



Provincial Department of Education - NWP

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09 E I

Second Term Test - Grade 13 - 2020

Index No :

Biology I

Two Hours Only

- ❖ Answer all questions.
- ❖ Write your Index number in the space provided in the answer sheet.
- ❖ When you select the response which you consider to be the best answer to a question mark your response on the answer sheet according to the instructions given in it.

01. Select the **correct** statement about the elemental composition of living matter.
 1. oxygen accounts the highest of the body mass in human.
 2. In living body contain 20 – 25 elements.
 3. There are 25 essential elements for plants.
 4. Potassium is the most available trace element in human body.
 5. Vanadium is not found in human body.

02. Choose the **correct** statement regarding proteins.
 1. Twenty two different amino acids are involved in formation of proteins.
 2. Many proteins have Phosphorus (P).
 3. A protein can be consist with one polypeptide chain.
 4. One end of protein is hydrophobic while the other end is hydrophilic.
 5. Disulphide bonds and hydrophobic interactions are involved in formation of secondary structure of proteins.

03. Select the **correct** statement regarding electron microscope.
 1. Specimens should not be stained because colours are not visible.
 2. Living specimens are never seen by electron microscope.
 3. Only two dimensional (2D) images are given by scanning election microscope.
 4. The election microscope should be able to magnify the object up to 1×10^8 times.
 5. Magnification of election microscope is greater than the tight microscope because election beam has higher ware length.

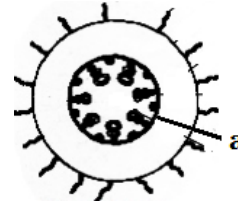
04. Which one is happening in G2 (second gap) phase?
 1. DNA wind around histone beads and form chromatin.
 2. Synthesis of new cellular organelles.
 3. Duplication of centromere.
 4. Thickened the chromatin.
 5. Building up the histone protein.

05. Which statement is **incorrect** about NAD^+ ?
 1. Component which works as a non-proteinuous co-factor.
 2. Component which works as reductive in dark reaction of photosynthesis.
 3. Component which works as a reducing agent in Kreb’s cycle.
 4. Component which works as an electron carriers.
 5. Component which made from two nucleotides.

06. What is **correct** regarding cellular respiration?
1. The first step of cellular respiration is pyruvate convert into acetyl co-enzyme A.
 2. In oxidative phosphorylation the total number of ATP produce is 30.
 3. The final Hydrogen acceptor in Ethyl alcohol fermentation is Pyruvate.
 4. Energy compared to 18 ATP's is released in citric acid cycle.
 5. From substrate Phosphorylation 2 ATPs are made from a glucose molecule in Krebs' cycle.
07. Which incident happened after the evolution of dinosaurs and radiation?
1. Conifers (gymnosperms) are dominated.
 2. Mammalian radiation.
 3. Dominance of amphibians.
 4. Extinction of many marine organisms.
 5. Origin of most present day group of insect.
08. What is **true** from the following given statement?
1. A disadvantage of artificial classification is, it is unable to expand by adding more group.
 2. Morphological features are used in natural classification.
 3. Carolus Linnaeus was the first person who classified the organisms scientifically.
 4. Robert H. Whittaker introduced the taxon phylum.
 5. Mammalia is a taxon at the phylum level.
09. What is the **true** about fungus?
1. *Zygomycota* mycelium has incomplete septate.
 2. All fungal absorptive are decomposers.
 3. Fungus don't produce spores with flagella.
 4. In sexual reproduction of *Ascomycota* produce two different conidiopores.
 5. Basidiospores of *Basidiomycota* are endogenous.
10. Which is **true** about kingdom Plantae?
1. Only seedling vascular plants shows heterospory.
 2. Sperms of seed plants do not possess flagella or cilia.
 3. Vascular plants don't require external water for fertilization.
 4. All seed plants' gynoecium is present in ovary.
 5. Xylem tracheids and vessel elements are present in plants of phylum Coniferophyta.
11. Which is **false** about comparison of phylum Nematoda and phylum Annelida?
- | <u>Nematoda</u> | <u>Annelida</u> |
|--|----------------------------|
| 1. Live in marine, fresh and terrestrial | Not in marine |
| 2. Tough cuticle present | Some possess tough cuticle |
| 3. Segmented body | Segmentation absent |
| 4. True coelom absent | True coelom present |
| 5. Clitellum present | Clitellum present |
12. Which shows the similar characteristics of phylum *Chondrichthyes* and phylum *Osteichthyes*.
1. Internal fertilization
 2. Viviparity
 3. Presence of air sacs
 4. Rough scales
 5. Gills with operculum
13. Parenchyma cells are different from collenchyma cells because, collenchyma cell has,
1. Living even at maturity
 2. Thickened corners by lignin
 3. Large central vacuole
 4. Present right inside the epidermal cell layer in a cylinder or rays
 5. Flexible

14. Choose the **correct** statement about the following diagram,

1. Primary structure of typical dicot stem
2. Primary structure of typical dicot stem
3. Primary structure of typical monocot stem
4. Primary structure of typical monocot root
5. 'a' is pericycle



15. During the transport in plants,

1. Transport through cytoplasm of root cortex, osmosis is used.
2. Last check point of radial transport is pericycle.
3. Stomatal transpiration is important for vertical transportation.
4. Diffusion and bulk flow is used in water transportation of symplastic route.
5. Diffusion is used for the transportation of water in vessel elements and tracheids.

16. What is **correct** comparison between transpiration and guttation?

Transpiration

Guttation

- | | |
|--|--|
| 1. Water removed as vapour | water removed as liquid or vapour |
| 2. Happens only at day time | Happens only at night |
| 3. Mostly removes through stomata | Removes through hydrothodes or stomata |
| 4. Happens due to the water potential gradient | Happens due to the root pressure |
| 5. Pure water removed | Pure water removed |

17. What is the **true** comparison between nutrition in plants and examples?

Mode of nutrition

Example

- | | |
|-----------------------|---|
| 1. Mutualism | Coralloid roots of <i>Cycas</i> & <i>Anabaena</i> |
| 2. Commensalism | Lichens & host plant |
| 3. Semi parasitic | <i>Cuscuta</i> & host plant |
| 4. Total parasitic | <i>Loranthus</i> & host plant |
| 5. Carnivorous plants | <i>Utricularia</i> |

18. What is the **false** response given below about the structures of life cycle of Angiosperms?

Incident

Structure

- | | |
|-----------------------|----------------|
| 1. Microsporophyll | - Filament |
| 2. Megasporophylls | - Ova |
| 3. Male Gametophyte | - Pollen grain |
| 4. Female gametophyte | - Embryoac |
| 5. Megaspore | - Ovary |

19. Select the **correct** statement about responses of plants for different stimuli.

1. Plant trigger can be able to detect only wave length not for light intensity.
2. Green light is the most important colour regulating photo morphogenesis.
3. Hypocotyl elongation depends on by blue light.
4. Proportion of far red : red light are inhabit the vertical growth.
5. The sudden loss of turgor results thigmonasty.

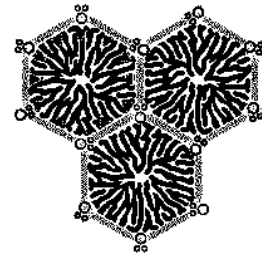
20. Which is **correct** regarding the tension of plants?

1. Plants synthesize Abscisic acid as response to the cold stress.
2. Cold stress results reduction of solute concentration in cytoplasm
3. Reasons for salt stress is high salinity in soil results toxic for plant.
4. Synthesis of alkaloids is induced chemical defense mechanism in plants
5. Synthesis of alkaloid compounds due to pest attacks are induced chemical defense mechanisms.

21. Type of animal tissue has these characteristics.
 A. All cells are spindle shape. B. All cells are uni-nucleated. C. Works involuntarily
 This tissue can be,
 1. The Areolar (Loose connective) tissue. 2. The dense connective tissue.
 3. Smooth muscle tissue. 4. Skeletal muscle tissue.
 5. Cardiac muscle tissue.

22. Which is a function of duodenum?
 1. Starts the digestion of protein.
 2. Absorption of alcohol and some drugs.
 3. Secreting the secretine hormone.
 4. Non specific defense.
 5. Secreting pepsinogen.

23. Following diagram represents the liver lobule. Select the **correct** statement.



1. It functions as endocrine as well exocrine.
2. It worked as defense against microbes.
3. Hepatic blood and bile mixed within the sinusoid.
4. In hormones needed to blood glucose regulation.
5. Hepatic blood circulate within the central vein.

24. Which is **correct** about respiratory pigments of organisms?

	Pigments	Types of Organisms
1	Hemoglobin	Some Annelids
2	Hemocyanin	Some Annelids
3	Hemerythrin	Marine Vertebrates
4	Myoglobin	Insects
5	Chlorocruorin	Some Arthropods

25. Select the **correct** statement about disorders of the respiratory system from below?

1. Excessive sweating is a symptom of pulmonary tuberculosis.
2. Anti-inflammatory drugs are used to control asthma.
3. Hydrogen cyanide in cigarette smoke causes cancer.
4. Oxygen transport through blood is reduced due to carbon dioxide.
5. Silicosis results lung cancer.

26. Which is **not** a way of acquired immunity?

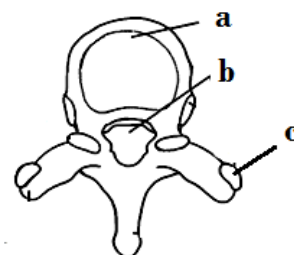
1. Keratinized cell layers are located in the human skin.
2. The mucous membrane which covers the body cavities.
3. Secretion of tears is a washing action of eyes.
4. Cell mediated immune response.
5. The permeability of the blood vessels near tissue damage is increased.

27. Which is **correct** about the animal excretion from the following?

1. Urea needs the lowest amount of energy to synthesize among excretory products.
2. Among excretory products, highest carbon loss occurs in urea extraction.
3. Some marine fishes excrete urea.
4. Green glands found in some insects.
5. Malpighian tubules are connected and open to the outside through an excretory duct.

28. Choose the **incorrect** answer about the central nervous system.
1. Human brain has two ventricles in the forebrain and hindbrain has one for each.
 2. Cerebrospinal fluid helps to circulate nutrients and hormones.
 3. Forebrain gives rise to the pineal body thalamus and hypothalamus.
 4. The outermost layer of meninges is the dura mater.
 5. The superficial part of cerebrum is consist of nerve cell bodies.
29. Which statement is **incorrect** about nerve impulses generation and transmission ?
1. Concentration of K^+ is lower inside the cell while non-conducting impulse.
 2. To maintain the net negative charge in the cell, there is more sodium channels open than potassium channels.
 3. To maintain the Na^+ and K^+ gradient across the membrane by transporting three potassium ions out of the cell for every two sodium ions.
 4. Depolarization results due to Na^+ inflow in response to stimulus.
 5. Refractory period allows the reverse conduction of an impulse in an axon.
30. Which is a function of a human skin?
1. It works as endocrine as well as exocrine organ.
 2. During high temperatures Krause bulb is used to regulate temperature.
 3. React against harmful damages caused by IR rays.
 4. Synthesis of vitamin A.
 5. Involve for excretion process.
31. Which one is true about endocrine disordered in human.
1. Type I diabetes → Glucose is deficient inside body cells.
 2. Type II diabetes → This is caused by the destruction of beta cells of Langerhans by the immune system.
 3. Hyperthyroidism → Due to lack of TSH production.
 4. Hypothyroidism → Treatment is surgical removal of part or all of the thyroid glands.
 5. Hyper thyroidism → Lead to bulging of eyes and goiter.
32. Steps given below related to spermtogenesis. Select the **correct** order.
- a. Primary spermatocytes are generated by mitosis.
 - b. Primordial germ cells are generated by mitosis.
 - c. Spermatids are generated by mitosis.
 - d. Secrete into cavity of seminiferous tubules.
 - e. Spermatogonial stem cells are generated by mitosis.
1. b, e, a, c, d 2. e, b, a, c, d 3. b, c, a, e, d
 4. c, d, b, e, a 5. d, e, b, a, c
33. Choose the correct statement about hormonal control of the human female reproductive cycle.
1. In the follicular phase, estradiol stimulates the secretion of FSH and LH.
 2. When the estradiol level are low, GnRH secretion increases.
 3. Mature follicle secretes progesterone and estradiol.
 4. After the ovulation, FSH stimulates the follicular tissue to transform into the corpus luteam.
 5. In the luteal phase, very low levels of LH and FSH prevent the maturation of another egg.

34. Select the **correct** statement regarding the diagram given below.
1. Anterior view of axis vertebra.
 2. Spinal cord goes through 'a'
 3. Blood vessels go through 'b'
 4. Facet for articulation with adjacent vertebra by c.
 5. There are 12 vertebrae in vertebral column.



35. Tall trees and green colour seeds are dominant traits. 'X' tree which is tall and has green seeds is bred with a 'Y' tree which is short. The F₁ generation shows following phenotypic ratio.

Tall, green seeds : Short green seeds
1 : 1

X and Y genotypes respectively are,

1. AaBb, AaBb 2. AaBb, aaBB 3. AABB, aabb 4. AaBb, aaBb 5. AaBB, aabb

36. Dimple on cheek is double recessive Mendelian trait can be seen in human. In a population 2.25% of total show this trait. The percentage of heterozygotes in that population for this trait is,

1. 25.5% 2. 97.75% 3. 74.5% 4. 72.25% 5. 85.00 %

37. What is **true** about gene expression?

1. The final production of gene is always a polypeptide.
2. m - RNA molecule is a copy of the other DNA which is not working as sketch.
3. There are 20 codons as the language of amino acid of a protein.
4. There are four termination cordons.
5. Genetic code is common for every eukaryotes and different from prokaryotes.

38. Steps given below are the process of a synthesis of a recombinant plant and animal.

- a. Transformation of the recipient cells b. *In vitro* modifications of the gene of interest
c. Isolation and purification of the gene d. Amplification of modified gene by cloning

Select the correct order of the given steps.

1. b d c a 2. c d b a 3. c b d a 4. c a b d 5. a c b d

39. Select the **incorrect** statement about world's main biomes.

1. A prominent dry season of 6 – 7 months can be seen in temperate deciduous forest.
2. There are tall grasses and scattered trees in savanna.
3. There are venomous snakes, lizards scorpions birds and such kind of animals in desert.
4. The normal temperature is below – 10°C in winter season of chaparral and around 30°C in summer.
5. Tropical grass land's trees have special adaptations for fire.

40. Select the correct matching for the categories and examples of animal species.

	Threatened level	Example
1.	Critically endangered	Dumbara galpara madiga (marbled rock frog)
2.	Endangered	Small squirrel
3.	Extint	<i>Lingula</i> (Lampubella)
4.	Flagship	Sri Lankan Lion
5.	Migratory species	Thilapia

• Use the following instructions to answer the questions 41 through 50.

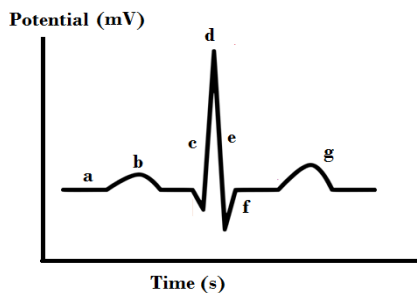
Only A,B,D correct	1
Only A,C,D correct	2
Only A,B correct	3
Only C,D correct	4
Any other answer/combination of answers correct	5

41. Which statement/statements is/ are **correct** about lipids

- A. Triacyl glycerols which have hydro carbons and double bonds are liquid in room temperature.
- B. Excessive use of Trans – unsaturated fats results thickening artery wall.
- C. Phospholipids shows amphoteric characters.
- D. Most animal lipids are baring unsaturated fatty acids.
- E. Some lipids are acting as macro molecules.

42. What is/ are **correct** statement/ statements about NAD^+ , NADP^+ and FAD ?
- NAD^+ and FAD are derivatives of vitamins.
 - All are oxidizing agents during respiration.
 - All are act as coenzymes.
 - All are derivatives of nucleic acids.
 - All are universal energy carriers.
43. What is/ are **correct** above geological eons and eras of evolution?
- Diversification of vascular plants was happened in Paleozoic era.
 - Origin of mammals was happened in Mesozoic era.
 - Amphibians dominated in Paleozoic era.
 - Extinction of dinosaur happened in Mesozoic era.
 - Primate groups originated in Mesozoic era.
44. Which statement/ statements is/ are similar to the life cycles of *Pogonatum* and *Nephrolepis*
- Gametophyte is photosynthetic.
 - External water is needed for fertilization.
 - Cuticle is found on sporophyte.
 - Homospory.
 - Gametophytes are dioecious.

45.



The graph shows the electrical signal generated by the SA node as it travels throughout the heart. Choose the **false** statement/ statements.

- a shows the complete cardiac diastole.
 - b shows the atrial depolarization.
 - c shows the ventricular repolarization.
 - g shows the arterial repolarization.
 - This graph shows the electro cardiogram
46. What is/ are the false combination/ combinations of the functioning and the structure of human eye.
- Cornea - refraction of light rays.
 - Sclera - transports the nutrients to the eye.
 - Ciliary muscles - secretion of vitreous humor.
 - Iris - controls the amount of light entering the eye.
 - Suspensory ligament – sclera fixed to the eye orbit.
47. What is / are the **wrong** answer / answers about the hormones affect on reproductive system.
- FSH stimulates the legdig cells to nourish sperms.
 - Secretion of LH promotes the spermatogenesis
 - Secretion of GnRH from hupothalamus.
 - Estradiol stumlates the secretion of Gonadotropin hormone.
 - Secretion of HCG result the generation of corpus luteum.
48. Which is/ are **incorrect** statement/ statements about animal skeletons.
- Pseudo coelom acts as fluid filled skeleton in Cnidaria.
 - Exo skeleton of some Arthropods are made by cutine.
 - Exo skeleton of some Arthropods contained protein or CaCO_3 .
 - Some Reptiles have bony exo skeleton.
 - Endo skeleton of Echinodermata Made up of CaCO_3 .

49. Select the **correct** statement / statements.
- A. Chromosomes act as the physical unit of heredity.
 - B. Genetic materials of prokaryotes are also replicated.
 - C. Operons provides codes to few peptides.
 - D. Exons in Eukaryotes provide codons for polypeptides.
 - E. All DNA in chromosomes of prokaryotes are active.
50. Select the **correct** statement/ statements about biomes in world.
- A. The average annual rain fall in tropical rain forests is 1500 mm – 2000 mm.
 - B. Savanna biome can be seen in tropic of cancer region.
 - C. Desert biomes are absent in tropic of cancer region.
 - D. Tall conifers can be seen in chaparral.
 - E. Temperature at Tundra is always below 0 °C

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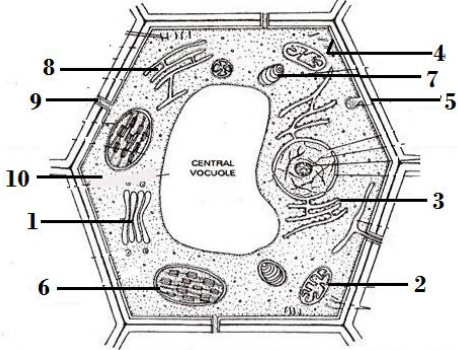
Second Term Test - Grade 13 - 2020

Index No : **Biology II** **Three Hours Only**

Impotent
Part A - Structured Essay. Answer all questions on the paper itself.
Part B - Essay, Answer four questions only. Give clearly labeled diagrams where necessary.
Part B - Essay, Answer four questions only. Give clearly labeled diagrams where necessary.

Part A (Structured Essay)

(01) A). Diagram given below represents the electron microscopic view of a plant cell.



- i. Name all parts labeled as 1-10 in the illustration given above.

- ii. State 3 features used for identification of the above illustration as plant cell.

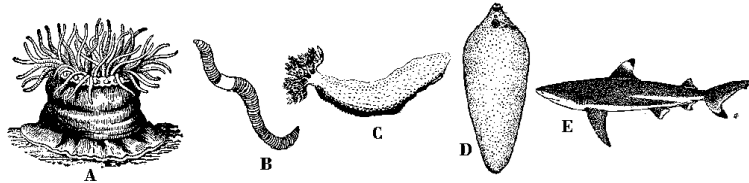
iii. What is ~~a~~the thin structural layer ~~is in~~ presence between cell walls of adjacent plant cells?

.....

iv. Write a cellular organelle which secretes the above mentioned structure and two functions of it.

.....

B) Complete the given dichotomous key using the organisms given below.



- i. Radial symmetry present
 Radial symmetry absent
- ii. Tentacles are found around the mouth
 Tentacles are absent around the mouth
- iii. Clitellum present
 Clitellum absent
- iv. Heterocercal caudal fin is present
 Heterocercal caudal fin is absent

C) i. Define "balanced diet".

.....

ii. a). Amino acids can be separated in to two types. State those two types of amino acids.

A
 B

b). Write two examples for each A and B types.

.....

iii. Write hormones which stimulate the given processes.

a) ~~a)~~ Release of bile from the gall bladder and digestive enzymes from the pancreas.

.....

iv. ~~ab)~~ Regulates digestion in the stomach. Stimulates the secretion of gastric juice.

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iv. Name two antioxidant vitamins.

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v. Write deficiency symptoms of following Vitamins.

Vitamin B₉ -

Vitamin C -

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02. Reproduction is a characteristic feature of organism.

A. i. Write two modes of reproduction of animals.

.....
.....

ii. a). According to the mode of reproduction mentioned in above (02.A. i.) above question, name a reproductive mode for the offspring produced as similar among each other as well as to the parents.

.....

b). List down the types of reproduction and examples for them which related to above (02.A ii.a) mentioned mode.

.....
.....

iii. Some structures of human male reproductive system are given below. Write the function of each structure.

a). Epididymis-

.....
.....

b). Seminal vesicle-

.....
.....

c). Prostate gland-

.....
.....

iv. List down parts of human female reproductive system.

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v. Name two hormones that secrete from anterior pituitary to continue oogenesis.

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B. i. Write the main structures used for excretion of animals.

- a) Prawn-
- b) Spider-
- c) Earth worm-
- d) *Paramecium*-
- e) *Planaria*-

ii. Removal of excretory product from the body is essential. Explain why?

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

iii. In which part of the nephron specialized for selective reabsorption of substances in glomerular filtrate?

.....

iv. State the 3 processes involved in urine formation.

.....

C. i. Name 2 specific defense responses mediated by diverse T lymphocytes and B lymphocytes in acquired immunity.

.....

ii. Define following terms.

a. Antibodies –

.....

b. Naturally acquired active immunity –

.....

iii. Write 2 factors affected to autoimmune disease.

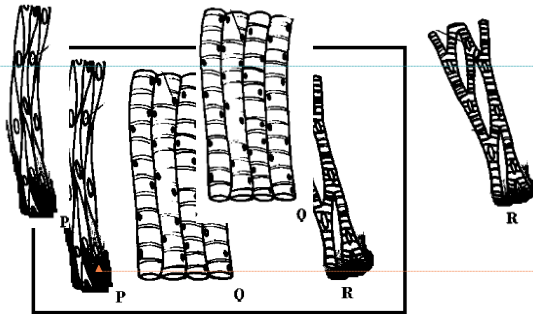
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iv. Name an example for autoimmune diseases.

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03. A



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i. The above diagrams show 3 types muscle tissues. Identify ~~the~~ each

P –

Q –

R –

ii. Write the functions and locations of ~~each~~ above mentioned tissue types in given table.

Tissue	Location	Function
P
Q
R

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iii. List down 3 differences between structural features of P and Q mentioned above in 03. A (H)

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B. i. How ~~much~~ many bones in the cranium in human skull.

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.....

ii. From the cranium,

a) Name types of pair of bones

.....
.....

b) Which bone has the foramen ~~magnam~~ magnum?

.....
.....

c) ~~Which bone has the inner ear~~ Name the bone which locate in the inner ear?

.....
.....

iii. What are the fused bones in human ~~vertebra~~ vertebra?

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iv. Draw and label first typical cervical vertebra in human vertebra

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04. A. i. What is an animal hormone?

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ii. Write the ~~the~~ main function and ~~hormone secreter locator~~ secretory locations of hormone for each hormones given below.

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Hormone	Location	Function
1. prolactin		
2. Growth hormone (GH)		
3. Thymosin		
4. Adrenaline		
5. T R H (Thyrotropin Releasing Hormone)		

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iii. Complete given table related to plant hormones.

Stimuli	Response	Example
<u>Light</u>	<u>Photo morphogenesis</u>	
<u>Touching</u>		
<u>Touching</u>		

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B. i. Write ~~State~~ 3 basic ~~characters-characteristics~~ of sensory receptors.

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ii. What are the main types of chemoreceptors in human?

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

iii. Name the receptors important in following instances.

- a - Detect warmth -
- b - Black & white (night) -
- c - Sensitive to light touch -
- d - Pressure receptors -

iv. Mention the sensory receptors for animals given below.

- 1. *Planaria* _____ -
- 2. Squid _____ -
- 3. Grasshopper _____ -

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C. i. Enzymes mentoned below are involved in DNA duplication. Write the function.

- a. DNA polymerase _____ -
- b. Primase _____ -
- c. Tropolisomerase _____ -

ii. Define following terms.

- Gene _____ -
- Gene expression _____ -

iii. Δ Ppolypeptide synthesis is happening in two stagessteps. Name those two stagessteps.

.....

iv. Write two defects cause due to the changes in chromosomes.

.....

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Biology – Grade 13 Part II

Part B (Essay)

❖ **Answer four questions only.**

05. I. Explain the fine structure of mitochondria.
II. Explain the process that happens through the mitochondrial inner membrane during cellular respiration
06. I. Describe the structure of transverse section of dicotyledonous plant stem.
II. Describe the secondary growth of dicotyledonous plant stem.
07. I. Describe the structure of human skin.
II. Explain the role of skin to regulate temperature.
08. I. Describe the structure of human ovary.
II. Explain the delivery process and the hormone regulation.
09. Illustrate the non Mendelian inheritance by using appropriate examples.
10. Write short notes.
 - I. Silicosis
 - II. Genetically modified organisms (GMO)
 - III. Biomes