Provincial Department of Education, Northern Province
மாகாணக் கல்வித் திணைக்களம், வடக்கு மாகாணம்.

General Certificate of Education (Adv. Level) First Term Evaluation - May 2024.
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர) முதலாம் தவணை மதிப்பீடு – வைகாசி 2024.

Grade 12 (2025)	Biology I உயிரியல் I	09 | E | I	*Three hours* *மூன்று மணித்தியாலயங்கள்*

* *Additional reading time 10 minutes.*

Instructions:

* Answer all questions.
* Write your ***index number*** in the answer sheet provided.
* In each of the question from **1** to **30**, pick one of the alternatives from (1), (2). (3), (4), (5) which is ***correct*** or ***most appropriate*** and ***mark your response on the answer sheet with a cross (X)*** on the number of the correct option. Use blue or black ink pen for your responses.

1. To be considered as an application of biological knowledge contribute to increase food production with the increase in human population
   1) Understanig the diversity of plants.
   2) Understaning the human body and its function.
   3) Production of disease resistant varieties of life stock.
   4) Seek cure measures for cancer.
   5) Production of modern agricultural equipments.

2. Polymer found as a storage component.
   1) Lactose 2) Sucrose 3) Inulin
   4) Pepsin 5) Insulin

3. Correct regarding the method used by a student to observe epdermal cell of *Tradescantia* under the compound light microscope.

   A – Move the body tube to bring the objective lens into position.
   B – Compltetely opens the diaphrgm.
   C – Place the slide on the stage of the microscope.
   D – Obtain a clear immage using the fine focus knob.
   E – Adjust the mirror to give illumination to the condensor lens.

   1) E, C, B, A, D
   2) A, E, C, B, D
   3) C, E, B, A, D
   4) E, B, C, A, D
   5) B, E, C, A, D

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4. There are 10,000 purines in a DNA molecule of a gene found in a chromosome. If there are 20% of adenine, the number of guanine found in that gene,
   1) 3000
   2) 2000
   3) 6000
   4) 4000
   5) 9000

5. Correct regarding centriole
   1) It is a non mebrane bounded subcellular component.
   2) Each centriole is composed of nine microtubules arranged(9+0) in a ring.
   3) It is made up of filaments of tubulin protein sub units.
   4) It contributes to form spindles in all organisms during cell division.
   5) A pair of centrioles, which arranged parellel to each other, are located near to nucelus.

6. Correct regarding mitochondrium,
   1) It is found in all Eukaryotic cells.
   2) It is found in all cells which carryout aerobic respiration.
   3) Its inner and outer membranes are smooth.
   4) Its matrix consists of circular chromosome and 70s ribosomes.
   5) It participates in photorespiration.

7. Correct regarding the proteins found in plasma membrane
   1) Most of the integral proteins penetrate part of the way into the membrane.
   2) Peripheral proteins are only loosely bound to the inner surface of the membrane.
   3) Some proteins in the plasma membrane act as receptor molecules for interacting with specific biochemicals.
   4) Some proteins in the plasma membrane which would be released into the digestive tract and act as enzymes.
   5) Ions and certain non-polar molecules can pass through the pores found in the transmembrane proteins.

8. Correct regarding 70s, 80s ribosomes.
   1) Both have the same size.
   2) Both can be found in the cytoplasm of organisms.
   3) Both are made up of two subunits of same dimension.
   4) 70s ribosome are found only in prokaryotic cells.
   5) Bound ribosomes are only attached to the membrane surface of the endoplasmic reticulum.

9. Correct statement regarding anchor junctions
   1) They found in the animal embryo.
   2) They form strong binding by intermediate filaments.
   3) They connect the plasma membranes of adjacent cells tightly.
   4) They mechanically attache the cytoskletons of adjacent plant cells.
   5) They allow exchange of materials between adjacent cells.

10. Mitotic phase that forms chromatin.
   1) Prophase 2) Prometaphase 3) Metaphase
   4) Anaphase 5) Telophase

11. Movement of sister chromatids of each chromosome towards oposite poles by shortening of microtubules, takesplace in,

1) metaphase I. 2) anaphase II. 3) anaphase I

4) metaphase II 5) prophase.

12. Significane of meiosis.

1) Maintains the constant number of chromosomes.
2) Asexual reproduction.
3) Maintains the genetic stability.
4) Growth and deveolpment.
5) Regeneration of cells.

13. Correct statement regarding enzymes.

1) The presence of some enzymes alter the nature of end products of a reaction.
2) Some competitive inhibitors bind to the active site of the enzymes.
3) Active site of an enzymes are made up of many amino acids.
4) To reverse from the competitive inhibitors, substrate concentration will be incrased.
5) Most of the competitive inhibitors are irreversible.

14. Correct regarding photorespiration

1) Enzymes do not participate in photorespiration .
2) In photorespiration, CO_2 and O_2 are competitive substrates.
3) Photorespiration occurs efficiently in C4 Plants.
4) Photorespiration takesplace only in mitichonria.
5) Photorespiration is a beneficial process to plants.

15. In which of the lights, chlorophyll **a** is more effective according to the action spetrum?

1. Red and violet 2. Blue and green 3. Red and blue
4. Violet and blue 5. Yeollw and red

16. Some statements regarding biochemical evolution are given below.
a – Biotic synthesis of small organic molecules from inorganic molecules.
b – Organic macro molecules were packed into membranes, to produce protocells.
c – Nucleic acids were surounded by membrane.
Which of the above statements is/ are correct?

1) a, b and c 2) Only a and b 3) Only b and c
4) Only b 5) Only c

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17. Cosider the following statements regarding evolution.
P – Colonization of land by animals.
Q – Formation of tetrapods.
R – Evolution of sponges..
S – Emergence of large trees.
Sequence of diversification of Eukaryotes.
1) R, S, P, Q 2) Q, S, R, P 3) R, Q, S, P
4) S, Q, P, R 5) R, P, S, Q

18. Which one of the following animals / animal groups first colonized the land?
1) Sea anemone 2) Spider 3) Tetrapod
4) Sponge 5) Mollusks

19. Which of the following hierarchy of taxa was introduced by Ernest Heackel?
1) Species 2) Genus 3) Phylum 4) Class 5) Order

20. Which of the following hierarchy of taxa consists of large number of common chaateristics?
1) *sapiens* 2) *Homo* 3) Chordata 4) Mammalia 5) Eukarya

21. All the members of Domain Bacteria
1) reproduce by binary fission.
2) are uniceluular.
3) contain cell wall.
4) contain flagella.
5) have the ability to fix nitrogen.

22. Correct regarding Protists.
1) Uniceullar forms have marine habitat.
2) Uniceullar forms contain pellicle.
3) *Sargassum* is a greenish coloured brown algae.
4) *Euglena* is an autotroph.
5) All muticelluar forms have marine habitat.

23. *Paramecium* differs from other Protists because of
1) unicellularity.
2) containing food vaculoes.
3) containing pellicle.
4) containing two types of nucleus.
5) habitat is fresh water.

24. Characteristics such as marine habitat, cellulose in cell wall and chlorophyll **c** found in
1) Diatom 2) *Sargassum* 3) *Gelidium* 4) *Ulva* 5). *Euglena*

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- **For each of the questions 25 to 30, one or more of the responses is/are correct. Decide which response/responses is/are correct and then select the correct number.**

If only (A), (B) and (D) are correct……(1)

If only (A), (C) and (D) are correct …….....(2)

If only (A) and (B) are correct ……...(3)

If only (C) and (D) are correct……(4)

If any other response or combination of responses is correct…….(5)

Directions summarized				
1	**2**	**3**	**4**	**5**
(A), (B), (D) Correct.	**(A), (C), (D)** Correct.	**(A), (B)** Correct.	**(C), (D)** Correct.	**Any other responses or combination of responses** Correct.

25. Which of the following organelle/ organelles is/are involved with detoxification?

A. Lysosomes

B. Rough ER

C. Smooth ER

D. Peroxisome

E. Glyoxysome.

26. Correct statement/ statements regarding flagellum and cilia

A. Flagella are often organized in rows.

B. Both contain stuructures without micro tubules in its center to bound the cells.

C. Cilia are more numerous than flagella on the cell surface.

D. Both are essential for fertilization process.

E. Flagellua are short cellular projection.

27. Which of the following event/ events is/are takingplace in the thylakoid membranes of chloroplast?

A. Synthesis of ATP

B. Production of phosphoglycolate.

C. Synthesis of NADPH

D. Releasing of O_2

E. Utilization of CO_2

28. Correct statement / statements regarding C3 plants.

A. First stable product of the CO_2 fixation is a carbohyrate such as 3-PGA.

B. CO_2 fixation occurs in both mesophyll cells and bundle sheath cells.

C. CO_2 is fixed by the enzyme RuBISCO.

D. A 5C sugar which is RuBP acts as CO_2 acceptor.

E. Kranz anatomy is found in its leaves.

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29. Basis/ bases for present system of classification
    A. Molecular structure of cellular components.
    B. Morphological charateristics.
    C. Base sequences of rRNA.
    D. Amino acid sequence of common proteins.
    E. Molecular charateristics.

30. Viruses
    A) are considered as an artificial group.
    B) donot have cellular organization.
    C) are belong to prokaryotes.
    D) are polyphyletic group.
    E) are belong to Domain Archea.

General Certificate of Education (Adv. Level) First Term Evaluation - May 2024
கல்விப் பொதுத் தராதரப் பத்திர (உயர் தர) முதலாம் தவணை மதிப்பீடு – வைகாசி 2024.

Grade 12 (2025)	Biology II உயிரியல் II	09	E	II	Index No:……..……

- ***Use additional reading time to go through the question paper, select the questions you will answer*** and decide which of them you will prioritise.

Instructions:

- This question paper consists of **07** questions in **09**pages.
- This question paper - **Part II** comprises Part **A** and **B**. The time allotted for **both parts and Part I** is **three hours**. (Additional reading time is **10 minutes**)

Part A – Structured essay (Pages 2 – 08)

- Answer **all three** questions on this paper itself.
- Write your answers in the space provided for each question. Note that the space provided is sufficient for your answers and extensive answers are not expected.

Part B – Essay (Page 09)

- Answer **two** questions only. Use the papers supplied for this purpose. At the end of the time allotted for this paper, before handing over to the supervisor tie the two parts together so that **Part A is on the top of Part B**.
- You are permitted to take only **Part B** of the question paper from the examination hall**.**

✓ For examiners' use only

Part	Question. No	Marks
A	1	
	2	
	3	
B	4	
	5	
	6	
Total		

Total Marks

In Numbers	
In Letters	

Code Numbers

Marking Examiner 1	
Marking Examiner 2	
Marks Checked by	
Supervised by	

[see page 2

Part II A – Structured essay

❖ **Answer all questions in this paper itself.**

(Each question carries 100 marks)

Do not write in this column.

1. A. i. What is natural resource?

……

……

ii. What are the environmental problems arise due to over exploitation of natural resources?

……

……

……

iii. Name the organism which can be either an indiviual as well as cell in the heirarchial levels of organization.

……

iv. Which pysical properties of water help to moderate temperature?

……

……

v. Which one ot the pysical properties of water in polar regions help to organisms in aquatic bodies can suvive during winter?

……

B

i. Excess consumption of which fats contribute to atherosclerosis?

……

……

ii. a. In between which, the interactions involved in the formation of tertiary structure of protein?

……

b. Which interactions are involved in the formation of a tertiary structure of protein?

……

……

iii. Give **one** function of each of the following proteins.

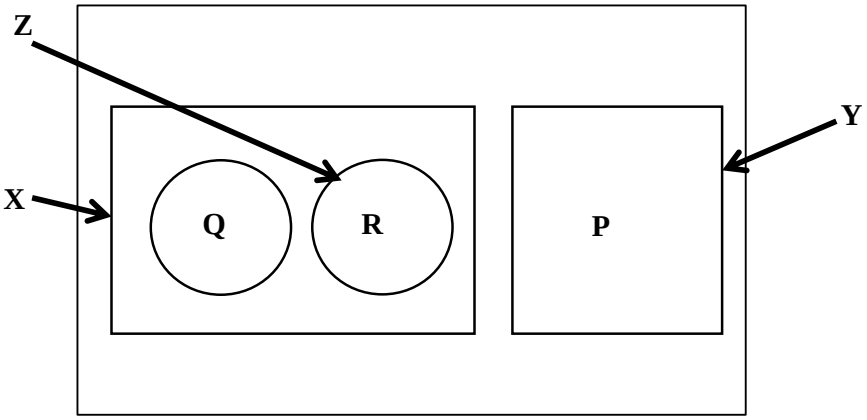
a. Serum albumin ……

b. Immunoglobulin ……

[see page 3

Do not write in this column.

iv.



a. P, Q and R are carbohydrates. Q gives brick red precipitate when treated with Benedict's solution and R and P do not give brick red precipitate.

Identify the following carbohydrates.

X ……...

Y ……...

Z ……...

b. Give an example for each of the followings.

P ……...

Q ……...

R ……...

C.

i. Give the cell theory.

……

……

……

iii. Magnification and resolving power are important parameters which can be seen in a microscope.

a. What is magnification?

……

……

b. What is resolving power?

……..

……

[see page 4

b. Dimension of the image is 0.8mm. If the magnification is X40 (times), then what is the actual dimension of that object?

Do not write in this column.

……

iv. a. In which basis, the Cis face and Trans face of the Golgi apparatus can be identified?

……..

……..

b. What are the functions of Golgi apparatus?

……

……

……

……

iv. Compare the flagella of Prokaryotes and Eukaryotes.

……

……

……

……

100

2)

A. i. Which extra cellular component limits cell growth?

.....

ii. Name the meiotic phase for each of the following events.

a. Breakdown of nuclear envelope: .....

b. Chromosomes move towards opposite poles where the sister chromatids remain attached to the centromere: .....

iii. a. What are galls in plants?

……

……

b. Give **two** plant growth regulators responsible for the formation of galls in plants.

……

iv. a. What is oxidative phosphorylation?

……

……

[see page 5

b. What is the average value of the energy released during hydrolysis of ATP?

……

Do not write in this column.

v. What is the role of cooperativity in allosteric regulation of enzymes?

……

……

B. i. What is absorption spectrum?

……

……

ii. What is photo system?

……

……

iii. What is the source of electrons which neutralize the electrons that could be excited from photosystem I and II?

photosystem I ……

photosystem II ……...

iv. Briefly Indicate the cyclic electron flow of the light reactions of photosynthesis.

……

……

……

v. a. Indicate the name of the apparatus that could be used to measure the rate of photosynthesis in the laboratory.

……

b. Name a plant that could be used in the above apparatus mentioned in v a).

……..

c. Indicate **two** main factors that affect the photosynthesis.

……

……

C. i. Indicate the main steps of the Calvin cycle.

……

……

……

[see page 6

ii. What is Kranz anatomy?

.....

.....

iii. Indicate the role of enzyme RuBISCO in the photosynthesis of C3 plants.

.....

.....

iv. In which cell of C4 path way, pyruvate molecule is produced?

.....

v. Give **four** significances of C4 path way.

.....

.....

.....

.....

Do not write in this column.

100

3. **A)** i. What is the age of earth?

.....

ii. Name **two** gases which could be found in the early atmosphere that contains hydrogen as one of the components.

.....

iii. Name the era, that the present-day animal phyla appeared.

.....

iv. Indicate **two** characteristics which were showed by the proto cells.

.....

.....

v. Which would be considered as the ancestor/ habit for the tetrapods?

.....

vi. Indicate the sequential order of geological eons of evolution.

.....

.....

vii. What are the principles used by Lamarck in his hypothesis?

.....

.....

[see page 7

viii. What are the knowledges / hypotheses are integrated in Neo Darwinism?

……

……

……

Do not write in this column.

B) i. a) Which kingdoms were newly introduced by Robert Whittaker?

……

b) Which criteria were used by Robert Whittaker in his classification of Kingdoms?

……

……

……

ii. What is taxon?

……

iii. Define the morphological species concept.

……

……

iv. Indicate the international codes for binomial nomenclature.

……

……

……

……

……

v. a) Name the Kingdom which included in Domain Archaea.

……

b) What is the size range of Domain Archaea?

……

c) Indicate a habitat of Archaea other than extreme and more moderate environments.

……

[see page 8

Do not write in this column.

C) i. State the common structural features that can be seen in both *Amoeba*, *Euglena* and a structural feature that can be seen only in each of them.

In both …….

……

In *Amoeba* only ……

In *Euglena* only ……

ii. Indicate the name of a Protist for the following description.

a) Posses root like hold fast and leaf like blade ……

b) Storage food is chrysolaminarin ……

iii. Name a protist that could live only in fresh water.

……

iv. Complete the following sentence with the suitable terms.

"Fossils of the oldest known protists similar to small ……

were dated as …….. years ago."

v. Give one example for each, **nitrogen fixing** bacteria and cyanobacteria.

Bacteria ……..

Cyanobacteria ……

100

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Grade 12 (2025)	09	E	II	Biology II உயிரியல் II

Part B – Essay

- *Answer **two** questions only.*
- *Give clear labelled diagrams where necessary.*

*(Each question carries **150** marks).*

4. a. Briefly describe the formation of nucleic acids.

   b. Briefly describe the differences between the Domains regarding genetic composition and protein synthesis.

5. Describe the cell division process of Eukaryotic cells to maintain the genetic stability.

6. Write short notes on the followings:

   a. Contribution of water functioning as habitat.

   b. Extra cellular matrix of animal cell.

   c. TCA cycle.

* * *

Education கல்வி අධ්‍යාපන

எங்கள் குறிக்கோள்

எண்ணிம உலகத்தில் மாணவர்களிற்கென சிறந்ததொரு கற்றல் கட்டமைப்பை உருவாக்குதல்.

அனைத்தும் டிஜிட்டல் மயப்படுத்தப்பட்ட இந்த காலத்தில் பல்வேறு துறைகளும் கால ஓட்டத்துடன் இணைந்து டிஜிட்டல் தளத்தில் பல்கிப்பெருகி வருகின்றன. அந்த வகையில் கல்வித்துறையும் இதற்கு விதிவிலக்கல்ல. இணையவழி கல்வியின் மூலம் கலவித்துறை புதியதொரு பரிமாணத்தை எட்டியுள்ளது. குறிப்பாக கொரோனா பேரிடர் காலத்தில் நாடே முடக்கப்பட்டிருந்தது. இதனால் மாணவர்களிற்கும் பாடசாலை, கல்வி நிறுவனங்களிற்கு இடையிலான தொடர்பு துண்டிக்கப்பட்டது. அந்த இக்கட்டான சூழ்நிலையில் இணையவழி வகுப்புகள் மாணவர்களிற்கு வரப்பிரசாதமாக அமைந்தது என்பதே உண்மை.

இன்று தொழில்நுட்பம் மாணவர்களை தவறான பாதைக்கு இட்டு செல்வதாக ஓர் எண்ண ஓட்டம் மக்கள் மத்தியில் உள்ளது. தொழில்நுட்பம் என்பது ஒரு கருவி மட்டுமே அதை எவ்வாறு பயன்படுத்துகிறோம் என்பதில் அதன் ஆக்க மற்றும் அழிவு விளைவுகள் தீர்மானிக்கப்படுகிறது. உளியை கொண்டு சிலையை செதுக்க நினைத்தால் அவன் நிச்சயம் சிற்பி ஆகலாம். இங்கு பிரச்சினையாக காணப்படுவது மாணவர்களை வழிப்படுத்த தொழில்நுட்ப உலகில் ஓர் முறையான கட்டமைப்பு இல்லாமையே. அதை உருவாக்குவதே எங்கள் நோக்கம். அதை நோக்கியே எங்கள் பயணம் அமையும்.

எமது இணையத்தினூடக ஊடாக உங்களிற்கு தேவையான பரீட்சை வினாத்தாள்களை இலகுவான முறையில் தரவிறக்கம் செய்து கொள்ளமுடியும்.

kalvi.lk

கல்வி சார் செய்திகளை உடனுக்குடன் அறிந்து கொள்ள எமது சமூக ஊடக தளங்களின் ஊடாக உடனுக்குடன் அறிந்து கொள்ள முடியும்.

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