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07 Royal College

Final Term Test - July 2026

Grade 13

Biology I

09 E I

Two hours

• **Answer all questions.**

1. Select the correct statement regarding water.
 - 1) Hydrogen bonds are present between the positively charged hydrogen and the negatively charged oxygen of the water molecule.
 - 2) Hydrogen bonds between water molecules are always very fragile.
 - 3) Water has higher surface tension due to high adhesion.
 - 4) Solubility depends on the polarity and ionic nature of a solute.
 - 5) Water can function as a thermal buffer due to its high specific heat.
2. Which of the following gives galacturonic acid on hydrolysis ?
 - 1) Storage polysaccharides in animals
 - 2) Storage food of Dhalia tubers
 - 3) Middle lamella of the cell wall
 - 4) Constituents of the arthropod exoskeleton
 - 5) Constituents of the fungal cell wall
3. Select the choice that represents the proteins with secondary, tertiary and quaternary structures respectively .
 - 1) Keratin , myoglobin, collagen
 - 2) Collagen, albumin , haemoglobin
 - 3) Keratin, spider's silk fiber, haemoglobin
 - 4) Myoglobin, keratin, collagen
 - 5) Keratin, collagen, haemoglobin
4. Select the correct statement regarding the organelle that carry out packaging and distribution of materials.
 - 1) Enclosed by two membranes.
 - 2) Membrane bound enzymes are present.
 - 3) Digests worn out organelles.
 - 4) Form the cell plate during the cytokinesis of plant cells.
 - 5) A network of flattened or tubular sacs.
5. Which of the following is correct regarding tumors, cancers and galls ?
 - 1) When a normal cell converts into an abnormal cell through transformation, it necessarily form a tumor.
 - 2) Cancer cells do not need growth factors.
 - 3) All benign tumors do not cause serious problems.
 - 4) Cells of benign tumors cause metastasis.
 - 5) The causes for the galls are the same as for the tumors and cancers.

6. Which of the following is common for all enzymes?
- 1) Heat sensitivity
 - 2) Substrate specificity
 - 3) Catalyzing reversible reactions
 - 4) Not changing the properties or nature of the end products.
 - 5) The requirement of cofactors for catalyzing a reaction.
7. In C_4 plants,
- 1) CO_2 initially accepted by PEP in the bundle sheath cells.
 - 2) Production of malate and light reaction take place in a same cell type.
 - 3) PS I are absent in bundle sheath cells.
 - 4) Structure of the chloroplasts of mesophyll cells and bundle sheath cells is the same
 - 5) 3-PGA are not formed during photosynthesis.
8. The number of total ATPs produced by a glucose molecule at the end of the citric acid cycle is
- 1) 2
 - 2) 4
 - 3) 6
 - 4) 30
 - 5) 32
9. Given below are few events of the evolution of biodiversity.
- A. Beginning of differentiation of plant body as stem, roots and leaves
 - B. Formation of the oldest protists
 - C. Origin of ancestors of the arthropods
- Which of following choice shows the correct sequence of the above events?
- 1) A, B, C
 - 2) A, C, B
 - 3) B, C, A
 - 4) B, A, C
 - 5) C, B, A
10. Which answer contains only characteristics of a single organism in kingdom Protista ?
- 1) Cellulose in the cell wall, pellicle, chlorophylls a
 - 2) Phycobili proteins, holdfast, food vacuole
 - 3) Pectin in the cell wall, storage food is Chrysolaminarin, carotene
 - 4) Storage food is Laminarin, eyespots, flagellum
 - 5) Pseudopodia, pellicle, storage food is Flouredian starch.
11. Which of the following can be seen in all seed plants ?
- 1) Microscopic gametophytes , heterospory
 - 2) Retaining the megasporangium inside the parent sporophyte, heterospory
 - 3) Absence of flagellated sperms, microscopic gametophytes.
 - 4) Dependent gametophyte, not requiring water for fertilization
 - 5) Production of pollen grains, transportation of sperm through the pollen tube.
12. In Amphibians,
- 1) Always possess limbs with digits for locomotion in a terrestrial environment.
 - 2) All larval stages respire through gills
 - 3) Ear lobe is present behind the eye
 - 4) All show external fertilization
 - 5) Have a restricted metabolic rate due to the change of body temperature according to environmental temperature.

13. Which of the following statement regarding plant tissue is correct ?
- 1) The shoot apical meristem produces new cells only outward from the stem, due to mitosis.
 - 2) The epidermis consists of one or few layers of tightly packed cells.
 - 3) Hair like trichomes reduce water loss and reflect excess light
 - 4) Pits are present in the end walls of the of vessel elements.
 - 5) Companion cells in the phloem are present only in flowering plants.
14. Select the choice with the most suitable examples for the followings.
- A) Parasitic plant B) Carnivorous plant C) Semi parasitic plant
- 1) *Cuscuta*, *Nepenthes*, *Loranthus*
 - 2) *Cuscuta*, *Loranthus*, *Drosera*
 - 3) *Loranthus*, *Utricularia*, *Cuscuta*
 - 4) *Loranthus*, *Nepenthes*, *Cuscuta*
 - 5) *Cuscuta*, *Utricularia*, *Nepenthes*
15. Select the correct statement regarding the water potential of a cell.
- 1) As $\Psi_s = 0$ MPa in a fully plasmolyzed cell, $\Psi = \Psi_p$
 - 2) In pure water $\Psi_s = 0$ MPa and as solute concentration increases, Ψ_s will become more negative.
 - 3) When the Ψ is lower in the solution, water diffuses out of the cell and the protoplasm cell shrinks.
 - 4) When the cell is at fully turgid state, $\Psi_p = 0$ MPa and water potential is equal to 0 MPa.
 - 5) Ψ_p gradually increases when the cell reaches a flaccid state from a turgid state.
16. Select the correct statement.
- 1) The female gametophyte of *Pogonatum* produces a single archegonium.
 - 2) In *Selaginella* both types of spores have thick walls.
 - 3) Male and female gametes of *Nephrolepis* are produced in separate gametophytes.
 - 4) Pollen grain of *Cycas* first enters into the archegonial chamber through the micropyle.
 - 5) The mature embryo sac of flowering plants is a highly reduced structure with eight cells.
17. Select the correct statement regarding plant responses.
- 1) *Mimosa pudica* shows thigmomorphogenesis.
 - 2) Growth of tendrils in climbing plants is an example of thigmotropism.
 - 3) According to the statolith hypothesis, at high concentration of auxin cell elongation is inhibited in the root.
 - 4) Cryptochromes are the major type of photoreceptors involved in seed germination.
 - 5) Light of wavelength 730 nm increases the percentage of seed germination.
18. Select the correct statement/statements.
- A. In some vertebrates pseudostratified columnar epithelium has cells with cilia.
 B. Loose connective tissue is the most widely distributed connective tissue type in the vertebrate body.
 C. Osteoblasts are the mature bone cells that maintain the bone tissue.
- 1) A only 2) B only 3) C only 4) A and C only 5) A, B and C

19. Enzymes contained in the pancreatic juice are
- 1) Nucleotidases, Trypsin
 - 2) Cholecystokinin, secretin
 - 3) Chymotrypsin, aminopeptidases
 - 4) Trypsin, Chymotrypsin
 - 5) Phosphotases, Trypsin
20. Which of the following is correct regarding the vitamin and its deficiency symptom ?
- | | | |
|---------------------------|---|--------------------------------|
| 1) Vitamin B ₅ | - | Scaly skin |
| 2) Biotin | - | Cracks at corners of mouth |
| 3) Ascorbic acid | - | Degeneration of teeth and skin |
| 4) Vitamin E | - | Heart failure |
| 5) Vitamin A | - | Nervous system degeneration |
21. Select the correct statement regarding the human lymphatic system.
- A. Lymph nodes are composed of connective tissues and white blood cells.
 B. The lymph is drained into two veins in the neck.
 C. Skeletal muscle contraction helps to move the lymph
- 1) A and B 2) A and C 3) B and C 4) A only 5) A, B, and C
22. Which of the following is correct regarding the role of T lymphocytes and B lymphocytes in acquired immunity ?
- 1) The epitopes on a single T lymphocyte or B lymphocyte cannot be identical.
 - 2) Among the two types of lymphocytes T and B, one type of lymphocyte responds to a pathogen with a particular epitope.
 - 3) T lymphocytes can recognize only dendritic cells.
 - 4) B lymphocytes can recognize and bind to the antigens present in blood plasma, lymph and interstitial fluid.
 - 5) Helper T cells activate only the effector cell types of T cells.
23. Select the correct statement/statements regarding the disorders of the nervous system.
- A. The reason for depression is the changes in neurotransmitter levels in the brain.
 B. Parkinson's disease is associated with the gradual degeneration of dopamine neurotransmitter releasing neurons in the brain.
 C. The cause for Alzheimer's disease is a progressive and reversible degenerations in the neuron.
- 1) A only 2) B only 3) C only 4) A and B only 5) B and C only
24. Select the correct statement regarding the structure and the function of the human eye.
- 1) Before reaching the retina, the structures through which light rays coming from the visual field pass are the cornea, aqueous fluid, lens and vitreous body only.
 - 2) Except for the yellow spot, rods and cones are distributed evenly in other areas of the retina.
 - 3) Behind the lens transparent fluid like vitreous humour is present.
 - 4) The pigment of the iris which is a circular coloured body, prevents penetration of excessive light.
 - 5) Only two types of neurons are present in the retina.

25. Which of the following is a basic characteristic of sensory receptors ?
- 1) A specialized structure to receive a stimulus
 - 2) Sometimes connected with the nervous system.
 - 3) Continuous stimulation leads to complete loss of responsiveness.
 - 4) During the conversion of stimulus energy into the action potential, sensory signal can be strengthened.
 - 5) The stimulus must be at the threshold level to be detected.
26. Select the correct statement regarding hormones.
- 1) Development and maturation of lymphocytes are caused by thymosin hormone.
 - 2) Hormones are secreted only by endocrine glands.
 - 3) The most abundant hormone synthesized by the anterior pituitary has non- trophic effects only.
 - 4) Only prolactin promotes milk secretion by the mammary glands.
 - 5) Melatonin is involved in the regulation of biological rhythms related to reproduction and daily activity level.
27. Select the correct statement regarding the semen
- 1) Main fraction of the semen is made up of secretions from seminal vesicle and the prostate gland.
 - 2) Normally, the sperms comprise 10% of the final ejaculate.
 - 3) Thick secretions of seminal vesicles contain anticoagulant enzymes.
 - 4) Citrate is present in the alkaline mucus secreted by the bulbourethral glands.
 - 5) All the glands that contribute to produce secretions of semen exist as pairs.
28. Infections that may lead to fallopian tubes filled with pus and lymphoma respectively ,
- 1) Gonorrhea, syphilis
 - 2) Syphilis, AIDS
 - 3) Syphilis, Gonorrhea
 - 4) Gonorrhea, AIDS
 - 5) AIDS, syphilis
29. The maintenance of the relative position of radius and ulna in spite of forces applied from the elbow or wrist is due to the
- A. Articulation of the proximal end of the humerus with the ulna and radius.
 - B. Articulation of the distal end of the radius with the proximal carpal bones.
 - C. Presence of a fibrous joint along the shafts of radius and ulna
- 1) A only 2) B only 3) C only 4) A and B only 5) B and C only
30. Select the correct statement,
- 1) A heritable feature that varies among populations is a character.
 - 2) Each diploid organism has at least two copies of each gene, residing on non – homologous chromosomes.
 - 3) Breeding experiment conducted between two organisms with heterozygous condition for a specific character is referred to as a monohybrid cross.
 - 4) Test cross is used to reveal the unknown genotypes for specific traits in an organism
 - 5) Phenotype is brought about by the genotype of the individual.
31. In a population that is in Hardy-Weinberg equilibrium, a blood group locus has three alleles as I^A , I^B and i . The allele frequencies are $I^A = 0.3$, $I^B = 0.2$, $i = 0.5$. The expected percentage of AB blood group
- 1) 3 2) 6 3) 39 4) 12 5) 25

32. Select the correct statement regarding polymerase chain reaction
- 1) Polymerase chain reaction is used to copy sequences of DNA in vivo.
 - 2) Four types of deoxyribonucleotide triphosphate are used as raw materials.
 - 3) Primer used in PCR is a specific sequence of RNA with a small number of nucleotides.
 - 4) Primer extension takes place at a lower temperature.
 - 5) An exact copy of the target DNA is synthesized after three PCR cycles.
33. Select the correct statement regarding the product and the genetically modified organism that contributes to producing it.
- | | |
|-----------------|---------------------------------|
| 1) Amylomaltase | - <i>Bacillus</i> sp. |
| 2) Chymosin | - <i>Escherichia coli</i> |
| 3) Aspartame | - Yeast |
| 4) Golden rice | - <i>Pantoea</i> sp. |
| 5) Liberty Link | - <i>Bacillus thuringiensis</i> |
34. Select the correct statement regarding ecological pyramids.
- 1) Most of ecological pyramids begin at the bottom with the primary producers.
 - 2) The energy pyramid describes the overall nature of the ecosystem.
 - 3) In most cases there is a gradual decrease in the number of individuals in the pyramid of numbers from the higher to the lower trophic levels.
 - 4) The pyramid of numbers is more fundamental.
 - 5) The fresh weight of biomass represents the amount of energy available in the form of organic matter of an organism.
35. Select the correct pair.
- 1) A remnant of once widespread species now found in isolated areas - Tuatara
 - 2) An organism that plays a very important role in the stability of a system - Blue magpie
 - 3) A plant that faces a high risk of extinction in the wild - Wesak Orchid.
 - 4) A plant species that occurs in its historically known natural range - *Garcinia quaesita*
 - 5) A plant that is confined to a particular area and not found growing naturally anywhere else in the world - Kitul
36. An effect of acid rain is
- 1) Increasing atmospheric temperature.
 - 2) Reducing the carbon sequestration capacity
 - 3) Causing loss of food crop production
 - 4) Increasing the potential risk of skin cancer.
 - 5) Changing the structure of fresh water ecosystems
37. An instance of microbial activity in the carbon cycle is,
- 1) oxidation of ammonium ions into nitrites.
 - 2) consumption of methane.
 - 3) conversion of nitrate ions into molecular nitrogen.
 - 4) increased uptake of immobile nutrients in soil.
 - 5) formation of stable soil aggregates.

38. Select the correct combination.

	Method of sterilization		Way of sterilization happens		Application
A	Direct flaming	E	Denature of proteins	I	Glassware
B	UV radiation	F	Burned to ash	J	Operation theaters
C	Autoclaving	G	Oxidation	K	Scalpel blade
D	Hot air sterilization	H	Destruction or damaging DNA	L	Heat resistant solutions

- 1) BGJ 2) DHI 3) CEL 4) AFL 5) DGJ

39. Which characteristic is most important when selecting an organism as an indicator of fecal contamination in drinking water?

- 1) It should be highly pathogenic to humans.
- 2) It should present only in water contaminated with human feces.
- 3) It should be consistently present in human feces in large numbers
- 4) It should survive for a shorter period than pathogens.
- 5) It should be difficult to culture in laboratories.

40. Select the correct statement regarding dengue.

- 1) Dengue is a vector borne disease that is caused by a DNA virus
- 2) Vector mosquito is grey – black in colour.
- 3) Female mosquitoes lay eggs in the form of egg rafts and the colour is changed from white to shiny black within a few minutes.
- 4) Dengue starts with flu-like symptoms.
- 5) Endotoxin of *Bacillus thuringiensis israelensis* is toxic to the pupal stage of the mosquito.

The instructions for the questions 41 to 50 are given below.

- For each of the questions 41 to 50 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

Summary of above instructions				
1	2	3	4	5
Only (A) (B) and (D) correct	Only (A) (C) and (D) correct	Only (A) and (B) correct	Only (C) and (D) correct	Any other response or combination of responses correct

41. Which of the following is/are correct regarding cellular structures ?

- A. Desmosomes connect the plasma membranes of adjacent cells.
- B. The most abundant glycoprotein in the extracellular matrix of animal cells is fibronectin.
- C. Lysosomes and central vacuoles help digestion.
- D. Structures that help detoxification are peroxisomes and smooth endoplasmic reticulum.
- E. Ribosomes are produced in the nucleolus.

42. The choice/choices with unique features of any animal phylum is/ are
- A. Tube feet, protonephridia, muscular foot.
 - B. Eversible pharynx, water vascular system, dorsal nerve cord.
 - C. Gastrovascular cavity, notochord, pseudocoelom
 - D. Pseudocoelom, clitellum, metanephridia
 - E. Segmentation, nematocyst, parapodia
43. Which of the following disorder/disorders of respiratory system leads/lead to pulmonary hypertension ?
- A. Silicosis B. Asbestosis C. Asthma D. Tuberculosis E. Lung cancer
44. Which of the following method/methods of water and solute transport takes/take place according to the concentration gradient?
- A. Osmosis
 - B. Diffusion
 - C. Imbibition
 - D. Facilitated diffusion
 - E. Bulk flow
45. Each follicle in the ovary,
- A. is in the outer layer of the ovary.
 - B. is present in the ovary at the birth.
 - C. completes the maturation.
 - D. consists of an oocyte.
 - E. is at the same developmental stage.
46. Select the correct statement / statements regarding the hereditary diseases of human.
- | | | |
|-------------------------|---|---|
| A. Haemophilia | - | One of the proteins required for blood clotting is absent. |
| B. Klinefelter syndrome | - | Monosomy in the X chromosome and genotype is XYY |
| C. Sickle cell anaemia | - | Caused by a missense mutation |
| D. Turner syndrome | - | Most of them have normal intelligence |
| E. Cystic fibrosis | - | Affects only females due to defect in trans - membrane chloride channels. |
47. A function / functions of RNA polymerase is / are ,
- A. Unwinds the double helix and separate the two strands of a DNA molecule.
 - B. Adds complementary ribonucleotides against the template DNA
 - C. Proofreading activity
 - D. Adds a short RNA primer on DNA template.
 - E. Twists the DNA molecule to relieve the strain.

48. Which of the following parameters and Sri Lankan ecosystems are correctly matched?
- | | |
|-----------------------------------|--|
| A. 32°C - 36°C temperature | - Tropical dry mixed evergreen forests |
| B. 1250 mm - 2000 mm rainfall | - Savanna |
| C. Above 1500 m in altitude | - Wet Patana |
| D. Less than 1000 mm of rainfalls | - Salt marshes |
| E. 16°C - 28°C temperature | - Tropical submontane forest |
49. Which of the following is / are correct regarding *Escherichia coli* ?
- A. A facultative anaerobe
 - B. A coccus bacterium
 - C. Synthesize some vitamin B complexes
 - D. Cause urinary tract infection
 - E. Detoxify pollutants
50. Select the correct response / responses regarding the method of propagation and the relevant plant.
- | | | |
|-------------------|---|--------------|
| A. Tissue culture | - | Pineapple |
| B. Division | - | Mentha |
| C. Cutting | - | Spider plant |
| D. Layering | - | Snake plant |
| E. Grafting | - | Strawberry |



Royal College - Colombo 07

Grade 13

09 E II

Final Term Test – July 2026

Biology II

Time : 3 Hours

Additional Reading Time : 10 minutes

Name :- Class :- Index no :-

Instructions :

- The question paper consists of 10 question in 13 pages
- This question paper comprises Part A and Part B. The time allotted for both parts is 3 hours and 10 minutes

Part A - Structured Essay

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

Part B - Essay

- Answer four questions only.
- 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 remove only Part B of the question paper from the Examination hall.

For Examiner's use only

For the second paper		
Part	Question nos.	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		

Final Marks

In numbers	
In words	

Part A – Structured Essay

Answer all the questions on this paper itself. (Each question carries 100 marks)

1) A) i) Define followings.

(a) Sustainable food production.

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(b) Development

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.....

ii) State two functions of phospholipids.

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iii) (a) How is a bond formed between two nucleotides during formation of nucleic acids?

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.....

(b) What is the type of bond formed?

.....

(c) How are the two strands of the DNA molecule held together?

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iv) (a) Which RNA type has a complex irregular structure?

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(b) What is the function of this RNA type?

.....

v) Explain the way of the formation of an image in a transmission electron microscope.

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B) i) What are peripheral proteins in the plasma membrane?

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ii) (a) Why is the rough endoplasmic reticulum known as membrane factory?

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(b) State the contribution of cytoskeleton to cellular movements.

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.....

iii) (a) What is the reason for the declining of enzyme activity when pH is altered above or below the optimum pH?

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.....

(c) How do competitive inhibitors reduce the rate of enzyme catalyzed reaction in certain enzymes?

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(c) What is the essential process required in metabolism to regulate the end products?

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iv) (a) What adverse effects would plants experience, if photoprotection is not provided by carotenoids ?

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(b) Describe the linear electron flow in chloroplast.

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(c) What are the products of oxygenase reaction of enzyme Rubisco?

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v) State the way of production of different products during the regeneration of an oxaloacetic acid molecule from a citric acid molecule in the Krebs cycle.

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C) i) (a) What are acquired characteristics?

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.....

(b) What are included in the taxonomy?

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.....

ii) What are considered in the ecological species concept?

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.....

iii) State the type of storage food in each of organisms given below.

(a) Diatoms :

(b) *Sargassum* :

(c) *Aspergillus* :

iv) (a) Define integuments in plants.

.....
.....

(b) How the pollen grain is protected during pollination?

.....

(c) Why motility is not required for sperms of most seed plants?

.....

v) (a) What is the significance of the clitellum of annelids?

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

(b) How does the gas exchange occur in molluscs?

.....

(c) State two adaptations in birds for flight other than the presence of wings.

.....

(2)A) i) State the specific location of the vascular cambium in a typical woody root.

.....
.....

ii) The heartwood is generally darker than the sapwood. What is the reason for this ?

.....
.....

iii) a) What is represented by the Y axis of the graph plotted to represent the results of the experiment to determine the water potential of cells of potato strips?

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b) State the four processes that take place in phloem translocation.

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.....

c) State two genera of plants in which guttation take place.

.....

iv) State the element responsible for each of the following deficiencies and state the form in which the element is absorbed by plants.

a) Chlorosis between veins of older leaves :

b) Reduced internode length :

c) Death of leaf tips :

d) Stubby roots :

v) a) State two structural features shown in reproductive organs of all land plants.

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.....

b) Give examples for two genera of plants that do not require external water for fertilization.

.....

B) i) What are the three common causes for seed dormancy?

.....
.....

ii) What is the reason for the collapse of leaves when they are touched in *Mimosa pudica* ?

.....
.....

iii) State the plant hormone responsible for each of the functions given below

- a) Phototropism :
- b) Promotes desiccation tolerance :
- c) Promotes the movement of nutrients into sink tissue :

iv) a) Describe the feeding mechanism of clams and oysters.

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.....

b) What is referred to as the mucus in saliva ?

.....

.....

c) State the pathway followed by a glucose molecule during its transport from the lumen of the small intestine to the liver.

.....

v) State the role of each of following enzymes in protein digestion.

a) Pancreatic carboxypeptidase

.....

b) Pancreatic Trypsin

.....

C) i) a) What nutrition-related conditions lead to hypotension?

.....

b) What is referred to as a 'stroke'?

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.....

ii) Why blood does not clot in undamaged blood vessels ?

.....

.....

iii) Name the volumes of air that are important in preventing the collapse of the alveoli during expiration.

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iv) State the two mechanisms that produce different autoimmune diseases.

.....

.....

v) How do autoimmune diseases affect the development of immunodeficiency diseases?

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.....

3) A) i) State two differences between the nerve cords of annelids and chordates.

.....
.....

ii) Describe the cerebral ventricles.

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.....
.....

iii) State the action of the parasympathetic division of the autonomic nervous system on the following organs.

a) Heart :

b) Bladder :

iv) a) State the specific location of the taste buds.

.....

b) State the structures that taste buds consist of.

.....

v) State the substances excreted through the human skin

.....

(B) i) How are the hormones produced by the adrenal medulla mainly involved in the fight or flight response ?

.....

ii) a) What is the non surgical treatment carried out for hyperthyroidism?

.....

b) What is the nature of the skin in an individual with hypothyroidism ?

.....

iii) Describe a heat conservation mechanism that is activated when the body temperature decreases.

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.....

iv) State **two** advantages of internal fertilization over external fertilization.

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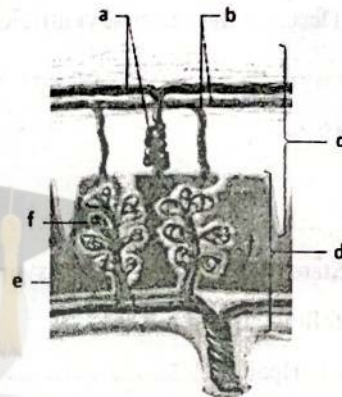
v) What is the fate of the corpus luteum if fertilization does not take place?

.....

.....

vi) Name the structures labeled as a, b, c, d, e and f in the given diagram.

- a
- b
- c
- d
- e
- f



vii) State **three** rapid changes that are brought about by high levels of progesterone in the mother.

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.....

.....

C) i) What is an exoskeleton?

.....

.....

ii) How do aquatic mammals move?

.....

iii) a) Name the structure of the cranium that allows the passage of the spinal cord.

.....

b) What are sutures in the human skeletal system?

.....

c) What is the significance of these sutures?

.....

iv) Name the parts of the sternum and state the role of each part.

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v) What is osteoporosis?

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.....

vi) What happens when a new molecule of ATP binds to the myosin head according to the sliding filament theory?

.....

4) A) i) What is known as non – Mendelian inheritance ?

.....

.....

ii) State why the inheritance of the AB blood groups in humans is considered a pattern of non-Mendelian inheritance.

.....

.....

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iii) State briefly how the following conditions affect changes in gene frequency.

a) Mutation

.....

.....

b) Migration

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c) Natural selection

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.....

.....

iv) State how inbreeding helps the accumulation of superior genes in agriculture.

.....

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.....

.....

v) The reduction of genetic diversity due to artificial breeding will have adverse consequences on evolutionary fitness. State three such adverse consequences.

.....

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.....

B) i) a) What is known as a nucleosome?

.....

.....

b) State the components of a nucleosome.

.....

.....

ii) State five main features of the genetic code.

.....

.....

.....

.....

.....

iii) Draw the structure of a cloning vector showing its essential features.



iv) a) What is the aim of the Cartagena Protocol?

.....

.....

.....

b) What is the main reason for introducing the Cartagena Protocol?

.....

.....

v) What is the role of a keystone species in an ecosystem?

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vi) State the main difference between In-situ conservation and Ex-situ conservation.

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C) i) State three differences between endotoxins and exotoxins.

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ii) Briefly state the role of bacteria and fungi in increasing the bioavailability of phosphorus in the soil.

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iii) State what happens to the sludge remaining after waste treatment.

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iv) State the major difference between food borne infection and food intoxication regarding the way of making infection.

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v) What is the aim of food preservation.

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vi) What is known as hydrocele?

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vii) What is the reason for calling the embryonic stem cells as pluripotent?

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Royal College - Colombo 07

Grade 13

Final Term test – July 2026

Biology II

09 E II

Essays - part B

Instructions:

* Answer **four** questions only.

Give clear labelled diagrams where necessary.

(Each question carries 150 marks)

- 5) a. Describe the activity of a cancer cell.
b. Describe the diversity of the composition and structure of cell walls among organisms.
- 6) a. State the differences between transpiration and guttation in plants.
b. Describe the process of gamete production in *Cycas* sporophytes.
- 7) a. Describe the relationship between metabolic substrates and excretory products.
b. Describe the structure of the blood vessels associated with the nephron.
c. State the role of kidney in homeostasis.
- 8) a. Describe the processes that take place in the zygote until the end of gastrulation stage during human development.
b. Describe the ways of detecting disorders of the fetus during pregnancy.
- 9) a. Describe point mutation.
b. Briefly explain the advantages of using microbial processes over chemical processes.
- 10) Write short notes on followings.
 - a) Cystic fibrosis
 - b) Extinction of species
 - c) Importance of tissue culture technique
