිමිකම් ඇවිරිණි/முழுப் பதிப்புரிமையுடையது/All Rights Reserved]

ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව
இலங்கைப் பரீட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம் இலங்கைப் பரීட்சைத் திணைக்களம்
Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka
ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව
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අධ්‍යයන අභ්‍යන්තර පාඨ (පෙට් අවුල්) විභාග, 2013 ආශ්වාච්ඡා
கல்விப் பரீட்சைத் துறைப் பரீட்சை (பேய் அட்ட) விவரம், 2013 ஆவது
General Certificate of Education (Adv. Level) Examination, August 2013

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உயிரியல் II
Biology II

09 E III

Part B - Essay

Instructions:

- * Answer four questions only.
- Give clear labelled diagrams where necessary.
- (Each question carries 15 marks.)

5. (a) Describe the fine structure of a mitochondrion using a fully labelled diagram.
(b) Explain the role of mitochondria in cellular respiration.
6. (a) Describe the structure of human skin.
(b) Explain the role of human skin in homeostasis.
7. (a) What are the major materials generally transported in vascular plants?
(b) State the sources of those materials.
(c) Briefly describe the processes and mechanisms involved in the transport of those materials in vascular plants.
8. Describe the different non-Mendelian patterns of inheritance with suitable examples.
9. (a) Describe the nature of normal microbiota of the human body.
(b) Explain the properties of pathogenic bacteria that contribute to their disease causing ability.
10. Write short notes on the following.
 - (a) DNA fingerprinting and its applications
 - (b) Implantation of human embryo
 - (c) Modes of heterotrophic nutrition
