First Term Test – November 2018

Grade 13

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- **Answer all Questions.**

1. Which of the followings can be considered as a common characteristic for both living and non living organisms?

1. Adaptation
2. Reproduction
3. Order and organization
4. Metabolism
5. Growth

2. Select the incorrect regarding the biological molecules.

1. The shape of a protein influences its biological activity.
2. All the large molecules in cells are macromolecules
3. All monosaccharides and disaccharides are carbodhydrates.
4. Waxes and steroids are also lipids.
5. All proteins are polymers of amaino acids.

3. A mitochondrion differs from a chloroplast because

A - ATP is synthesized only in the mitochondrion

B - DNA is contained only in the chloroplast

C - Enzymes are contained only in the mitochondrion

D - NADP is contained only in the chloroplast

E - Photosynthetic pigments are present only in the chloroplast

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

4. Which one of the following responses is incorrect regarding metabolic reactions?

1. Catabolic reactions liberate energy.
2. The end products produced in anabolic reactions contain more energy than the reactants.
3. The entire energy liberated during biological reactions is utilized in converting ADP to ATP
4. The ATP produced in catabolic reactions are hydrolyzed, and the energy thus liberated is utilized in the anabolic reactions.

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5. Protein synthesis is an anabolic reaction while glucose oxidation is a catabolic reaction.

5. Which of the following is common for both C_3 and C_4 plants,

1. Presence of two types of chloroplast
2. Absence of photorespiration
3. Presence of RuBP carboxylase
4. Presence of low CO_2 compensation point
5. Presence of PFP

6. Select the correct statement regarding Respiratory Quotient. (R_Q)

1. It depends on the chemical nature of respiratory substrate
2. It depends on the temperature.
3. It depends on the P^H value of the medium.
4. It depends on the pressure of the medium.
5. It depends on the all the factors mentioned above.

7. Cilia and flagella

1. Contain myosin which pulls on acting filaments.
2. are organized by basal bodies derived from centrioles.
3. Plants do not have these organelles.
4. Prokaryotes have both organelles.
5. Both organelles are made of microfilaments.

8. Which is the correct pair among the relation between some organelles and their functions ?

1. Rough endoplasmic reticulum	-	Synthesis of phospholipids
2. Smooth endoplasmic reticulum	-	Production of Lysosomes
3. Golgi apparatus	-	Store Ca2+ ions
4. Glyoxisomes	-	Photorespiration
5. Microtubules	-	Contraction of muscle fibre

9. Given below are a few statements regarding photosynthesis.

A - It is process which produces organic food directly for all heterotrophs.

B - It takes place in the presence of sunlight

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C - It is an energy fixing mechanism which produces complex molecules from simple molecules

D - Chlorophyl b is the main photosynthetic pigment of cyanobacteria.

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

10. In aerobic respiration which of the following does not take place?

1. Break down of glucose to two pyruvate molecules takes place in glycolysis.
2. ATP is produced by substrate phosphorylation.
3. Conversion of pyruvate to Acetyl Co - A takes place with release of CO_2 and ATP.
4. Entry of pyravate molecule to mitochondrial matrix depends on the presence of O_2
5. Krebs cycle is a cyclic process which produce ATP, NADH, $FADH_2$ and CO_2

11. This question is based on the following data.

$C_6H_{12}O_6 \longrightarrow$ 2 ethanol ΔH = - 210 kJ mol^{-1}

ADP + Pi $\longrightarrow$ ATP ΔH = - 30.6 kJ mol^{-1}

According to the above details, the efficiency of alcoholic fermentation is

1. 40.38 %
2. 13.73 %
3. 29.1 %
4. 5.5 %
5. 7.75 %

12. The incorrect statement regarding the following is

1. In mitosis, spindle microtubules which are attached to the kinetochores, pulls chromatids away from each other.
2. The longest phase of the cell cycle is G_2
3. Centrioles duplicate at G_2.
4. In anaphase of mitosis, attached chromatids are separated from each other.
5. Each chromosome contains two identical chromatids at G_2.

13. Which one of the following is correct regarding the scientific work carried out by the scientis in classifying organisms ?

1. Carolous Linnaeus - Introduced kingdoms Protista, plantae and Animalia.

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2. Theophrastus - Classified animals according to their external appearance.
3. Haeckel - Introduced kingdom protista.
4. Whittaker - Introduced kingdom Archaebacterial.
5. Woese - Introduced five kingdom system of classification.

14. Which one is incorrect,

1. Palaeozoic era - Origin of most present day insect groups.
2. Palacozoic era - gymnosperms dominated
3. Mesozoic era - Origin of mammals.
4. Mesozoic era - dinosaurs become extinct at the end.
5. Cenozoic era - Appearance of bipedal human ancestors.

15. Which one of the following is false regarding cartilage?

1. It is found in all vertebrates.
2. It has no blood vessels.
3. There are three types.
4. It is a connective tissues.
5. It has no lacunae.

16. Which one of the following groups do not contain exoskeleton?

1. Arthropods
2. Reptiles
3. Molluscs
4. Echinoderms
5. Radiolarians

17. Which one is incorrectly paired with excretory organ - example ?

1. Antennal Gland - Prawn.
2. Sweat gland - Human
3. Flame cell - *Planaria*
4. Contractile vacuole - Tape worm
5. Nephridia - Earth worm

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18. **Which one of the following features distinguishes *Nephrolepis* from *Pogonatum*?**

1. Presence of heteromorphic alternation of generations
2. Presence of homospory
3. Presence of well developed vascular system
4. Requirement of external water for fertilization
5. Nutritionally independent saprophyte.

19. **Which of the following characteristic is common for all protista.**

1. Presence of cell walls.
2. Unicellularity
3. Presence of flagella or cillia as locomotary structures.
4. Eukaryotic feature.
5. Presence of chlorophill a.

20. **Incorrect statement regarding the fungi is**

1. All fungi have chitin as the cell wall component.
2. All fungi are heterotrophs.
3. Zygomycota and the Ascomycota produce endogenous spores during sexual reproduction.
4. Motile gametes are found only in kingdom fungi.
5. *Agaricus* dikaryotic mycelium produces the fruiting body.

21. **Few characteristics of organisms belong to kingdom plantae are given below.**

A - vascular plant do not need water for fertilization.

B - Both saprophyte and gametophyte are photosynthetic

C - Heterosporous seedless plants.

D - Seed plants which produce cones.

Phylla show above characteristics respectively is,

1. Bryophyta, Pterophyta, Lycophyta, Anthophyta
2. Pterophyta, Lycophyta, Bryophyta, Anthophyta
3. Lycophyta, Pterophyta, Cycadophyta, Bryophyta
4. Anthophyta, Pterophyta, Lycophyta, Cycadophyta
5. Cycadophyta, Pterophyta, Lycophyta, Anthophyta

22. A - Availability of oral and ventral suckers

B - Availability of parapodia and chaetae

C - Availability of endoskeleton and radula

D - Availability of short pair of antenna and cylindrical body

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E - Cylindrical body with tube feet with suckers

Which answer gives organisms with above characteristics respectively ?

1. *Planaria*, *Arenicola*, snail, centepede, star fish.
2. *Fasciola*, *Nereis*, Squid, milipede, sea cucumber
3. *Taenia*, Earth warm, octopus, cockroach, sea cucumber
4. *Planaria*, *Nereis*, octopus, milipede, sea cucumber
5. *Fasciola*, *Nereis*, Squid, milipede, sea urchin

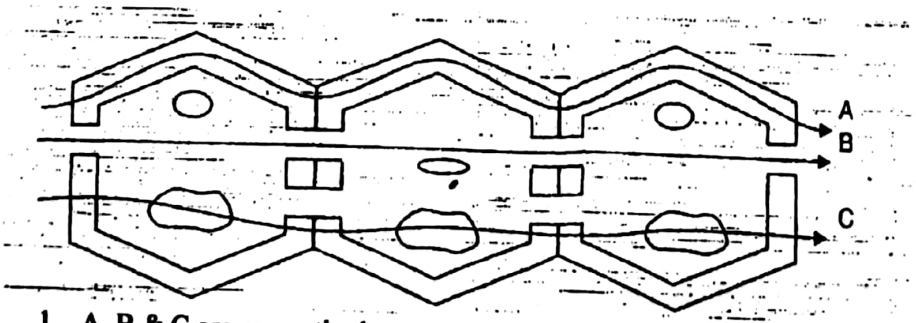
23. Select the incorrect statement regarding the sexual reproduction of plants

1. All terrestrial plants have reproductive organs protected by a sterile cell layer.
2. Delay of meiosis after fertilization creates a diploid generation
3. After fertilization the zygote is retained within the gametophyte.
4. Diploid generation produces spores by mitosis.
5. Many terrestrial plants reproduce asexually as well as sexually.

24. Not a reason for seed dormancy.

1. Presence of inhibitors
2. Presence of a thin seen coat
3. Seed coat is impervious to water
4. Presence of an immature embryo
5. Presence of growth substances

25. Which is the irrelevant statement regarding the pathways of water and solutes movements in plant shown in the diagram as A, B & C



1. A, B & C are respectively apoplast, symplast and vacuolar.
2. B pathway is not blocked by the casparian strips.
3. Water enters the pathway B across a plasma membrane of one cell.
4. Pathway C has the highest resistant to water movement.
5. Lumens of xylem vessel elements are not included into the pathway A.

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26. **The solute potential of a cell is - 1200 kPa. It equilibrates with distilled water at atmospheric pressure. What is the pressure potential of the cell at this occasion.**

1. O
2. 1200 kPa
3. 600 kPa
4. - 1200 kPa
5. 900 kPa

27. **Which of the following is incorrect regarding phloem translocation ?**

1. As a result of phloem loading, water potential in a sieve tube decreases.
2. Mass flow of phloem fluid takes place from source to sink under a pressure potential gradient.
3. After phloem loading, high hydrostatic pressure is built up in the sieve tube.
4. Phloem loading and unloading are active processes.
5. As a result of phloem unloading water potential in a sieve tube decreases.

28. **Choose the incorrect statement.**

	Element		Deficiency symptoms
1.	K	-	Yellow and brown leaf margins
2.	Ca	-	Crinkling young leaves.
3.	Mg	-	Chlorosis between veins.
4.	Mn	-	Death of root and shoot tips.
5.	B	-	Discoloured leaves

29. **The tissue organization of numerous parts of the human digestive system is given below. Which one is incorrect ?**

1. Bruner's glands are present in submucosa of the duodenum.
2. Circular folds can be seen in mucosa of small intestine.
3. The longitudinal muscle layer of the large intestine is a continuous one.
4. Presence of rugae when stomach is empty.
5. Presence of a circular muscles layer as the outer most layer in the muscularis externa of the stomach.

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30. **The incompatible pair regarding the human circulatory system is**

1. The arteries that supply diaphragm and kidneys. They are given off as paired arteries.
2. Coeliac artery - Supply stomach and Liver.
3. Pulmonary arch - formed by VIth aortic arch.
4. Hepatic portal vein - starts from a capillary network and ends in a capillary network.
5. Left common carotid artery - The first artery given off from the aorta once the coronary artery is formed.

A few blood cells of human are given as A, B, C in the first column. The other columns indicate their structural and functional characteristics.

types of blood cell	Structural features	functional features
(A) Neutrophils	(P) large, circular nucleus	(S) Secrete histamine and Heparin
(B) Lymphocytes	(Q) 2 - 5 lobes in the nucleus	(T) Production of antibodies
(C) Basophils	(R) two incomplete lobes in the nucleus	(U) phagocytosis

31. **What is the functional sequence of A, B, C ?**

1. QRP 2. RQP 3. PQR 4. QPR 5. QPR

32. **What is the functional sequence of A, B, C ?**

1. SUT 2. UST 3. TUS 4. STU 5. UTS

33. **Incorrect regarding the human salivary glands**

1. There are 3 glands.
2. Largest is the parotid glands.
3. Saliyary glands are stimulated by reflexes
4. Parotid glands are located anterior and inferior to the ear.
5. Control of the secretion of saliva is by autonomic nerves

34. **Incorrect regarding the hydrolyzing enzyme trypsin,**

1. Acts in the stomach
2. Hydrolyze proteins in to smaller polypeptides
3. Secreted by the intestinal glands
4. Acts well in the acidic medium
5. Secretion is stimulated by Enterogasteron.

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35. **Not a function of the liver,**

1. Secretion of bile
2. Production of urea
3. Break down of haemoglobin
4. formation of urine
5. Detoxification by enzymes

36. **Select the incorrect statement regarding hormonal control of the gastrointestinal tract**

1. Gastrin stimulates the secretion of HCI and pepsinogen
2. Gastrin inhibition is done by CCK and secretin
3. CCK stimulates the gallbladder to synthesis bile
4. Secretin stimulates secreting of pancreatic juice
5. CCK also stimulates increased pancreatic secretion

37. **Choose the incorrect statement.**

	Vitamin		Deficiency symptoms
1.	Vitamin A	-	immunity impairment
2.	Vitamin E	-	Nervous system degeneration
3.	Vitamin B3	-	reduced heart function
4.	Vitamin B5	-	tingling of hands and feet
5.	Cobalamin	-	Less of balance

38. **Select the correct statement regarding blood groups**

1. A person with blood group A contain the antigen A in his Red blood cells.
2. Anti A antibody is present in the blood plasma of a person with blood group A.
3. Both anti A and anti B antibodies are present in the blood plasma of a person with blood group AB.
4. Both anti A and anti B antibodies are present in the red blood cells of a person with blood group A.
5. A person with blood group B^+ can donate blood to a person with blood group AB^+

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39. **Incorrect statement regarding respiratory pigments is**

1. Only chordates contain respiratory pigments in blood cells.
2. haemocyanin is a respiratory pigment which contain Cu^{2+}
3. Chilopodes lack respiratory pigments
4. Haemoerythrin is a red colour respiratory pigment
5. Chloroquorin is the respiratory pigment of prawns.

40. **Which of the following is not a feature for reducing the transpiration in plants ?**

1. Presence of sunken stomata.
2. Presence of waxy cuticle
3. Bundle sheath cells.
4. Reduce the surface area of leaves
5. Presence of epidermal hairs

For each of the questions 41 - 51, one or more of the responses is/ are correct. Decide which of response/s is/ are correct and then select the correct number.

If only A, B, D are correct 1

If only A, C, D are correct 2

If only A, B are correct 3

If only C, D are correct 4

If any other response or combination of responses is correct 5

Directions Summarised				
(1)	(2)	(3)	(4)	(5)
A, B, D Correct	A, C, D Correct	A, B Correct	C, D Correct	Any other responses or combination or responses Correct

41. **Correct statement/ statements regarding the coagulation of blood is**

A. Thombrin is a proteolitic enzsyme

B. Thombrin converts fibrinogen into fibrin

C. Only Ca^{2+} are needed to convert prothombrin into thombrin

D. When a blood vessel is injured, thombroplastin is released.

E. Thombroplastin is absent in haemophilic patients

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42. **Where the meiosis cannot be taken place the following organisms.**

Organisms	Location of meiosis
A. Mucor	- Zygospore
B. Agaricus	- Basidium
C. Pogobatum	- Capsule
D. Man	- Seminiferous tubules
E. Nephrolephis	- Gametangia

43. **Which is/ are found in slug ?**

A. Radula
B. Foot
C. Siphon
D. Arms
E. Eye spots

44. **Which of the following statement (s) regarding the blood circulatory system is/ are correct?**

A. All vertebrates have a closed blood circulatory system.
B. Presence of a blood circulatory system is a characteristic feature of all animals.
C. All animals that have double circulation passes a ventral heart.
D. The blood circulatory systems of vertebras have evolved from a basic plan
E. In man, the systemic arch is derived from the third aortic arch of the basic plan of aortic arches of vertebrates

45. **Which of the following organelle / organelles is / are involved in detoxification ?**

A. smooth endoplasmic reticulum
B. peroxisomes
C. golgi complex
D. glyoxisomes
E. lysomes

46. **Correct statement regarding the entering of water to the xylem in root system is,**

A. Water potential of root hair is high relative to the water potential of soil water.
B. Water potential of root hair is low relative to the water potential of soil water.
C. Solute potential of root hair is high relative to the Solute potential of soil water.
D. Solute potential of root hair is low relative to the Solute potential of soil water.

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E. Entering water to the root hair until the equilibrium of solute potential and root potential of root hair.

47. Which one of the following statement/s is/ are incorrect regarding human pancreas

A. It functions both as an exocrine and endocrine gland

B. Pancreatic juice contains two proteolytic enzyme

C. Pancreatic juice helps to neutralize acidity of chyme.

D. Damage to Langerhan islets may lead to diabetes

E. Secretin regulates functioning of the pancreas.

48. The group/s which possess/es complete alimentary canal is/are,

A. *Nereis*, centipede, *Ichthyophis*

B. *Planaria*, crab, *Taenia*

C. Star fish, sea urchin, centipede

D. *Chiton*, Earthworm, Scorpion

E. Brittle star, Millipede, Leech

49. The group/ groups of compounds which gives / give colour changes with the Benedict's Test is/ are

A. Fructose, Lactose, Maltose

B. Galactose, Glucose, Lactose

C. glycoges, Glucose, Sucrose

D. Maltose, Lactose, Galactose

E. Sucrose, Maltose, Lactose

50. Which one/s of the followings is/are secondary meristematic tissues in plants?

A. Ground meristem

B. Intercalary meristem

C. Inter vascular cambium

D. Cork cambium

E. Vascular cambium

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Royal College – Colombo

First Term test November 2018

Grade – 13

Biology

Part A – Structured Essay

Time –3 hours

Name/ Index No :-.....

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 that extensive are not expected.

Part B – Essay

- Answer four questions only. Use the papers supplied for this purpose. At the end of the time allotted for this paper, tie the two papers together so that **Part A** is on 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	Question Nos.	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
Total		

Final Marks

In numbers	
In words	

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Part – A Structured Essay

Answer all questions

01. (A)

(i) What is the characteristic of life that maximizes the efficiency of al bio – chemical activities of the living cells ?

.....

(ii) The sum of all chemical activities are divided in to main two types. What are they?

....

(B) (i) Synthesizing of nucleotides is a one of the bio chemical activities.

a) Mention the type it belongs

.....

b) Mention the reason for it

.....

.....

(ii) Which nucleotide synthesizing process is called as phosporylation ?

.....

(iii) Mention 2 special features that help that nucleotide to do its main function

.....

.....

(C) (i) Cellular aerobic respiration is an another bio – chemical activity

a) Mention the type it belongs

.....

b. Mention the reason for it

.....

(ii) Mention the three main steps of aerobic respiration and places where they occur.

.....

.....

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(D) There is a protein group that is important to cellular bio chemical reactions

(i) Identify that group

.....

(ii) Mention the elemental composition of those

.....

(iii) What is the main function of those

.....

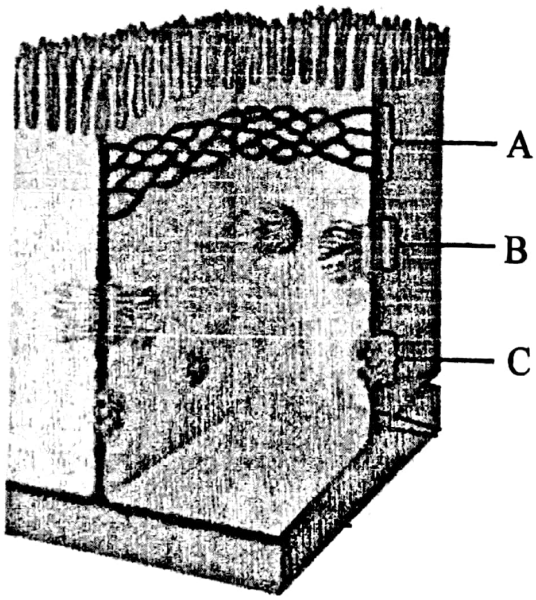
(iv) Briefly explain the effect of temperature to the activity of those compounds

.....

.....

.....

(e) Identify the figure and fill the grid



	Structure	Main Function	Location
A			
B			
C			

Mention two functional differences between prokaryotic cell and a eukaryotic cell

.....

.....

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(f) (i) What is the special cell division type that is used by animals to sexual reproduction

.....

(ii) Draw a diagram of a cell in metaphase of first division stage which has 6 chromosomes in diploid stage

(iii) Mention two events take place in that cell division which help to make variations

....

(iv) What are galls in plants ?

.....

(G) (i) The emerging force of natural selection could have produced first cells through a sequence of four main stages. What are they ?

.....

.....

.....

.....

(ii) Mention Geological eras of evolution that following incidences happened.

(a) Domination of Amphibians .....

(b) Increasing the dominance of angiosperms .....

(c) Extinction of dinosaurs .....

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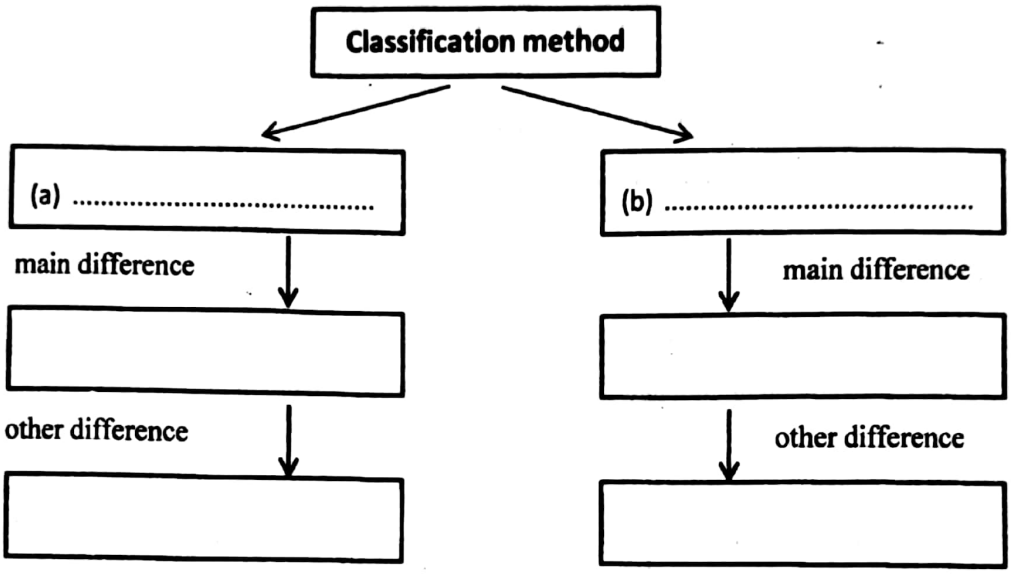
(iii) What is the artificial / human procedure which gave the idea of natural selection to Charles Darwin

.....

(iv) Fill the following mind map using classification methods



02. (A)

(i) Who introduced the five kingdom system of biological classification?

.....

(ii) What are the criteria of that classification.

.....

.....

.....

(iii) What is binominal nomenclature?

.....

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(B)

(i) Mention 2 common characteristics between Archea and Eukarya domans

.....

.....

(ii) What are basidiospores?

....

(iii) Who produces them?

.....

(iv) Mention about their basic nature of myeelium.

.....

(v) What are the differences between Ascopores and condiphores?

.....

.....

(C)

(i) Mention about the structure of nervous system of following phyla briefly.

(a) Platyhelminthes - .....

.....

(b) Anelida - .....

.....

(c) Arthropoda - .....

.....

(ii) Mention the respiratory organs of following living beings.

(a) Millepede .....

(b) Spider .....

(c) Crab .....

(iii) What is parapodia?

.....

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(D)(i) Fill the grid by using "√" if the organism shows the relevant method and use, "×" if the organism does not use it.

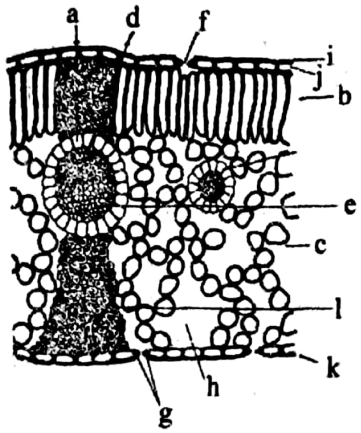
Class	Internal Fertilization	External Fertilization
Chondrichthyes		
amphibia		
Mammalia		

(ii) Write two characteristic features of phylum chordata.

.....

.....

(E) (i)



(a) Identify the diagram .....

(b) Name

a - e - i -

b - f - j -

c - g - k -

d - h - l -

(c) Write the function of following parts.

i -

b -

l -

f -

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(d) Mention about the uneven thickness of cell walls of g.

.....

(e) (i) What is phyllotaxy?

.....

(ii) What is the importance of H?

.....

(iii) What are the other adaptions of plants for that importance.

....

(f) (i) What is water potential?

.....

(ii) Define the pressure potential?

.....

(iii) Cell has a water potential, How is it?

.....

(iv) What is the statolith hypothesis? Explain briefly about its effect.

.....

.....

.....

.....

(v) Write 2 adaptations of plants to tolerate salt stress.

.....

.....

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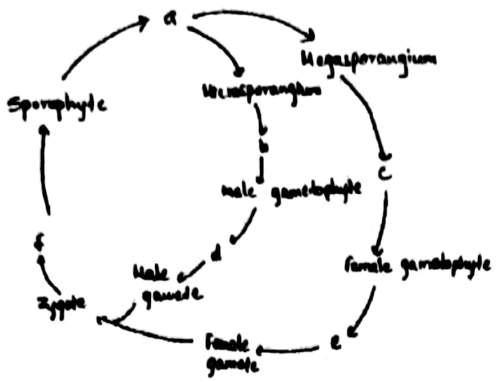
03. (i) The following diagram represents the life cycle of selaginella.



Name the structures / stages labelled as a, b, c, d and e

a. .....

b. .....

c. .....

d. .....

e. .....

(ii) What are the name of structures / stages of angiosperm life cycle which correspond to the following structures stages in the above diagram?

(i) a - .....

(ii) b - .....

(iii) female garetoplayte - .....

(iii) Mention as special characteristics of

(a) phylum gnetophyta

.....

.....

.....

(b) Give an example for gnetophyta plants.

.....

(B) (i) Write 2 special features of epithelial tissues.

.....

.....

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(ii) Write down the kind of Epithelial tissues seen in given places.

a. Inside the heart chambers .....

b. Inside the stomach .....

c. nasal passage .....

(iii) (a) What are the most abundant tissue type of the human body?

.....

(b) What are the main functions of that tissue type. Write 2 of them

.....

.....

(iv) (a) Mention 2 structural differences between smooth muscle and skeletal muscle.

.....

.....

(b) What are the importences of intercalated discs?

.....

.....

(v) What are Neuroglia.

.....

(C) (i) What is heterotrophic nutrition ?

.....

(ii) What are the main stages of holozoic nutrition

.....

(iii) Write down 4 feeding mechanisms of animals

....

....

(iv) Fill the grid.

Method	definition	example
Mutualism		
Parasitism		
Commensalism		

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(D) (i) What is an alimentary canal ?

.....

.....

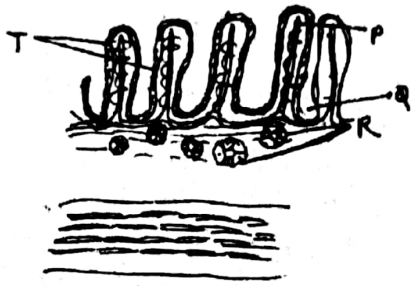
i. Write a major function of each of the following structure/ organ in human alimentary canal.

a. Mouth .....

b. Colon .....

c. Stomach .....

ii. The question below is based on the diagram of human small intestine.



Name the parts labeled as P, Q, R, T in the above diagram and write the major functions of each

	structure	function
P	.....	.....
Q	.....	.....
R	.....	.....
T	.....	.....

04. (A)

(i) What is a balanced diet ?

.....

.....

(ii) Write 3 functions of lipids in the diet?

.....

.....

.....

(iii) What are vitamins ?

.....

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(iv) Write two deficiency symptoms for each of the following.

a) Vitamin D .....

.....

b) Cobalamin .....

.....

(v) Write two functions of diatery fibres

.....

.....

(vi) Write the equation for calculating BMI (Body mass index)

.....

(B)

(i) What is the need of a Circulatory system in animals.

.....

.....

.....

.....

(ii) What are the main components of a circulatory system ?

.....

.....

.....

(iii) What are the two types of circulatory methods and give vertebrate classes as example (only one example is sufficient)

.....

.....

(iv) What are the functions of lymphatic system. Write 3 of them.

.....

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(C)

(i) What is the position of human heart?

.....

.....

.....

.....

(ii) Why is the wall of left ventrical is more thicker than the wall of right ventrical.

.....

(iii) Write 2 difference between veins and arteries

.....

.....

.....

(iv) What is the main common structural features between veins and lymph vessels.

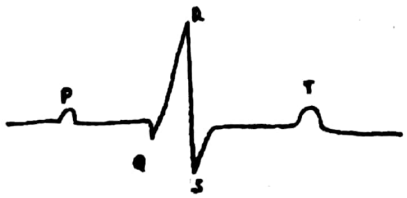
.....

(E)

(i) What is electrocardiogram (E.C.G.)

.....

(ii)



Identify

a) P wave .....

b) QRS wave .....

c) T wave .....

(iii) Why does E.C.G. not show the atrial repolarization.

.....

(iv) What is blood pressure.

.....

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(v) What is the blood pressure of a healthy adult man.

.....

(vi) Write 2 risk factors for hypertension.

.....

.....

(E)

(i) Define below words

a) cardiac output .....

b) stroke volume .....

(ii) How do you calculate cardiac output

.....

(iii) Write 2 Factors that affect stroke volume

.....

.....

(iv) Briefly explain the coronary circulation.

.....

.....

.....

(v) a) what is atherosclerosis?

.....

(b) How does it lead to a situation called angina.

.....

.....

.....

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Part B – Essay

- Answer only Four questions.

(01) a) Mention the gross structure of chloroplast in a plant cell.

b) Explain the process that atmospheric CO_2 is converted in to starch in a leaf of *Zea mays (Corn)*

(02) a) What are the things that are transported in a vascular plant.

b) Explain the pathways and mechanisms that those things are transported.

(03) a) Mention the position of human stomach.

b) Explain the structure of the stomach.

c) What happens to the food bolouses in the stomach when they enter to the stomach through the oesophagus Explain.

(04) a) What are the features that belong to the conducting system of human heart?

b) Mention the gross positions and structure of them.

c) Explain the cardiac cycle by mentioning the functions of the conducting system.

(05) a) Explain the structure of an angiosperm flower.

b) Explain about the pollination and mention the significance and adaptations for cross pollination.

c) Explain about the process of fertilization and fruit development of an angiosperm plants.

(6) Write short notes on following topics.

a) International codes of binominal namenclature.

b) Biottic stress

c) Structure of human liver.

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