



De Mazenod College - Kandana

Biology Part I - Grade 12

3rd Term Test July 2016

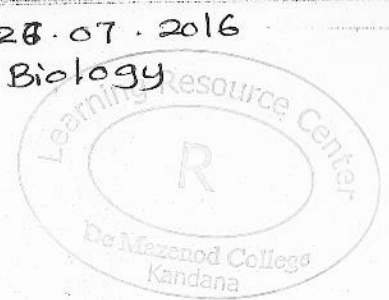
Time 2 hours

Answer all questions.

1. Which of the following is a linear polymer containing glycosidic bonds.
1. Glycogen 2. Glucose 3. Sucrose 4. Cellulose 5. Ribulose
2. Polysaccharide which is made of polymerization of galacturonic acid is the major component in
1. Middle lamella
2. Primary cell wall of plant cells
3. Cytoplasm
4. Plasma membrane
5. Exoskeleton of insects
3. The pair of purine bases in RNA
1. Adenine and guanine
2. Cytosine and uracil
3. Adenine and uracil
4. Guanine and cytosine
5. Adenine and cytosine
4. Select the correct statement
1. More elastin fibres are found in ligaments
2. Nerve fibres and blood vessels are found in cartilage
3. Pores of spongy bones are filled with blood
4. White fibrous cartilages are found in inter vertebral discs
5. Compact bone are not strong as spongy bones
5. Presence of high adhesive and cohesive forces of water does not contribute
1. To provide support in herbaceous plants
2. In movement of guard cells
3. To ascent of sap
4. To grow aquatic plants and algae in deep water*
5. In blooming of flowers
6. When plant is provided with H₂O labeled with ¹⁸₈O and normal CO₂. Which one of the following contains ¹⁸₈O isotope after photosynthesis?
1. Evolved O₂ 3. Stored starch 5. Non of the above
2. Produced C₆H₁₂O₆ 4. In RuBP
7. Select the incorrect statement regarding proteins
1. All proteins are made up of one or more polypeptide chain
2. Prions are proteins which has the ability to multiply within living cells
3. Catalase is a catalytic protein which hydrolyses H₂O₂
4. Thin filaments of muscle fibre contains actin protein
5. Capsid of a certain virus contains definite number of protein.
8. Incorrect pair of comparison between lysosome and peroxisome is

Lysosome	Peroxisome
1. Membranous vesicles	membranous vesicles
2. Contain hydrolytic enzymes	contains detoxifying enzymes
3. Contains in both plant and animal cells	contains only in plant cell
4. Digest worn out organelles	helps in photorespiration in plants
5. Helps in cell death by autolysis	not involved in cell death

9. Which of the following is not a characteristic similar to both skeletal muscle fibre and smooth muscle fibre ?
1. Unbranched nature .
 2. Nervous supply only from autonomic nervous system
 3. Neurogenic in contraction
 4. Absence of intercalated disc.
 5. Extensibility.
10. Select the correct sequence of events that take place in meiosis
- | | |
|--|--------------------------------------|
| A. Formation of two daughter cells | C. Formation of recombinant nodules |
| B. Separation of homologous pairs | D. Pairing of homologous chromosomes |
| E. Arrangement of pairs of homologous chromosomes on the equatorial plane. | |
- | | | |
|------------------|------------------|------------------|
| 1. A, B, C, D, E | 3. D, C, B, E, A | 5. C, D, E, B, A |
| 2. A, C, E, B, D | 4. D, C, E, B, A | |
11. Which of the following is incorrect
1. Sum of all chemical activities in a cell is the metabolism
 2. Cell uses energy released from catabolic reactions for anabolic reactions to take place
 3. ATP acts as an energy carrier in between reactions
 4. ATP is an immobile molecule
 5. When ATP hydrolyses to ADP, it releases 30.6 KJ/mol
12. Which of the following is incorrect regarding C4 photosynthesis ?
1. Oxaloacetate is formed within chloroplast of mesophyll cells
 2. Malate transport in to bundle sheath cells through plasmodesmata.
 3. Within bundle sheath cell, pyruvate is formed after releasing CO₂
 4. Pyruvate transport in to mesophyll cells again .
 5. Calvin cycle takes place within bundle sheath cells at a high CO₂ concentration
13. Which of the following is true ?
1. Sensory organs are absent in coelenterates
 2. Digestive tract is absent in tapeworms
 3. Blood circulatory system is absent in mollusks
 4. Blood pigments are absent in Arthropods
 5. Cephalization is absent in Annelids
14. Which is not occurred in Krebs's cycle?
1. Production of ATP by substrate level phosphorylation
 2. Production of 3 NADH molecules and a FADH₂ molecule from one pyruvate molecule.
 3. Regeneration of citric acid from oxaloacetic acid
 4. Production of CO₂ by decarboxylation
 5. Production of 2 ATP from one glucose molecule.
15. Given below are a few characteristics of an animal attached to rocks and other surfaces of marine environment.
- Has a head no eyes. Has a structure on the ventral side of the body by which attaches to the substratum
- Has a soft body covering. This organism belongs to the class:
- | | | |
|------------------|-------------------|-------------|
| 1. Polychaeta | 3. Gastropoda | 5. Bivalvia |
| 2. Holothuroidea | 4. Polyplacophora | |
16. Ascomycota differ from Basidiomycota because in Ascomycotes
1. Mycelium is septate
 2. Dikaryotic phase is present.
 3. Motile structures are absent in life cycle
 4. Storage food is starch
 5. Sexual spores are endogenous.



17. Which one of the following is not relevant in a comparison between *Sargassum* and *Gelidium*
- Both of these organisms are multicellular
 - Both have chlorophyll a, as photosynthetic pigment
 - Both have cellulose cell walls
 - Both are eukaryotic thallus forms
 - Both have flagellated cells
18. Which of the following is not a common feature for both Archea and Eukarya
- Presence of several RAN polymerase
 - Absence of peptidoglycan in the cell wall
 - Absence of branched lipid chains in plasma membrane
 - Not sensitive to streptomycin
 - Methionine as a starting amino acid for protein synthesis
19. Some members of a certain animal phylum shows following characteristics ,
- Bear a calcified exoskeleton.
 - No cephalization
 - Presence of ductless glands
- The character that cannot be seen in the above phylum is ,
- Unisexuality or bisexuality
 - External fertilization
 - Nerve ring and the radial nerves
 - Asexual reproduction
 - Development through a ciliated larval stage
20. Which of the following features are common to both groups of Reptilia and Mammalia?
- Nictitating membrane
 - Teeth within cavities
 - Major excretory product as uric acid
 - Homoeothermic
 - 12 pairs of cranial nerves
 - Glandular skin
 - Body divided into ; neck, trunk, and tail
- a, c, d, e only
 - d, e, g only
 - c, e, g only
 - b, c, e, f only
 - a, b, e, g only
21. What is the incorrect statement regarding muscle layers in the wall of alimentary canal?
- They are mainly composed of smooth muscles
 - Autonomic nervous plexus are present between muscle layers.
 - Consist of peripheral longitudinal muscle layer and the inner circular muscle layer.
 - They produce all types of movements in the alimentary canal.
 - They are situated only between serosa and the mucosa of the alimentary canal.
22. Select the correct statement regarding human pancreas
- It is situated in the curve of the duodenum, anterior to stomach
 - Secretory cells of pancreatic acini produce both enzymes and hormones.
 - Secretion of pancreatic juice is stimulated by the hormone secretin
 - Liver is the only target organ for pancreatic hormones
 - Pancreas produces all enzymes needed for the completion of protein digestion.

23. Select the response correctly matches function , deficiency and the vitamins

Function	Deficiency disease	Vitamin
F – needs for carbohydrate metabolism	Q -Anaemia	Y- cobalamin
G – needs for the synthesis of DNA and RNA	R - pelegra	X – thiamin
H – synthesis coenzyme needed for cellular respiration	P – degeneration of nervous system	Z - niacin

1. F, P, Z 2. G, Q, X 3. H, R, Z 4. F, R, X 5. H, P, Y

24. A plant tissue is allow to immerse in a sugar solution of solute potential -800 kPa and to reach the incipient plasmolysis .Then it is immersed in pure water for 30 minutes .Later it is transferred into a sugar solution of -600 kPa solute potential and allowed to equilibrate . What is the pressure potential of the tissue?

1. 1400 kPa 2. 800 kPa 3. 600 kPa 4. 200 kPa 5. 0 kPa

25. Select the incorrect regarding the basic plan of human blood circulatory system.

- The right arch of the 4th pair of aorta is lost
- 3rd pair of aortic arches produces the pair of carotid arteries
- 1st and 5th pairs of aortic arches are lost
- 2nd pair of aorta arches produces the pulmonary arteries
- Ventral aorta produces pairs of aortic arches

26. Select the false statement about the structure and the function of human brain.

- Hypothalamus – controls the autonomic nervous system
- Cerebellum - coordinates involuntary muscle movement
- Mid brain - controls the reflect movements of eye muscles
- Cerebral cortex – control mental activities
- Medulla oblongata – control the blood pressure

27. Select the materials transport through xylem

- A – water B – sucrose C – starch D – inorganic ions e- fructose
- A only
 - A and B only
 - A and C only
 - A and D only
 - A and E only

28. Select the major transport material of carbohydrates in plants

- Fructose
- Sucrose
- Cellulose
- Starch
- maltose

29. Which one of the following is not an excretory product ?

- NH₂
- CO₂
- Acetyl Co – A
- H₂O
- Bile pigments

30. Select the correct statement regarding hypothalamus

- Originated from embryonic midbrain
- Secret inhibiting and releasing hormones
- Respiratory centre is located in it
- It fulfills only specific endocrine function
- Helps to maintain coordination of muscle fibres and maintain of posture

31. Select the correct statement about the human lymphatic system

- There are no valves within lymph vessels
- Lymph collect into blood through subclavian vein
- Lymph has same composition to blood plasma
- Thoracic duct opens to right subclavian vein
- Lymphatic system involve only in specific immunity.

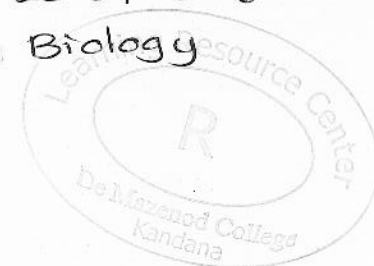


32. Incorrect statement about human kidney
1. It is a bean shape structure situated retroperitoneal in the abdominal cavity.
 2. It is covered by a renal capsule made up of elastic connective tissue
 3. Renal pyramids are striated structures situated in the renal medulla
 4. Nephron receives blood through afferent arterioles which arise from the branches of renal arteries.
 5. Peritubular capillaries drains blood into general circulation through the renal veins
33. Which of the following is correct?
1. 1mm³ of blood of mature healthy person contain 500,000 red blood cells
 2. Platelets are fragments of cytoplasm with nuclei
 3. White blood cells can reach to the tissue fluid through capillary walls.
 4. Eosinophil are granulocytes without nuclei
 5. Some invertebrates have haemoglobin within cells
34. Initial curvature of *Colocasia* petiole is measured as Q angle. Select the incorrect statement.
1. Q is increased in a hypertonic solution
 2. Q is decreased in a hypotonic solution
 3. When tissue is immersed in a solution it comes to the equilibrium
 4. This experiment is used to determine the water potential of tissue
 5. Curvature is not change at pure water.
35. Which is not a structural adaptation of guard cells which is important in stomatal opening.
1. Guard cells are tightly bound to each other at two ends
 2. Presence of curved lateral walls due to kidney shape
 3. Presence of chloroplasts
 4. Presence of cellulose hoops around the guard cells
 5. Presence of thick wall, covering the stomata.
36. A process that occurred due to stimulations of human sympathetic nervous system
1. Constriction of pupil of eye
 2. Decreasing the blood pressure
 3. Inhibition of sweating
 4. Increases the peristalsis
 5. Contraction of urinary sphincter
37. Which of the followings is incorrect about human blood cells.
1. Basophils are modified into mast cells
 2. Basophils activates in allergic conditions
 3. Neutrophils has the highest number
 4. Mainly they are produced in bone marrow
 5. Thrombokinesis is not secreted by blood cells
38. Not an exocrine secretion.
1. Mucus
 2. Enterokinase
 3. Saliva
 4. Glucagon
 5. Milk
39. Select the correct statement about the selective absorption in human nephron.
1. Obligatory water resorption is takes place at distal convoluted tubule
 2. Na⁺ and Cl⁻ are actively reabsorbed
 3. HCO₃⁻ reabsorption is occurred at proximal and distal convoluted tubules
 4. ADH is not important for the water reabsorption at distal convoluted tubules
 5. Glucose, amino acid and urea are actively reabsorbed at proximal convoluted tubules.
40. Select the incorrect pair about the structure and function in human respiratory system.
1. Nasal cavity - filtering and moisturizing of respiratory air
 2. Larynx - produced sound
 3. C-shaped cartilage - prevent the collapsing of trachea
 4. Surfactant cells - secretion of alveolar fluid
 5. Lungs - exchange of respiratory gases

Answer questions 41 to 50 using the given information.

1	2	3	4	5
A B and D correct	A C and D correct	A B correct	C D correct	Other combination

41. What is / are the pair/ pairs which contain a protein and a polysaccharide respectively.
- A. Amylase – Amylose
 B. Lipase – Inuline
 C. Glucagon – Cutine
 D. Pepsin – Glycogen
 E. Pectin - Suberin
42. What is/are the true statement/s regarding guttation?
- A. It is a process that water is removed passively from the plant.
 B. Water with salt will be lost through leaves .
 C. Responsible to xylem transportation in plants
 D. Water is lost through hydathodes in leaves.
 E. This is a process that can be controlled and taking place only in some plants.
43. Select the animal phyla / phylum in which , animals use their body surface to exchange respiratory gases
- A. Chordate
 B. Arthropod
 C. Annelida
 D. Coelenterate
 E. Echinodermata
44. What is / are the functions of mid brain ?
- A. Changing the size and the shape of the eye lens
 B. Changing the size of the pupil
 C. Maintaining the posture and balance of the body
 D. Maintaining the blood pressure
 E. Controlling the heart beat and respiratory rate
45. Correct statement/s regarding human erythrocytes
- A. Respire anaerobically
 B. It maintains high surface area volume ratio by its specific shape
 C. Can leave out from blood vessels in some organs
 D. Diameter is lesser than that of leucocytes
 E. Less abundant than that of platelets
46. Select the structure which contain haploid structures in Kingdom Plantae .
- A. *Pogonatum* - protonema , capsule
 B. *Selaginella* - strobilus , archegonia
 C. *Nephrolepis* – prothallus , antheridia
 D. *Cycas* - endosperm , archegonia
 E. *Anthophyta* – pollen grain , endosperm
47. Which of the followings are correct regarding the cardiac cycle ?
- A. Duration of the cycle is 0.8 seconds
 B. Atrio – ventricular valves are closed during the ventricular systole
 C. Aortic valves and pulmonary valves are opened during complete cardiac diastole
 D. Complete cardiac diastole takes more time than the articular systole
 E. Bicuspid and tricuspid valves are closed during atricular systole.
48. Select the correct order of the following organisms that show the given featuters
- a. Squid b. Lizard c. Salamander d. skate
- Endo skeleton , Gills , Excretory product as urea and three chambered heart.
- A. a,d,c,b
 B. a,d,b,c
 C. b,a,d,c
 D. c,a,d,b
 E. d,b,c,a



49. Select the incorrect combination . *

Floral parts of typical Angiosperm	Parts of <i>Selaginella</i> strobilus
A. Carpel	Megasporophyll
B. Stamens	Microsporophyll
C. Anther	Micro sporangium
D. Nucellus	Endosperm
E. Embryo sac	Female gametophyte

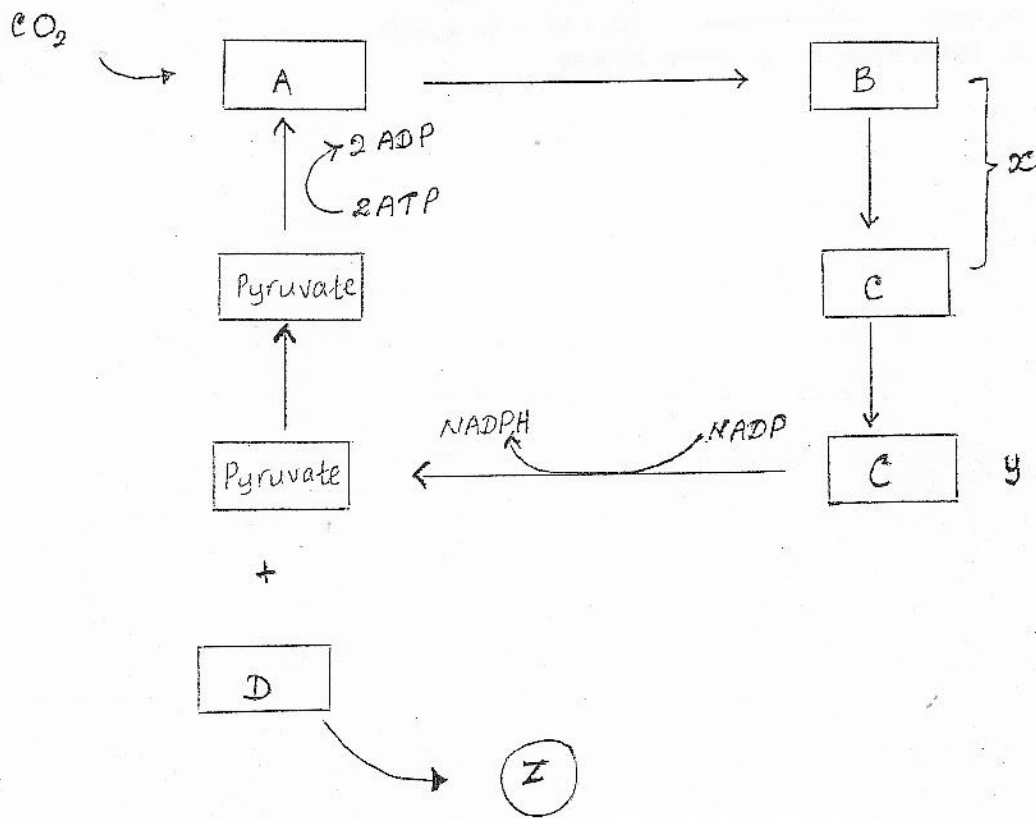
50. Select the correct reactions related to C3 and C4 pathways of photosynthesis.

- A. $2 \text{NADP}^+ + 4\text{e}^- + 4\text{H}^+ \longrightarrow 2\text{NADPH} + 2\text{H}^+$
- B. $2\text{ADP} + 2\text{P}_i \longrightarrow 2\text{ATP}$
- C. $\text{PEP} + \text{NADPH} \longrightarrow \text{OAA} + \text{NADP}$
- D. $4\text{H}_2\text{O} \longrightarrow 2\text{O}_2 + 4\text{H}^+ + 4\text{e}^- + 2\text{H}_2\text{O}$
- E. $\text{Malate} + \text{CO}_2 \longrightarrow \text{Pyruvate}$

Time : 3 hours

Part A – Structured Essay

1. A) Following diagram shows you mechanisms involved in photosynthesis.



i. Name the site of occurrence of X, y, and Z.

X

Y

Z

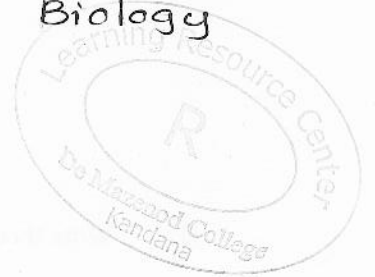
ii. a) Name A, B, C, and D

A

B

C

D



b) Name the site of capturing CO₂ by A

.....

iii. Write the reduction reactions that take place in photosynthesis mechanism.

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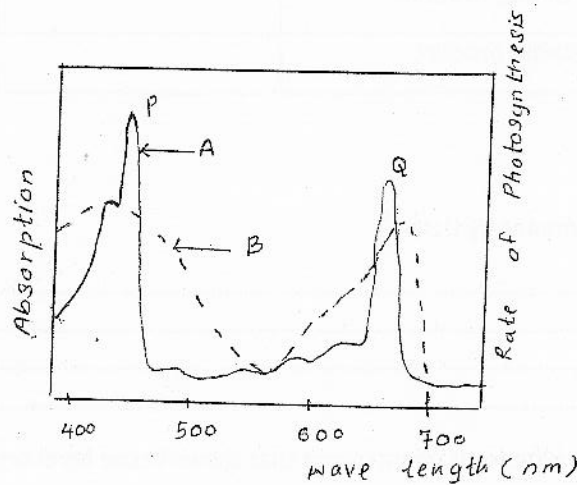
iv. Name the enzymes that used in the process mentioned in the above ii (b) and in Z cycle.

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v. Name two plants that shows the type of photosynthesis mentioned in the above

.....

B) Given below are two graphs relevant to photosynthesis mechanism.



i. Name the graphs marked as A and B

A
 B

ii. Name the respective colours and the range of wave-lengths of them relevant to the peak P and Q of graph A.

P

Q

iii. Write three conclusion about photosynthesis that derived by the above graphs .

.....

iv. Name the primary and final electron acceptor of the non- cyclic phosphorylation of photosynthesis.

Primary electron acceptor

Final electron acceptor

v. Complete the given table about C3 and C4 photosynthesis

Process	C3 plants	C4 Plants
a. First CO ₂ acceptor		
b. Place of CO ₂ fixation		
c. First stable product		

c)

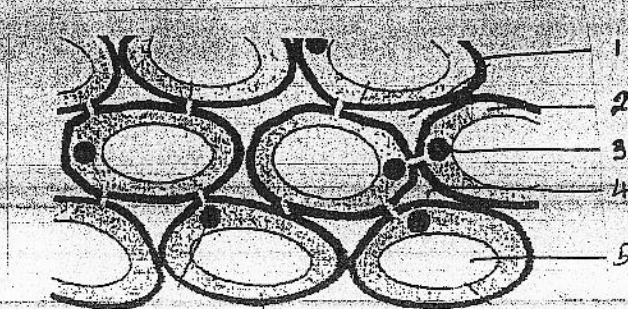
i. What do you meant by tissue ?

.....

ii. Name the two kingdoms of organisms that shows tissue level organization.

.....

iii. Answer questions a to d using the given diagram.



a. Name the tissue given in the diagram.

.....

b. Name the parts 1 -5 in diagram

1.....

2.....

3.....

4.....

5.....

c. Name the main two parts of the given tissue

.....

d. Write five characteristic features of the given tissue

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2. A.

i. What do you meant by nutrition?

.....

.....

ii. Name the mode of nutrient of the given organisms.

a) Blue non sulphure bacteria

b) *Ntrisomonas*

c) Chlorophyta

d) *Penicillium*

e) Mammals

f) *Loranthus*

g) Orchids and epiphytes

h) *Drossera*

iii. Name the elements that are found in trace level in plants but; macro elements in animals.

.....

B.

i. What do you mean by dental formulae ?

.....
.....

ii. Write the dental formulae of permanent teeth and deciduous teeth

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.....
.....

iii. Write three microbial activities of which causes disease in oral health

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iv. Write four habits to maintain good oral health

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v. Explain what do you mean by balance diet with the nutrients should present in it.

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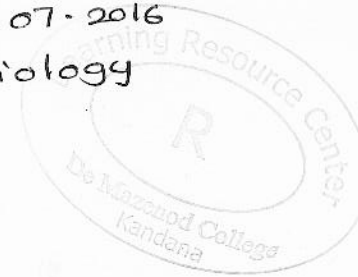
C.

i. What do you mean by peristalsis ?

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.....

ii. Name the tissue layers that can be seen in a cross section of stomach wall.

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.....
.....



iii. How small intestine is modified to perform its functions.

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iv. Write three differences of the wall of large intestine that shows than its general arrangement in gut wall.

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.....

3. A)

i. Write a main feature of the given phyla of invertebrate that they differ from one another .

- a. Coelenterates-.....
- b. Annelida -.....
- c. Mollusca -.....
- d. Echinodermata -.....

ii. Write the invertebrate phyla that possess the given feature

- a. Triploblastic coeleomates
- b. Triploblastic, acoelomates
- c. Bilateral symmetry
- d. Radial symmetry

iii. Name the respiratory and locomotory structures of the given Phyla

Respiration

- a. Annelida
- b. Arachnida
- c. Echinodermata

Locomotion

- a. Turberlaria
- b. Gastropoda
- c. Echonodrmata

B)

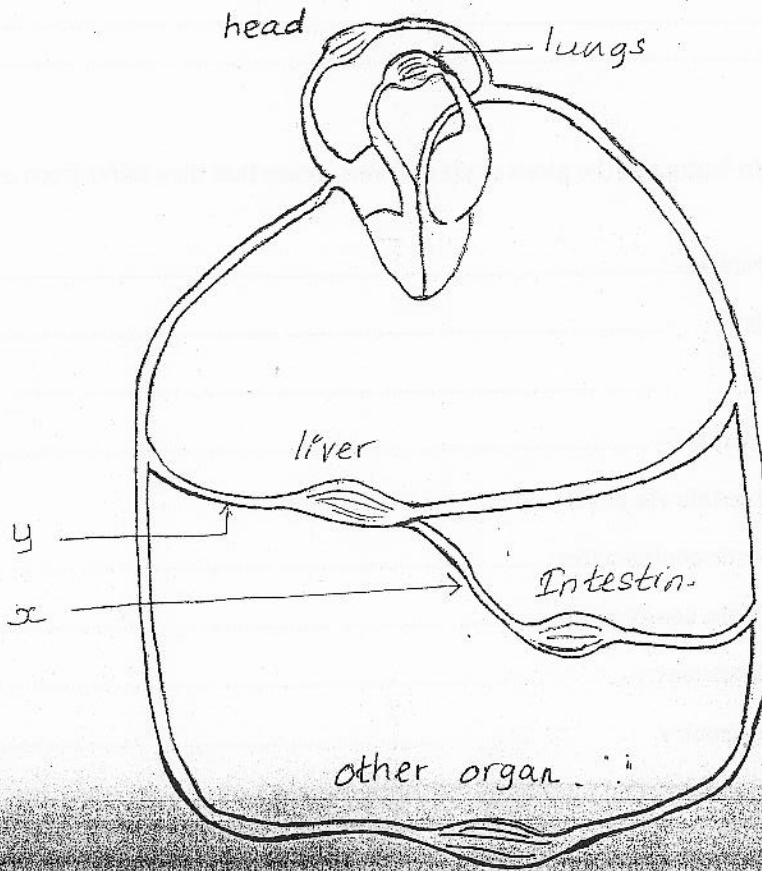
i. Name three groups of organisms that they exchange their materials by simple diffusion .

.....
.....

ii. Write two reasons for the need of circulatory system as the size of the body of an organism increase .

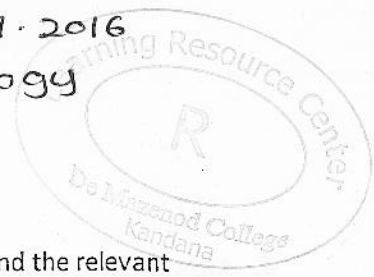
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iii. Answer the questions using the given diagram.



a. Name the type of the blood circulatory system given in the diagram

b. Name the groups of animals that the above system is present



c. Name the two main types of circulation in the above diagram and the relevant embryonic aortic arches that give rise to them.

Type of circulation

Aortic arch

.....
.....

d. Name the artery and the vein that transport blood in to and out of the given organs.

organ	Artery	Vein
Head		
Liver		
Intestine		

iv. Name two substances found in blood vessel X and two substance added to blood vessel Y from hepatocytes

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.....

C)

i. Name the two types of tissues that involved in transportation in flowering plants.

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ii. Write the three components of 'Pressure Flow Hypothesis'.

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4. A)

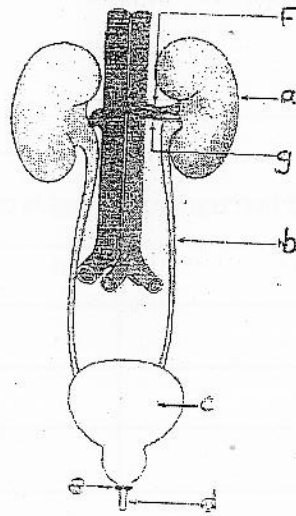
i. Name the main parts of the human urinary system

.....
.....

ii. Write three functions of the human Urinary System.

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

iii. Answer the questions 'a' to 'c' using the given diagram



a. Name the parts 'a' to 'g'.

a-.....

b-.....

c.....

d.....

e.....

f.....

g.....

b. Write the functions of parts 'a' to 'g'.

a.....

b.....

c.....

d.....

e.....

f.....

g.....

c. Write the impact of autonomic nervous on the structure named as e. The impact of autonomic nervous on the structure

.....

B)

i. Name the two types of tubules that contribute in main function of kidney. Tubules not contribute in

.....

ii. Name the function of above two tubules.

.....



iii. Name the two types of nephrons in kidney

.....

iv. Write two differences of the above two types of nephrons .

.....

v. a) Name the parts of the nephron that forms the malphigean corpuscle .

.....

b) Explain what type of blood passes through efferent arteriole

.....

c) Name the types of blood capillaries associates with the nephron

.....

d) Name the location of above two types of blood capillaries in the nephron.

.....

c)

i. What do you meant by co-ordination?

.....

ii. Name the two types of co-ordinations that takes place in human body.

.....

iii. Write differences between the above two types of co-ordinations.

.....

iv. Give one example for each of the above two types of co-ordinations.

.....

v. Name the structural and functional unit of vertebrate nervous system.

Structural -

Functional -

vi. Write the three factors needed to maintain the resting potential of neuron.

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Part B – Essay Questions.

Answer four questions only.

1)

- i. Explain the location ,gross structure and tissue arrangement of human stomach.
- ii. Explain the structural difference between the arrangement of tissues in the stomach wall and the wall of small intestine and it's importance.

2)

- i. What do you meant by transpiration?
- ii. What are the internal and external factors that affect on the rate of transpiration?. Explain the effect of those factors on the rate of transpiration.
- iii. Explain the importance of reduction of transpiration for plants and adaptations of plants for that .

3) Write shot notes.

- i. Nitrogenous excretory products in animals.
- ii. Radial transportation of water in higher plants
- iii. Water potential

4) Explain the ultra structure of DAN molecule and it's self replication mechanism.

5) Write an account of blood cell based on origin , structure and it's function

6)

- | | |
|--|--|
| i. Explain the structure of cytoplasm. | i. Explain the Structure of cytoplasm. |
| ii. Explain the importance of mitochondria | ii. Explain the importance of mitochondria |