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Provincial Department of Education - NWP

09	E	I

Second Term Test - Grade 13 - 2019

Index No : .....

Biology I

Two Hours Only

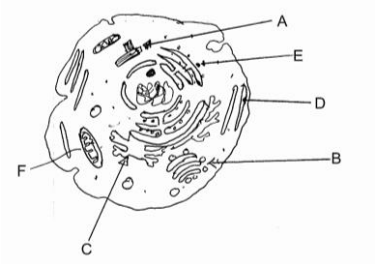
- Answer all questions.
- Write your Index number in the space provided in the answer sheet.
- When you select the response which you consider to be the best answer to a question mark your response on the answer sheet according to the instructions given in it.

1. Which biological character makes the biological functions efficient within organisms?
   1) Adaptation 2) Heredity and evolution 3) Order and organization
   4) Irritability and coordination 5) Growth and development

2. Which statement regarding the nucleotides found in living matter is correct?
   1) All of them have ribose sugar 2) All of them are polymers
   3) All of them have a genetic role 4) All of them have phosphodiester bonds
   5) All of them have the nitrogenous base adenine

3. A student prepared a slide containing an onion epidermal peel and observed it under the light microscope. Under which eye piece and objective lens combination will he see the least number of cells?
   1) 5×40 2) 5×60 3) 10×10 4) 10×40 5) 10×60

4. Given below is an illustration of an eukaryotic cell. Which statement is mismatching?



   1) A is formed by the arrangement of 9 triplets of structure D in circular manner
   2) Structures C & E together produce a network of intra cellular membranes
   3) Peroxisomes are produced by the vesicles produced at the periphery of structure B
   4) Structure F is not present in the cytoplasm of an erythrocyte
   5) Structure D is important in the formation of the spindle in cell division

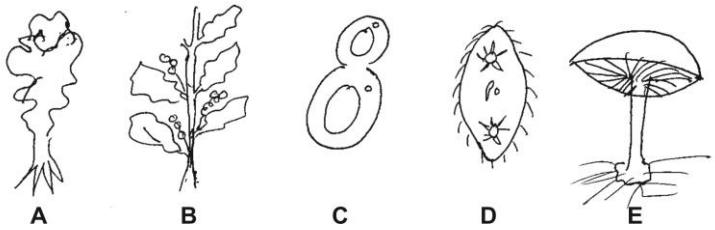
5. Select the answers based on the following statements.
   a) Duplication of DNA
   b) Movement of chromatids towards the opposite poles
   c) Arrangement of the homologous chromosome pairs along each side of the metaphase plate
   d) Movement of the centrioles towards the opposite poles
   1) a & b 2) c & d 3) b, c, d 4) b & d 5) a, c, d

6. Which statement is incorrect regarding enzymes?
   1) Enzymes are synthesized on the surface of the ribosomes
   2) Enzyme molecules are bigger than the substrate molecules
   3) Allosteric enzymes are made with several subunits
   4) At 60 ^{0}C the three dimensional structure of the enzyme amylase will change in 10min
   5) The subunits of the allosteric enzymes can't work simultaneously

7. Which statement regarding the photosynthetic pigments can't be accepted?
   1) Photosynthetic pigments absorb different wave lengths of visible light uniformly
   2) Chlorophyll molecules get oxidized when they absorb light
   3) Chlorophyll a is the main photosynthetic pigment
   4) Carotinoids are responsible for photo protection
   5) Photosynthetic pigments are arranged into photo systems

8. Which will always happen in fermentation?
   1) Acetaldehyde is produced as an intermediate product
   2) Decarboxylation
   3) Pyruvate being the final H+ acceptor
   4) Reduction using NADH
   5) ATP being spent and not produced

9. Select the correct combination regarding the following organisms



Organism	Photosynthetic pigment	Stored food	Cell wall materials	Cilia/flagella
A	Ch a & c	Starch	cellulose	Flagella present
B	Ch a & d	Floridian Starch	Cellulose and alginic acid	Cilia present
C	No piments	Glycogen	Chitin	No cilia or flagella
D	Ch a & d	Stomach	No cell wall	Cilia present
E	No pigments	Stomach	No cell wall	No flagella

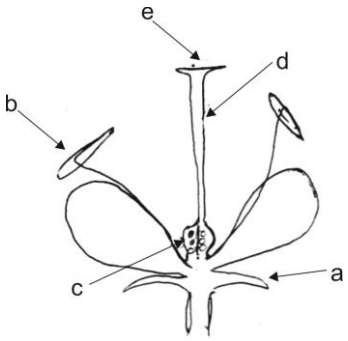
10. Not a character possessed by a species,
    1) Bearing large number of common characters
    2) Being the smallest group having an ancestor
    3) Production of fertile offspring by interbreeding
    4) Being different from other life forms by one or more characters
    5) Living inside a demarcated area and within a specific time period

11. Some organisms can survive in temperatures higher than 1000C. A character of such an organism could be,
    1) Having peptidoglycan cell walls
    2) Presence of introns in some genes
    3) Having only one type of RNA polymerase
    4) Being sensitive to antibiotics
    5) Having unbranched hydrocarbon chains in membrane lipids

12. Heterospory, independent sporophyte, dependent multi cellular gametophyte, presence of vessels in the xylem, presence of a cutanious cuticle are found in,
    a) Selaginella *a) Pinus* *c) Gnetum* *d) Hibiscus* *e) Lycopodium*

    Select the correct combination of answers,
    1) AB and D only 2) C &D only 3) A,B,C and D only
    4) D only 5) B, C and D only

13. Longitudinal section of an Angiosperm flower is illustrated below.
    Which statement regarding it can't be agreed with?



    1) It is a special type of shoot
    2) b – is a microsporophyll
    3) a – provide the initial protection to the flower
    4) c – becomes the fruit after being fertilized
    5) d and e are not essential parts of a flower

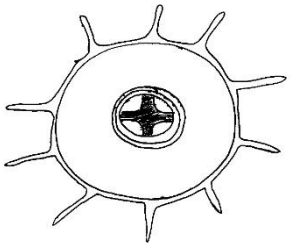
14. Given below is a description about a chordate,
    Bear legs for locomotion, major excretory product is uric acid, lays shelled eggs, poikilothermic. Which of the following statements is correct regarding the above organism?

    1) Streamlined body 2) show internal fertilization
    3) Bears a skin with glands 4) Heart has 4 chambers
    5) Originated in the mesozoic era

15. Which statement is correct regarding, Aspergillus, Mucor, Agaricus, and Saccharomyces
    1) All of them bear septate hypae
    2) All of them produce endospores during sexual reproduction
    3) All of them are **saccharophyts**
    4) Only *Agaricus* produce fruiting bodies in sexual reproduction
    5) Mucor always produce genetically identical spores in its reproduction

16. Not belong to the dermal tissue system
    1) Guard cells 2) Epidermal cells 3) Trichomrs
    4) Root hairs 5) Parenchyma tells

17. Which statement regarding the illustration that can't be agreed with?



    1) Located in between the epidermis and the vascular cylinder is the ground tissue.
    2) Pericycle has metistamatic properties
    3) Endodermis is a single layer of cells
    4) cortex involves in storage and radial transportation
    5) epidermis bears root hairs and no cuticle

18. Opening and closer of stomata is not affected by,
    1) CO_2 concentration of the substomatal cavity
    2) Usable soil water
    3) Internal clock of the guard cells
    4) Production of Abscisic acid in leaves and roots
    5) Atmospheric

19. A plant cell with a solute potential of -0.37mPa was put in an open solution with a solute potential of -0.02mPa.for 30 min. the cell will now,
    1) Have a water potential of -0.37mPa
    2) Have a pressure potential of +0.35mPa
    3) Have a pressure potential equal to the solute potential
    4) Have a water potential of -0.195 mPa
    5) Have a pressure potential of -0.35 mPa

20. Act as a source as well as a sink in the phloem translation,
    1) Fruits 2) Buds 3) Tubers 4) Stems 5) Leaves

21. Select the element which act as the component in some amino acids, that causes chlorosis in young leaves when deficient, and absorbed as anions from the soil solution.
    1) N 2) Mg 3) Fe 4) S 5) Mo

22. Plants have special mechanisms to tolerate drought stress. No such adaptation is,
    1) Increased production and release of abscisic acid
    2) Closure of stomata
    3) Shedding leaves in dry periods by some plants
    4) Rolling of leaves by some plants
    5) Changing the composition of the plasma membrane

23. Given below is a comparison between the primary and secondary growth of plants. Which one is incorrect?

	Primary growth	**Secondary growth**
1	Epical meristems are involved	Lateral meristems are involved
2	Increases the length of the roots and the height of the stems	Increases the circumference of the roots and the stems
3	Happens in all plants	Happens only in some plants
4	Only living cells are produced	Only dead cells are produced
5	Produce the primary structure of root and stem	Produce the secondary structure of root and stem

24. Select the mismatching combination
    1) Mast cells – production of heparin
    2) Fat cells – storage of fat
    3) Chondrocytes – secreting the matrix of bones
    4) Red blood cells - transportation of O_2
    5) Glial cells – replenishing neurons

25. An association between two individuals belonging to two species where both of them are benefited is,
    1) Tapeworm and man
    2) Orchid and host plant
    3) *Cuscuta* and host plant
    4) Termite and the microorganisms living in the gut
    5) *Nepenthes* and insects

26. Select the incorrect statement
    1) All the steps of holzoic nutrition takes place in the human digestive tract
    2) Antimicrobial agents like lysozymes are present in human saliva
    3) Peristalsis causes food to move along the esophagus
    4) Little absorption takes place in the stomach
    5) In the absorption of lipids watersoluble called globules chylomicrones are produced

27. Deficiency of a vitamin caused, loss of balance, numbness and anaemia.
    1) Green vegetables 2) Tomatoes 3) Milk products
    4) Orange colour vegetables 5) Pea nuts

28. Which statement regarding open circulatory systems is incorrect?
    1) Haemolymph is not present in capillaries
    2) Haemolymph pumped by heart reaches back into the heart via ostea
    3) Arthropods and some mollusks have open circulatory systems
    4) Exchange of materials takes place directly between the cells and haemolymph
    5) Haemolymph flows back to the heart via veins

29. A risk factor of hypertension is,
    1) Standing up suddenly 2) Shock 3) Starvation
    4) Deposition of LDL on the arterial walls 5) Malnutrition

30. Select the correct statement.
    1) Atherosclerosis can result from the deposition of Cis unsaturated fat
    2) The PH of human blood is 7.4
    3) Myoglobin is present in vertebrate blood
    4) O +ve blood can be donated to any person
    5) Atrio-ventricular valves are closed in total cardiac diastole

31. Which statement regarding the human respiratory system is correct?
    1) Lungs are located within the pleural space
    2) Relaxation of smooth muscles which results in constriction of the bronchioles causes Asthma
    3) The neurons of the respiratory control center located in the hypothalamus are sensitive to the CO_2 concentration of blood
    4) Tidal volume includes the volume of air present within the trachea
    5) Diffusion of O_2 and CO_2 takes place along the concentration gradient

32. Innate immunity,
    1) Develops within the body only after being exposed to a pathogenic invasion
    2) Produces slower responses
    3) Creates long term responses
    4) Results specific responses
    5) Uses a small receptor for the recognition of the invader

33. The protein secreted by a body cell which can prevent the viral replication is,
    1) Complimentary proteins 2) Lactoferrin 3) Interferon
    4) Lysozyme 5) Immunoglobulin

34. Select the correct statement regarding the lymphocytes important in immunity.
    1) They mature in bone marrow
    2) They have antigen receptors which can bind with two regions of the antigen
    3) Cytotoxic T cells are a type of effector T cells
    4) T lymphocytes produce antibodies
    5) T lymphocytes produce humoral immune responses

35. Which is an autoimmune disease?
    1) AIDS 2) Gastritis 3) Osteoarthritis
    4) Kidney failure 5) Type I diabetes mellitus

36. Which is not secreted in the kidney tubules?
    1) H^+ 2) Asprin 3) Excess K^+ 4) Amino acids 5) Creatinine

37. Given below are some features of an excretory organ present in the animal kingdom.
    ‘’multi cellular, tubular, open at both ends, in contact with a network of capillaries”

    What is the relevant excretory organ? Which animal bears it?

	Organ	**Animal**
1	Flame cells	*Planaria*
2	Green glands	Prawn
3	Malphigian tubules	Insects
4	Nephridia	Leech
5	Nephron	man

38. Femur articulates with the acetabulum to form the hip joint. In this join which of the below movements can’t be produced by the hind limb?
    1) Extension 2) Adduction 3) Rotation
    4) Circumduction 5) Abduction

39. Select the correct statement regarding the sternum of man.
    1) The ribs 1-10, i.e. the first 10 pairs of ribs articulate with the body of the sternum
    2) It is one of the major sites where red blood cells are produced
    3) Muscles of the diaphragm are attached to the xiphoid process of the sternum
    4) Some of the bones of the appendicular skeleton articulate with the sternum
    5) Longest part of it is the body

40. Not matching with the hormonal coordination,
    1) Transmitted via blood
    2) Both electrical and chemical transmission happens
    3) Creates a diffused response
    4) Causes slower responses
    5) Has a long term effect

- **For each of the questions 41 to 50 one or more of the responses is / are correct. Describe which of the response / responses is / are correct and them select the correct numbers.**

  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 summaries.				
1	2	3	4	5
ABD correct	**ACD correct**	**AB correct**	**CD correct**	**Any other response or combination of responses correct.**

41. A DNA molecule consists of 30000 base pairs. It has twice the cytosine than adenine. Select the correct combination.
    A. The number of purines present is 15000
    B. The sum of adenine and uracil is 20000
    C. Number of pyrimidines is equal to the number of purines
    D. Sum of guanine and cytosine is 10000
    E. The molecular weight of the nitrogenous base adenine is lower than that of cytosine

42. Select the correct combination.
    A. Amylase
    B. Inulin
    C. Cellulose
    D. Dipeptidase
    E. Agar

43. Not an effect of parasympathetic nervous system.
    A. Induction of emptying the bladder
    B. Increasing the heart rate
    C. Stimulating the activity of the pancreas
    D. Dilation of the pupil
    E. Stimulation of the adrenal medulla

44. Acceptable statement/ statements regarding the functionality of the human eye is/are?

    A. Refraction of light waves is important for creating a clear image on the retina
    B. When the rods of the retina are stimulated black and white vision is created
    C. Cornea is responsible for most of the refraction of light waves
    D. Pupil contracts in high light intensities
    E. In near vision the curvature of the lens is decreased

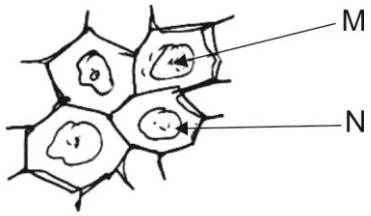
45. Trophic and non-trophic hormones secreted by the anterior pituitary are,
    A. Growth hormone
    B. Prolactin
    C. TSH
    D. Oxytocin
    E. ACTH

46. Select the correct combination regarding the disease of humans.
    A. Type II diabetes - doesn't depend on Insulin
    B. Hyperthyroidism – basic metabolic rate is increased
    C. Depression – loss of ability to recognize people
    D. AIDS – due to the infection of HIV
    E. Osteoarthritis – cause the bones to break

47. Not a contribution of the Axial skeleton for the upright posture of man,
    A. Curves of the vertebral column
    B. Large sacrum
    C. Curves of the foot
    D. Tuff and strong hip joint
    E. Occipital condyles being located at the middle of the base of the skull

48. Not a disease which produces naturally acquired immunity,
    A. Chicken pox
    B. Measles
    C. Tuberculosis
    D. Mumps
    E. Polio

49. When a *Rhoeo* lower epidermal peel is immersed in the solution X, the cells appeared as in the diagram



    A. N contains the solution X
    B. There is no pressure potential
    C. The tissue is in the initial plasmolysis stage
    D. M is the protoplast
    E. Solution X has become hypertonic

50. Common for *Nephrolepis*, *Pinus* and *Hibiscus* is/are,
    A. Bearing vascular tissues
    B. Formylmethionine being the starting amino acid in protein synthesis
    C. All of them having multicellular gametangia
    D. Meiosis in spore mother cells
    E. Heterospory

09 | E | I

Second Term Test - Grade 13 - 2019

Index No : .....

Biology II

Three Hours Only

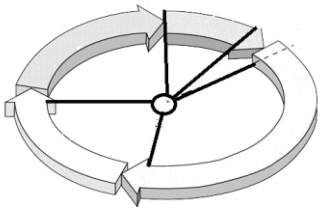
Impotent

Part A - Structured Essay. Answer all questions on the paper itself.

Part B - Essay, Answer four questions only. Give clearly labled diagrams where necessary.

Part A - Structured Essay

01). A).



Given above is an Eukaryotic cell cycle

i. What is a cell cycle?

.....

.....

ii. Name the phase of interphase and write the main events take place in each phase.

Phase	**Main events**
.....	.....
.....	.....

iii. What is a check point of a cell cycle?

.....

iv. Mark the locations of check points of the above cell cycle.

.....

v. (a) Mention three importance of mitotic division.

.....

.....

.....

(b) Meiotic division is important for the genetic variations.
What are the incidents of meiotic division that important for the above process?

.....

.....

(c) What the phases of meiotic division that contribute to the incidents mentioned above (b)?

.....

.....

.....

.....

B) i. Name the three

Animal phylum

....

....

....

ii. Aquatic organisms use various methods to locomot in water. Mention such two types of movements with a species as an example.

Method of movement	**Example (species)**
.....	.....
.....	.....

iii. How many bones are used to build up the bony structure which enclose the human brain?

.....

iv. (a) Out of the facial bones, Which one articulates with the cranium?

.....

(b)Name a process of the above mentioned bone in (a)

.....

v. What is the approximate capacity of human cranium?

.....

.....

C) i. (a) What is the type of joint of shoulder joint in human skeletal system?

.....

.....

(b) Name a type of movement of the above joint (a)

.....

.....

ii. Write two adaptations of human axial skeleton to maintain the erect posture

.....

.....

.....

.....

iii. (a) What is intervertebral discs?

.....

.....

(b) Write two importance of intervertebral discss.

.....

.....

iv. (a) What is slipped discs?

.....

.....

(b) What is the correct posture that lifting heavy weight by avoiding slipped disc?

.....

.....

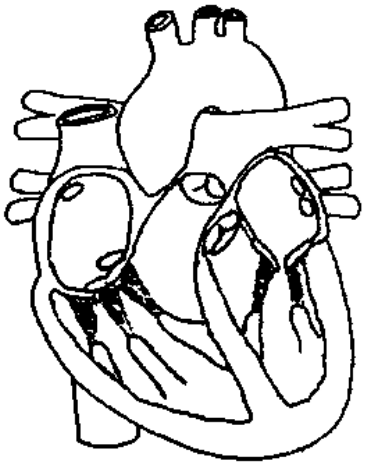
v. (a) What is the type of grip of human upper limb that is unique to man?

.....

(b) Mention an adaptation of upper limb for the above mentioned (a) grip

.....

02). A).



i. Given above diagram is a longitudinal section of the human heart. Name the following parts on the above diagram using the arrow heads.

a. Semilunar valves	b. Chordae tendineae	c. Aorta
d. Superior vena cava	e. Papillary muscles	f. Bicuspid valve

ii. State the action of valves of the Heart during the consequence of events that takes place in a complete heart beat.

a) Atrial systol .....

b) Ventricular Systol .....

c) Complete cardiac diastole .....

iii. Write the name of the amount of blood that pump by a ventricle during a single heart beat of healthy adult man. What is the amount of mili leters that pump from the above incident?

.....

iv. (a) Draw a wave chart to show the electro potential change that takes place in a human heart during one heart beat.

(b) Identify the patterns of the above chart.

.....

.....

.....

(c) Mention the importance of the above chart

.....

.....

B) i. What is the part of the human brain that regulate the force and rate of the heart beat?

.....

ii. Name other two functions that control by the above mentioned part in (B.(i))

.....

.....

iii. State the location of the mentioned part in (B (i))

.....

.....

iv. Write the parts of the human brain that regulate the following functions.

Function	**Part of the Brain**
a) Regulate the body temperature	.....
b) Maintain the balance and posture of the body	.....
c) Coordinate auditory and visual reflexes	.....

v. Name the types of Nervous organizations of following phylums in Kingdom Animalia

Animal phylum	**Types of Nerves organization**
a) Annelida	.....
b) Cnidaria	.....
c) Echinodermeta	.....

C) i. Write the feeding mechanism of organisms given below.

a) Aphids .....

b) Clam .....

c) Maggot .....

ii. (a) What is the main important of the stage, just below the stage of ingestion in Holozoic nutrition?

.....

(b) Briefly describe the events of the stage mentioned above in (a)

.....

.....

iii. What is human saliva?

.....

.....

iv. Write 4 functions of saliva that not contribute to the digestion

.....

.....

.....

v. Absorption is the main function of small intestine. Write three adaptations of small intestine to perform its function efficiently.

.....

.....

.....

03). A). i. What is a photosystem?

.....

.....

ii. In which basis photosystems divide into 2 types as photosystem I (PSI) and photosystem II (PS II)

.....

.....

iii. What are the pigments in photosystems?

.....

.....

iv. State 3 major events take place in a photosystem

.....

.....

.....

v. What are the synthesized materials in electron flow which participate both photosystems in light reaction.

.....

.....

B) i. What is artificial classification?

.....

ii. Robert H Whittaker introduced 5 kingdom system of classification. State 3 criteria he used in that classification.

.....

.....

.....

iii. State 3 molecular biological criteria which considered as the basis for present system of classification.

.....

.....

.....

iv. State the binomial names of following organisms

a) Man .....

b) "Hora" palant .....

c) Coconut plant .....

v. Complete the following dichotomous key using given animals centipede, Beetle, Snail, Leech Hydra, earthworm, frog, Tilapia, Millipede and Starfish

1. Presence of bilateral symmetry .....
   Absence of bilateral symmetry .....
2. Tentacles present .....
   Tentacles absent .....
3. External shell present .....
   External shell absent .....
4. Possess legs .....
   Do not possess legs .....
5. Wings present .....
   Wings absent .....
6. Presence of exoskeleton .....
   Absence of exoskeleton .....
7. Cylindrical body present .....
   Cylindrical body absent .....
8. Suckers present .....
   Suckers absent .....
9. Fins present .....
   Fins absent .....

C) i Name the specific sexual reproductive unit of angiosperms.

.....

ii. Write 4 whorls which build up the axis of above mentioned structure (C(i))

.....

iii. (a) Out of the mentioned above in (ii) state the essential whorls.

.....

.....

(b) Write a function of each whorle mentioned in above (iii)(a).

.....

.....

.....

.....

iv. Name and introduced the specific fertilization found only in angiosperms.

.....

.....

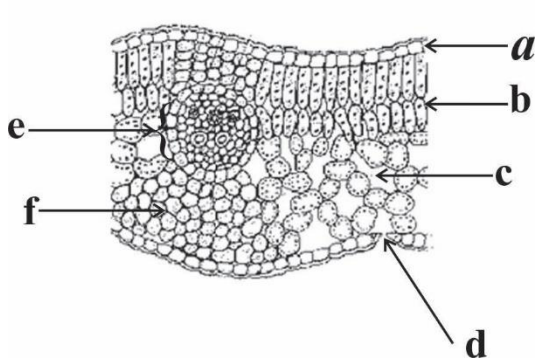
v. (a) What is known as developing a fruit without fertilization.

.....

(b) State a special characteristic of a fruit resulted by above process.

.....

04). A).



i. Identify the structure in the above diagram.

.....

ii. Name the parts of above diagram form "a" to "f"

a. ..... d. .....

b. ..... e. .....

c. ..... f. .....

iii. What is the function of the part identified as "d"

.....

iv. state three cytological features of cells in a tissue in the above diagram.

.....

.....

.....

v. State the away of regulating behavior of "d" in drought

.....

.....

.....

.....

B) i. What is seed dormancy?

.....

ii. How seed dormancy is important for the plant ?

.....

.....

iii. Write two characteristics of plasma membrane of plants to face cold stress.

.....

.....

iv. Write four induced structural and chemical defense mechanisms of plants.

.....

.....

.....

.....

v. Write the plant growth substances important for the following responses.

a) Promotes flowering in the pineapple family .....
b) Promote leaf senescence .....
c) Stimulate seed germination .....
d) Promote leaf abscission .....

C) i Introduce coordination

.....

.....

.....

.....

ii. What are the types of coordination in human body ?

.....

.....

iii. State 2 basic differences between above mentioned two types of coordination.

.....

.....

iv. (a) Name the main endocrine gland in human body

.....

.....

(b) Write an example for the following type of hormone that synthesize and secreted by above endocrine gland.

Trophic hormone .....

Non trophic hormone .....

Act as trophic and non trophic hormone

.....

v. What is a trophic hormone ?

.....

Second Term Test - 2019

Grade 13 - Biology - II

Part B Essay

❖ **Answer only four Questions.**

05). a. Describe responses to gravity shown by plants using statolith hypothesis.
b. Describe the structure of sarcomere and explain the contraction of skeletal muscle fiber.

06). a. State the characteristic of sensory receptors.
b. Briefly describe the structure of human skin and functions.

07). Prepare a report to describe the secondary immuny resposces which is activated as type of adaptive immunity in human body.

08). a. State the specific characteristics of meristarnatic tissues.
b. Name the meristamatic tissue based on their location.
c. Explain the formation of annual rings in a dicotyledonous plant stem as a result of the secondary growth.

09). a. Introduce the Nitrogenous excretion of animals.
b. Explain the structure of human kidney and briefly describe the mechanism of formation of urine.

10). Write short notes on,
a. Pollination of Anthophyta
b. Human cerebrum
c. Reducing sugar