

முழுப் பதிப்புரிமையுடையது / All Rights Reserved ]

MORA E-TAMILS 2019 | Tamil Students, Faculty of Engineering, University of Moratuwa | MORA E-TAMILS 2019 | Tamil Students, Faculty of Engineering, University of Moratuwa  
 மொறட்டுவை பல்கலைக்கழக பொறியியற் பீட தமிழ் மாணவர்கள்  
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கல்விப் பொதுத் தராதரப் பத்திர(உயர் தர) முன்னோடிப் பரீட்சை - 2017  
 General Certificate of Education (Adv.Level) Pilot Examination - 2017

உயிரியல் I  
 Biology I

09 E I

இரண்டு மணித்தியாலம்  
 Two hours

**Instructions:**

- \* Answer all questions.
- \* Write your Index Number in the space provided in the answer sheet.
- \* Instructions are given on the back of the answer sheet. Follow those carefully.
- \* In each of the questions 1 to 50, 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 (×) on the number of the correct option in accordance with the instructions given on the back of the answer sheet.

1. Which of the following **does not** contain Nitrogen?
  1. RNA
  2. PGA
  3. ATP
  4. IAA
  5. FAD
2. Which one of the following molecule is not found in the cell membrane of animals?
  1. Proteins
  2. Triglycerides
  3. Phospholipids
  4. Glycolipids
  5. Cholesterol
3. A DNA molecule contains Guanine bases as four times as Adenine bases. What is the percentage of Thymine bases in the DNA molecule?
  1. 10%
  2. 20%
  3. 30%
  4. 60%
  5. 80%
4. Which one of the organelle will produce hormones in the testes and adrenal cortex while detoxifying alcohol in the liver?
  1. Lysosomes
  2. Ribosomes
  3. Smooth endoplasmic reticulum
  4. Rough endoplasmic reticulum
  5. Golgi apparatus

5. Which of the following process reduces molecular oxygen to water?
  1. Photolysis of water
  2. Calvin cycle
  3. Citric acid cycle
  4. Pyruvates converted as Acetyl CoA
  5. Electron transport system
  
6. Which of the following statements regarding the reactions in the Calvin cycle is correct?
  1. These reactions occur in the matrix of mitochondria.
  2. NADH and ATP are formed
  3. Carbon dioxide is released
  4. They are most likely to occur during the day
  5. This occurs only in the presence of oxygen
  
7. Which one of the following classes includes the animals that does not have tentacles?
  1. Scyphozoa
  2. Polychaeta
  3. Insecta
  4. Cephalopoda
  5. Hydrozoa
  
8. Which one of the following special features differentiates Phylum Ciliophora from other phyla in Protista?
  1. Displacement by cilia
  2. Unicellular structure
  3. Absence of cell wall.
  4. Reproduction by binary fission
  5. Regulation of osmosis by contractile vacuole.
  
9. Common characteristic of all fungi is
  1. Asexual reproduction
  2. Saprophytic nutrition
  3. Non motile spores
  4. Septate mycelium
  5. Motile male and female gametes

10. Which one of the following biologists introduced phylum level classification?
1. Aristotle
  2. Carolos Linnaeus
  3. Ernest Haeckel
  4. Robert H. Whittaker
  5. Carl Woese
11. Which of the following hydrolytic reactions **cannot** be carried out by pancreatic enzymes?
- |                       |        |                          |
|-----------------------|--------|--------------------------|
| 1. Maltose            | —————→ | Glucose                  |
| 2. Proteins           | —————→ | Peptides + Amino acids   |
| 3. Small polypeptides | —————→ | Dipeptides + Amino acids |
| 4. DNA                | —————→ | Deoxyribonucleotides     |
| 5. Lipids             | —————→ | Fatty acids + Glycerol   |
12. Which of the following normally contains the highest concentration of oxygen in human?
1. Cells near to the Lungs
  2. Inhaled air
  3. Air in the alveoli
  4. Right Atrium
  5. Left Atrium
13. If birth of a child with blood type A to a mother with blood type B, the father must have with of the following blood type/s?
1. AB only
  2. Either AB or B
  3. Either AB or A
  4. Either AB or O
  5. AB or A or O
14. Which of the following statements regarding human lymphatic system is **incorrect**?
1. Main organ related to this is spleen.
  2. Lymphatic vessels have valves.
  3. Muscle contraction plays an important role in the transport of lymph.
  4. Tissue fluid is formed from the lymph moved out of lymph capillaries.
  5. Microorganisms are destroyed by the action of white blood cells in lymph nodes.

15. Which of the following is **not related** with the opening of stomata?
1. Movement of  $K^+$  ions into guard cells.
  2. Decrease of starch content in guard cells.
  3. Increase of water potential in guard cells than neighbouring cells.
  4. Increase of pressure potential in guard cells.
  5. Decrease of concentration of  $CO_2$  in intercellular air spaces.
16. Which of the following is **incorrect** regarding transpiration?
1. Most important factor that determines the rate of transpiration is the humidity of the atmosphere.
  2. Size of the stomatal pore affects the rate of transpiration more in windy conditions.
  3. Xerophytes usually have a higher rate of transpiration than the mesophytes.
  4. Transpiration can take place through the surface of plants.
  5. Transpiration is needed for the transport of mineral elements to the crowns of tall plants.
17. Which of the following statements regarding physiology of neuron is correct?
1. ATP is essential for the conduction of nerve impulse.
  2. Depolarization does not occur during refractory period.
  3.  $Na^+$  and  $Ca^{2+}$  ions are essential for the generation of action potential.
  4. Resting membrane potential is maintained by the action of  $Na^+$ -  $K^+$  pump on axolemma.
  5. Repolarization phase occurs due to the inflow of  $Na^+$  ions.
18. Which of the following parts of human ear is not related to hearing?
1. Oval window
  2. Tectorial membrane
  3. Malleus
  4. Perilymph of cochlea
  5. Utricle
19. Which of the following pairs of hormones do not act **antagonistically** in the processes mentioned adjacently?
1. Calcitonin, Parathormone - Calcium ion equilibrium
  2. Insulin, Glucagon - Glucose metabolism
  3. Adrenaline, Noradrenaline - Blood pressure
  4. Gastrin, Enterogastrone - Secretion of gastric juice
  5. FSH, Inhibin - Spermatogenesis

20. Which one of the following process does not takes place when body temperature increases than the normal level of man?
1. Stimulate sweat glands
  2. Constriction of shunt vessels
  3. Decrease the rate of lipid oxidation in liver
  4. Increase the secretion of Thyroxin and Adrenaline
  5. Dilation of pheripheral blood vessels of skin
21. Which of the following **is not reabsorbed** from glomerular filtrate of a healthy person?
1. Water
  2. Urea
  3. Glucose
  4. Amino acid
  5. H<sup>+</sup> ions
22. Which of the following skull bones helps to maintain resonance of voice in human?
1. Temporal bone
  2. Sphenoid bone
  3. Mandible
  4. Occipital bone
  5. Zygomatic bone
23. Which of the following is not related with skeletons of animals?
1. Preventing dehydration.
  2. Maintaining homeostasis
  3. Storage
  4. Production of white blood cells
  5. Production of hormones
24. Which of the following bones is **not found** in axial skeleton of human?
1. Atlas
  2. Sternum
  3. Rib
  4. Mandible
  5. Clavicle
25. Which of the following events **does not** take place in relation to hormonal changes occur in menstrual cycle of a woman?
1. GnRH stimulate anterior pituitary to secrete FSH and LH
  2. FSH stimulates secretion of Oestrogen from developing follides.
  3. Oestrogen stimulates the rise of blood LH level
  4. Secretion of LH from anterior pituitary is inhibited by increased level of progesterone in blood
  5. Oestrogen stimulates formation of oxytocin receptors in myometrium.

26. Which one of the following is the correct statement regarding sperm cell?
1. Its production initiates only after puberty
  2. Testosterone initiates spermatogenesis
  3. Its life time is nearly 24 hours
  4. Cortical reaction takes place in ovum by its released of trypsin.
  5. Its physiological maturation takes place in reproductive tract of human female
27. All of the plants producing seeds
1. Produce fruits.
  2. Do fertilization without utilizing external water.
  3. Produce non motile male gametes.
  4. Have xylem vessels and sieve tubes.
  5. Do double fertilization.
28. Which of the following cell types is not produced due to the vascular cambial activity during the secondary growth of dicot plant stem?
1. Cork cells
  2. Fibres
  3. Parenchyma cells
  4. Companion cells
  5. Xylem vessel elements
29. Which of the following plant growth substances is related with the inhibition of apical dominance?
1. Auxin
  2. Gibberellin
  3. Cytokinin
  4. Abscisic acid
  5. Ethylene
30. In pea plant, purple colour flowers are dominant over red colour flowers and elongated pollens are dominant over circular pollens. When a heterozygous plant with purple colour flower and elongated pollens is allowed to self-pollinate, progeny have plants with purple flower and elongated pollen, and plants with red colour flowers and circular pollens. The expected phenotypic ratio of them is
1. 9:7            2. 13:3            3. 3:1            4. 1:1            5. 2:1

31. Which of the following occurs in human due to polygenic inheritance?
1. A, B, O blood group
  2. Down's syndrome
  3. Intelligence
  4. Dimpling
  5. Haemophilia
32. Which of the following is **not** an application of genetically modified organisms?
1. *Thiobacillus ferrooxidans* - Extraction of copper from low grade metal ores
  2. *Escherichia coli* - Hepatitis B antigen
  3. *Bacillus thuringiensis* - Insecticide resistant corn varieties
  4. *Agrobacterium tumefaciens* - Weedicide resistant soya bean varieties
  5. *Ervinia uredovora* - Golden rice
33. Which of the following ecological pyramids can be inverted?
1. Pyramid of numbers in a mangrove
  2. Pyramid of numbers in an ocean
  3. Pyramid of numbers in a well-maintained paddy field
  4. Pyramid of bio mass in a shallow fresh water pond with denser aquatic plants
  5. Pyramid of energy in a sea shore with rocks
34. When considering bio diversity aspects, which one of the following groups have similar organisms?
1. *Caretta caretta*, *Garcinia quaesita*, *Lantana camara*
  2. *Dipterocarpus zeylanicus*, *Garcinia quaesita*, *Caryota urens*
  3. Indian fly catcher, Indian pitta, Blue magpie of Sri Lanka
  4. Tuatara of New Zealand, Woolly mammoth of North America, Southern shrub toad of Sri Lanka
  5. *Garcinia quaesita*, *Puntius nigrofasciatus*, *Loris tardigradus*
35. Which one of the following cannot be considered as a pathogen which carries infections through food?
1. *Vibrio cholerae*
  2. *Staphylococcus aureus*
  3. *Clostridium botulinum*
  4. *Salmonella typhi*
  5. *Shigella flexnert*

36. Which one of the following destroys bacteria by inhibiting the permeability of cell membrane?
1. Penicillin
  2. Ciprofloxacin
  3. Polymyxin
  4. Erythromycin
  5. Clotrimazole
37. Injection of antitetanus toxoid can be an example for which of the following immunity?
1. Naturally acquired passive immunity
  2. Naturally acquired active immunity
  3. Artificially acquired passive immunity
  4. Artificially acquired active immunity
  5. Inherited passive immunity
38. Commonly used method for sterilizing conical flasks in laboratory is
1. Heating at 121°C in autoclave.
  2. Radiation
  3. Chemical vaporization
  4. Heating in oven at 161°C
  5. Immerse in 75% alcohol
39. Which of the following microorganisms in the preparation of vinegar under aerobic condition?
1. *Saccharomyces cerevisiae*
  2. *Acetobacter aceti*
  3. *Lactobacillus bulgaricus*
  4. *Thiobacillus ferrooxidans*
  5. *Streptococcus lactis*
40. Which of the following statements is correct regarding HIV?
1. Cannot be transmitted from mother to foetus
  2. Transmitted only by sexual contact
  3. Possesses reverse transcriptase enzyme
  4. Destroy B Lymphocytes
  5. Antivaccines are used for curation.



**Instructions for the questions numbered from 41- 50**

If ABD are correct	If ACD are correct	If AB are correct	If CD are correct	Any other combination
1	2	3	4	5

41. Which of the following microorganism / microorganisms take part in nitrogen cycle and also act as autotrophs?

- A. *Azotobacter*                      B. *Rhizobium*                      C. *Anabaena*  
 D. *Nitrosomonas*                      E. Purple sulphur bacteria

42. Which of the following is / are found in both molluscs and echinoderms?

- A. Endoskeleton  
 B. Eyes  
 C. Ciliated larva  
 D. Unisexuality  
 E. Dorsal heart

43. The **incorrect** statement/s regarding two important metabolic processes taking place in plant cells is / are,

<u>Processes</u>	<u>Products</u>
A. Light reaction	– NADPH + ATP + O <sub>2</sub>
B. Krebs's cycle	– NADH + FADH <sub>2</sub> + CO <sub>2</sub> + ATP
C. Glycolysis	– NADH + ATP + CO <sub>2</sub>
D. Electron transport chain	– ATP + O <sub>2</sub>
E. Oxidation of Pyruvate	– CO <sub>2</sub> + NADH + ATP

44. Which of the following is / are correctly matched?

- A. Suberin                      – Endodermis of root  
 B. Fibrinogen                      – Blood  
 C. Sacromera                      – Smooth muscle  
 D. Chondrin                      – Cartilage  
 E. Lignin                      – Collenchyma

45. Select the correct combination/s in relation to structures of human respiratory system.
- A. Bronchus – Stratified ciliated epithelium
  - B. Bronchioles – Irregular cartilage rings
  - C. Alveoli ducts – Simple squamous epithelium
  - D. Alveoli walls – Macrophages
  - E. Trachea – Skeletal Muscles.
46. Which of the following statement/s is /are correct regarding an ecosystem?
- A. The energy consume for respiration by primary producers not included in Net primary productivity.
  - B. Energy transmit through organisms in an ecosystem is not cyclic.
  - C. Primary production is the amount of light energy converted to chemical energy within a given period by the primary producers.
  - D. The correct unit for grass primary productivity is kilogram per square meter per year ( $\text{kgm}^{-2}\text{yr}^{-1}$ ).
  - E. The base of all ecological pyramids is represented by primary producers.
47. Which of the following diseases is/are caused by bacteria?
- A. Leptospirosis      B. Leprosy      C. Poliomyelitis
  - D. Pneumonia      E. Herpes
48. Which of the following plant movements is/are tropic movement(s)?
- A. Turning of sunflower towards the sun
  - B. Leaf folding of *Mimosa* when the plant touched
  - C. Folding of leaves of *Sesbania* in the evening
  - D. Swimming of *Chlamydomonas* towards light
  - E. Growth of passion fruit tendril, circling a support
49. Which of the following antimicrobial substances present in human body fluids is/are involved to prevent entry of microorganisms in body tissues?
- A. Lactic acid      B. Lysozyme      C. Interferon
  - D. Phagocytes      E. Antibodies
50. Which of the following enzymes is/are involved in the replication of DNA
- A. Ligase      B. DNA polymerase      C. Restriction enzymes
  - D. DNA helicase      E. Primase

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உயிரியல்  
 Biology

II  
 II

09 E II

மூன்று மணித்தியாலம்  
 Three hours

Index No:

Instructions :

- \* This question paper consists of 10 questions in 13 pages.
- \* This question paper comprises part A and Part B. The time allotted for both parts is three hours.

PART A - Structured Essay (Pages 02-12)

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

PART B - Essay (Pages 13 )

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

For Examiner's Use Only

Part	Q.No.	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		
Percentage		

Final Marks

In Numbers	<input type="text"/>
In Words	<input type="text"/>

Code Numbers

Examiner	
Checked by	1.
	2.
Supervised by	

**Part II (A) - Structured essay**

Answer all **four** questions on this paper **itself**

**1. A.**

i. a. Name the major components in ATP.

.....  
.....

b. What features of ATP helps in the effective functioning?

.....  
.....

c. How much energy is released during the hydrolysis of an ATP molecule into an ADP molecule?

.....

ii. State two important features in which the DNA of prokaryotic cells differs from the DNA of eukaryotic cells.

.....  
.....

iii. What are the unique features of a DNA molecule in organisms that tend to be functioning as a hereditary material?

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

iv. a. What is the function of RNA in protein synthesis?

.....

b. If the triplet code of DNA denoting an amino acid is CAT, what will be the anticodon in the tRNA which transports the above amino acid?

.....

v. Name the enzymes related to the following processes.

1. Transcription

.....

2. Cutting DNA at specific sites

.....

B.

i. What are the major features of cell theory?

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

ii. a. What is the reason for the fluid nature of cell membrane?

.....

b. State four major functions of plasma membrane of a cell.

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

iii. a. What is respiratory quotient?

.....  
.....

b. Which apparatus is commonly used in school laboratories to determine the respiratory quotient?

.....

iv. a. where do the reactions of Kerb's cycle take place specifically in the Eukaryotic cell?

.....

b. What are the two kinds of molecules in which major part of the energy generated in Kreb's cycle is found?

.....

v. a. What is enzyme?

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

b. What is the effect of enzymes in the metabolic reactions of a cell?

.....

c. What do you understand by the term competitive inhibitors of enzymes?

.....

C.

i. State three unique features of Domain Bacteria.

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

ii. Some structures found in animals are given below.

- a. Spines                                      b. Claws                                      c. Antennae
- d. Suckers                                    e. Clitellum                                    f. Setae
- g. Tube feet                                    h. Tentacles                                    i. Parapodium
- j. Siphon

Which of the above structure/structures is/are found in the following organisms. **(Use only the English letters adjacent to the structures to answer the questions.)**

- 1. Prawn .....
- 2. Tape worm .....
- 3. Squid .....
- 4. Star fish .....
- 5. Millipede .....

iii. Name a plant phylum which shows the following characteristics.

- 1. Short living monocious gametophyte, homosporous, fertilization depends on external water  
.....
- 2. Have naked seeds, fertilization does not depend on external water, heterosporous  
.....

iv. Name a phylum appropriate for each of the following.

- 1. Have exogenic asexual spores produced in conidia.  
.....
- 2. Dichotomously branched vegetative body, motile zoospores.  
.....
- 3. Multicellular vegetative body, non-motile reproductive cell, cell wall consists of agar.  
.....

2. A.

i. Briefly describe the location of human stomach.

.....  
.....

ii. a. What is the special feature of muscular layer of human stomach?

.....

b. Name the secretary cells related to the secretion of gastric juice in human stomach.

.....

.....

c. State three functions of gastric juice other than digestion.

.....

.....

iii. Name the blood vessel which carries the highest concentration of glucose absorbed in small intestine.

.....

iv. a. Name the bile salts in human.

.....

.....

b. State two functions of the bile salts in human.

.....

.....

v. Name two hormones that influence in the secretion of pancreatic juice in man.

1. .... 2. ....

**B.**

i. a. What is essential elements?

.....

.....

b. In which form/forms, the following mineral salts are absorbed by plants?

1. Molybdenum .....

2. Boron .....

ii. Which mineral element is most necessary for the following functions in plants?

1. Maintaining the permeability of cell membrane .....

2. Maintaining osmosis and ionic balance .....

iii. a. What is water potential?

.....

.....

b. State two main factors in which the water potential of a plant cell is depending on.

.....  
.....

iv. a. Name the type of cell in xylem tissue that is only found in flowering plants / Angiosperms.

.....

b. State two functions performed by xylem tissue.

.....  
.....

v. Name three paths through which movement of water takes place along the root system.

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

vi. Explain the contribution of  $K^+$  in the opening and closing of stomata.

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

C.

i. a. What is the white blood cell type in human which has kidney shaped nucleus?

.....

b. What is the range of percentage the above white blood cell in the blood of a normal healthy adult human?

.....

ii. a. Name the three layers found in the wall of human heart.

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

b. State two unique structural features shown by cardiac muscle.

.....  
.....

iii. a. What is the pace maker of human heart?

.....  
.....



b. State the location of the pace maker of human heart.

.....  
.....

c. Name three major events that occur during the contraction of ventricles.

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

iv. a. Which pair of aortic arches in basic plan, forms the pulmonary artery of mammals?

.....

b. What are the classes of animals that have paired systemic arches?

.....

**3. A.**

i. a. What is resting membrane potential?

.....  
.....

b. What are the three factors on which the resting membrane potential depend?

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

ii. How does the organization of sympathetic nervous system differ from organization of parasympathetic nervous system?

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

iii. State how the sympathetic nervous system influences on the following structures.

- 1. Sphincter of urinary bladder .....
- 2. Salivary gland .....
- 3. Pupil .....
- 4. Myocardium .....

- iv. a. State two major types of neurotransmitters.  
1. .... 2. ....

b. How the neurotransmitter attached to the receptors in post synaptic membrane is removed from them?  
.....  
.....

v. Where the cerebrospinal fluid is found in meninges of brain?  
.....

vi. a. What is a reflex action?  
.....  
.....

b. Which part of brain controls the involuntary reflex actions such as sneezing?  
.....

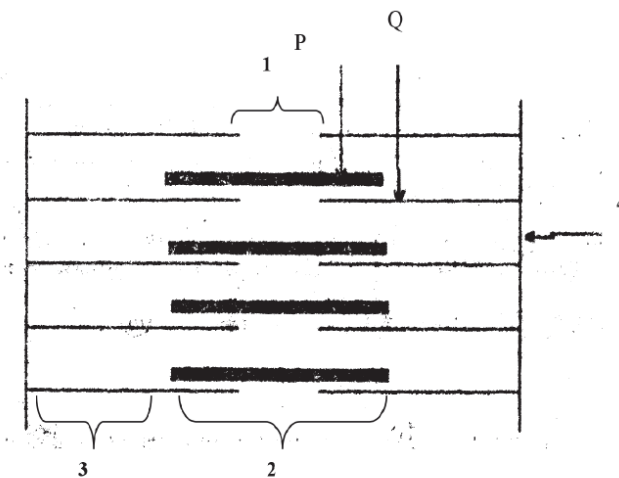
B.

i. State three structural features by which bone differs from cartilage.  
.....  
.....  
.....

ii. What are the bones that involved in the formation of ankle joint in human?  
.....

iii. What are the two features shown by human foot for walking?  
.....  
.....

iv. A diagram of sarcomere of skeletal muscle is given below.



a. Name the parts numbered from 1-4.

- 1. .... 2. ....
- 3. .... 4. ....

b. What are the main protein types found in P and Q?

- P ..... Q. ....

a. What is the theory that explains the muscle contraction?

.....

b. How do the calcium ions contribute in the above mechanism?

.....

C.

i. Name the structures of human reproductive system related to the following functions.

- 1. Physiological maturation of sperms .....
- 2. Production of major part of semen.....
- 3. Acts as site of fertilization .....
- 4. Implantation of embryo .....

ii. What are the three important changes that occur in human ovum to prevent polyspermy?

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

iii. a. Name the foetal membranes that participate in the formation of placenta.

.....

b. what are the two advantages of non mixing of blood of a mother and the foetus in placenta.

.....  
.....

iv. State the hormones directly responsible for the following activities in a human female during pregnancy period.

1. Inducing the development of oxytocin receptors in myometrium

.....

2. Inhibit the secretion of milk.

.....

3. Maintenance of corpus luteum without destruction in initial stage.

.....

v. State two sexually transmitted bacterial infections.

1. .... 2. ....

4. A.

i. What is mutation?

.....  
.....

ii. Name three events that can be causing spontaneous mutations.

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

iii. Give three disorders related to blood circulatory system that are inherited by mutations.

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

iv. a. State the conditions that should be fulfilled to maintain Hardy- Weinberg Equilibrium.

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

b. If the recessive character is found as 4% of a human population, what is the percentage of heterozygous individuals related to above character in this population?

.....  
.....

v. a. What is hybrid vigour?

.....  
.....

b. What is the major disadvantage due to inbreeding during reproduction of plants and animals?

.....

vi. What are the three major observations of a natural population that are basis for the Darwin Wallace Natural selection theory?

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

B.

i. What is known IUCN Red data book?

.....  
.....

ii. Write four IUCN Red data categories in correct / appropriate order based on the groups of highly threatened organisms living in natural habitats?

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

iii. Write two RAMSAR sites in Sri Lanka.

.....  
.....

iv. According to CITES convention in Sri Lanka, state two animals that need the submission of export permit?

.....  
.....

v. a. What is the meaning of sustainable usage of natural resources?

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

b. Give three renewable non-living resources.

.....  
.....

vi. State the geological periods in which the following events might be occurred.

Appearance of insects .....

Production of conifers .....

Appearance of dinosaurs .....

C.

i. a. What is known as food intoxication?

.....  
.....

b. State two bacterial species that cause food intoxication and state the type of exotoxins produced by them.

Bacterial species	Type of exotoxin
1. ....	.....
2. ....	.....

ii. Name four internal factors that cause food spoilage.

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

iii. State three basic principles applied during food conservation methods.

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

iv. a. State two advantages of using coliform bacteria in the tests to determine the sanitary quality of drinking water.

.....  
.....

b. State two major specific features that are used to identify coliforms.

.....  
.....



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 General Certificate of Education (Adv.Level) Pilot Examination - 2017

உயிரியல்  
 Biology

II  
 II

09

E

II

Part II (B) - Essay

Answer **four** questions only.

Give clearly labelled diagrams where necessary.

(Each question carries **15** marks.)

- Briefly describe the lifecycle of a typical angiosperm.
  - Explain briefly the way of adaptation of angiosperms for terrestrial life during the evolution process from nonflowering plant.
- Explain the contribution of endocrine system in the homeostasis of human.
- Tabulate the major global environmental issues and give an explanation of the factors and effects of them.
- Briefly describe the advantages of using microbial process over chemical process in industries.
  - Briefly describe five major commercially used microbial processes.
- Describe the structure of genes and their relationship with proteins.
  - Briefly describe the major steps in the human gene cloning processes in bacterial cells.
  - Explain the applications of DNA recombinant technology in agriculture.
- Give short notes on the following.
  - C<sub>4</sub> plants.
  - Regulations of hormones in the process of spermatogenesis.
  - Phloem translocation.

