



G.C.E. A/L Examination March - 2017

Conducted by Field Work Centre, Thondaimanaru

In Collaboration with

Provincial Department of Education, Northern Province.

Grade: - 12 (2018)

Biology

Time: Three hours

Answer all questions

- Which of the following is one of the characters of water essential for living hood and habitat?
 - 1). Transparent to light
 - 2). High capacity to absorb heat
 - 3). Expand during freezing
 - 4). High adhesive and cohesive force
 - 5). High latent heat of vaporization
- Which one of the followings contains branched polymers?
 - 1). Protein, nucleic acid
 - 2). DNA, RNA
 - 3). Cellulose, pectin
 - 4). Starch, glycogen
 - 5). Sucrose, cellulose
- Which of the following statement is **incorrect** regarding flagella and cilia?
 - 1). Contain microtubules
 - 2). Arise from a basal body
 - 3). Surrounded by plasma membrane
 - 4). ATP is needed for their beating
 - 5). Made up of actin and myosin filaments
- Cell considered as long lived is,
 - 1). Nerve cell
 - 2). Bone marrow
 - 3). Hepatocyte
 - 4). Red blood corpuscle
 - 5). Human oocyte
- Which of the following statement is **incorrect** regarding mitochondria?
 - 1). They are capable to replicate themselves
 - 2). They can produce their own proteins
 - 3). It is found in all aerobic organisms
 - 4). It has sites for Krebs cycle reactions
 - 5). It has ribosome
- Which of the following statement is **incorrect** regarding photosynthesis of C_3 and C_4 plants?
 - 1). Photosynthesis of C_4 is efficient that of C_3 plants.
 - 2). Ribulose bis phosphate act as CO_2 acceptor in both plants
 - 3). Less energy expenditure in C_3 than C_4
 - 4). Both utilize NADPH
 - 5). Photo respiration takes place in C_3 plants
- Compound that accept the final electron from NADH in the fermentation of muscle cells,
 - 1). Molecular oxygen
 - 2). Acetaldehyde
 - 3). Ethanol
 - 4). Co enzyme- A
 - 5). Pyruvate
- Which of the following statement is **incorrect** regarding cyanobacteria?
 - 1). They can reproduce by fragmentation
 - 2). They have capability to fix atmospheric nitrogen
 - 3). They contain plasmids
 - 4). They have prokaryotic cellular organization
 - 5). They never have flagella.

9. Following are found in an animal that belongs to a marine ecosystem:
- Head
 - Tentacles
 - Segmented body
- Suitable animal for the above,
- 1). *Bipalium* 2). *Nereis* 3). *Ascaris* 4). *Chiton* 5). Oyster
10. Which one of the followings **cannot** be considered as a unique feature for a phylum?
- 1). Book lung 2). Water vascular system 3). Pinna 4). Coelom 5). Radulla
11. Which one of the followings **cannot** be considered as a unique feature for amphibians?
- 1). Having renal portal vein 2). Having two occipital condyles in the skull
3). Having nictitating membrane 4). Having middle ear
5). Having both fresh water and marine habitat
12. A character that **cannot** be used to distinguish a cartilaginous fish from a bony fish. Cartilaginous fishes,
- 1).have larval stages 2).have no operculum 3).have placoid scale
4).many gill slits 5).have heterocercal tail
13. Which of the following element deficiency shows stunt growth and curling of leaves in plants?
- 1). B 2). Ca 3). Fe 4). Mg 5). Cu
14. Which of the following is **incorrect** regarding the structure and functions of human large intestine?
- 1). Its proximal end is caecum
2). Patches Payer's are found
3). It can propel faeces towards rectum
4). It can secrete mucus
5). Its muscular layer is continuous
15. Which of the following statement is correct regarding human alimentary canal?
- 1). Intrinsic factor that found in gastric juice aids in the absorption of vitamin B₁₂.
2). Hepatic portal vein transport oxygenated blood to the liver
3).Obligate absorption of water takes place in large intestine
4). Mucosa of duodenum is abundant in glands with branches
5). Secretion of pancreas is induced by sceretin and enterogastrene.
16. * Wounds in tongue
* Infertility
* Sores in skin
- Vitamins for the above deficiencies in human respectively,
- 1). Pyridoxine, cyanocobalmin, biotin 2). Riboflavin, tocopherol, nicotinic acid
3). Thiamine, riboflavin, nicotinic acid 4). Tocophereol, riboflavin, calciferol
5). Pantothenic acid, riboflavin, pyridoxine.
17. Gas that found in higher percentage in expiratory air,
- 1). Nitrogen 2). Oxygen 3). Carbon dioxide
4). Carbon mono oxide 5). Water vopour

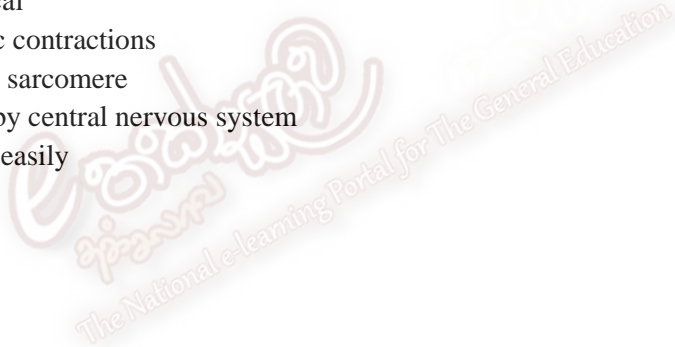
18. Total air exchanged in lungs during a deep inspiration and expiration,
 1). Tidal volume
 2). Inspiratory capacity
 3). Residual volume
 4). Vital capacity
 5). Functional residual volume
19. Select the correct statement regarding respiration in human.
 1). Time taken for a respiratory cycle is about 4-5 seconds.
 2). Diaphragm relaxes during inspiration
 3). Bronchioles are lined by ciliated columnar epithelium
 4). Breathing is always controlled by involuntarily.
 5). Alveoli are multi layered thick sacs.
20. **Incorrect** regarding mechanism of opening and closing of stomata,
 1). Decrease in CO₂ concentration in guard cells causing stomata open.
 2). Decrease in pH in guard cells causing stomata close.
 3). Plant growth substances do not affect it
 4). ATP is needed for this mechanism
 5). In some plants Cl⁻ ions disperse during stomatal operation.
21. Select the **incorrect** statement of the followings.
 1). Heart of fishes transport deoxygenated blood
 2). All the homoeothermic animals pose complete double circulation
 3). Vertebrates have closed circulatory system
 4). There are no blood vessels found in open circulatory system
 5). Single circulation of vertebrates always poses two chambered heart
22. A person of antigen B in erythrocytes, from who always receive blood during blood transfusion,
 1). B⁻ 2). AB⁻ 3). O⁺ 4). AB⁻ 5). B⁺
23. Which of the following is **incorrect** regarding structure of human heart?
 1). Papillae are modified from cardiac muscle
 2). Wall of auricles is thinner than ventricles
 3). Atrioventricular node is a mass of special fibres.
 4). Sinoatrial node is a mass of special nerve fibres
 5). Valves contribute in the production of heart sounds

❖ Follow the instructions given below for the questions from 24-30.

| ABD correct | ACD correct | AB correct | CD correct | Any other responses |
|----------------|----------------|---------------|---------------|------------------------|
| 1 | 2 | 3 | 4 | 5 |

24. Which of the following is/are made up with two nucleotides?
 A. NADP B. AMP C. NAD D. FAD E. FMN

25. Which of the following cellular structure/s is/are appear and disappear ?
 A. Centriole B. Chromosome C. Nucleolus
 D. Cytoskeleton E. Ribosome
26. Which of the following/s is/are common to chiolopodes and diplopodes?
 A. One pair of legs per segment B. Body divided into head, thorax and abdomen
 C. Presence of antenna D. Trachea as respiratory structure
 E. Excretory pores open at surface
27. In which structure/s of respiratory system of human, smooth muscle found?
 A. Trachea B. Alveolar duct C. Bronchiole D. Bronchus E. Larynx
28. Which of the following/s is/are photoautotroph/s?
 A. *Loranthus* B. *Sargassum* C. *Agaricus*
 D. Purple sulphur bacteria E. *Cuscuta*
29. Substance/s transported through phloem tissue is/are,
 A. PO_4^{3-} B. Growth substances C. NO_3^- D. Vitamins E. CO_2 gas
30. **Incorrect/s** regarding cardiac muscle,
 A. Short cylindrical
 B. Show rhythmic contractions
 C. Do not contain sarcomere
 D. Nerve supply by central nervous system
 E. Do not fatigue easily





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Biology II A

A. Structured essay Answer all questions in this paper.

01. The abundant inorganic compound in living matter is water.
- A. i). Indicate two major functions of water in living organisms.
.....
.....
- ii). Name two characters of water that tolerate the temperature changes in organisms.
.....
.....
- iii). a. What is the feature found in ATP molecules which enable as an energy carrier?
.....
b. Which is the energy source for the oxidative phosphorylation?
.....
- iv). Indicate the type of repeated structural units of the following organic substances.
- a. Glycogen
- b. Inulin
- c. Pectin
- v). Indicate the structural and storage compound stated above (a-c).
- Structural compounds
- Storage compound
- vi). a. Name a non polymeric carbohydrate which contain 1-2 glycosidic bond.
.....
- b. Briefly give the experimental procedure to identify the above mentioned carbohydrate in (vi. a).
.....
.....
.....
.....

B. i). What is cytoskeleton?

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

ii). Indicate the structural components of cytoskeleton.

.....
.....

iii). Write two functions of cytoskeleton in the cell division in animal cells.

.....
.....

iv). Indicate the cellular organelle for thy following functions.

- a. Production of glyco lipids
- b. Detoxification of peroxides.....
- c. Autolysis.....

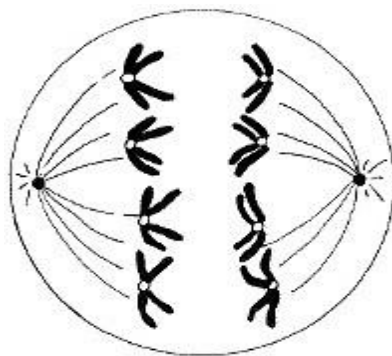
v). a. What is a cellular junction?

.....
.....

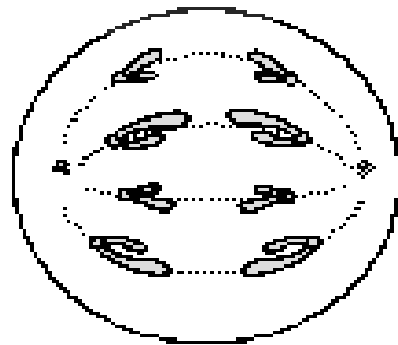
b. Why the plant cells do not have cellular junctions?

.....

vi). Two stages found in meiosis are given below:



Stage I



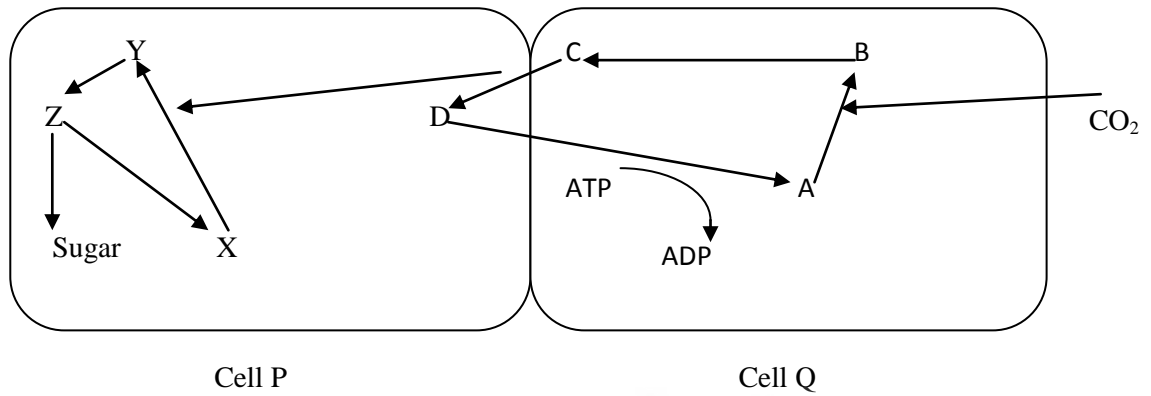
Stage II

Identify the above stages and briefly indicate the events takes place in the each stages.

Stage I.....
.....
.....

Stage II.....

C. Line diagram of photosynthetic path ways of sugar cane and maize are given below.



i). Name cell P and Q

P..... Q.....

ii). Give the specific places where the above cycles takes place.

P..... Q.....

iii). Name the compounds A, B, C and D.

A..... B.....

C..... D.....

iv). How many carbon atoms found in compound D?.....

v). Give suitable names for X, Y and Z

X..... Y..... Z.....

vi). Indicate a reduction reaction occurs in cell P.....

vii). Indicate two organelles involved in photo respiration other than chloroplast.

.....

viii). Give two global importance of photo synthesis.

.....

.....

2. A. i). What is meant by classification of organisms?

.....
.....

ii). What is a taxon?

.....
.....

iii). Indicate four specific features of phylum anthophyta.

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

iv). Followings are some structures found in Vertebrates and invertebrates.

- a. Exo skeleton b. tentacles c. Suckers d. Poison sting e. Gills
f. Trachea g. Eggs h. Eye spot

Which of the above is/are found in the following animal groups?

- Crustacea.....
- Polyplacophora.....
- Scyphozoa.....
- Polychaeta.....
- Amphibia.....
- Arachnida.....

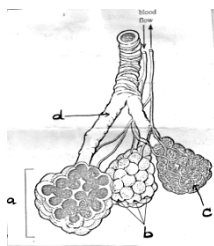
B. i). Class Reptilia is adapted to terrestrial life. Give such structural features of reptiles for terrestrial life.

.....
.....

ii). Name a phylum representing the following characters.

- a. Aristotle lantern..... b. Pinna.....
c. Siphon..... d. Parapodia.....

iii). The following diagram is part of human respiratory system.



Name a, b, c, and d.

- a..... b.....
c..... d.....

ii). Give two characters that has” b” for its function.

.....

iii). Give three cells found in structure “c” and indicate their functions

.....

.....

.....

3. A. i). Name the salivary glands in human and give their locations.

.....

.....

.....

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.....

.....

ii). Which is the abundant component of human saliva?

.....

iii). What is the role of autonomous nervous system in the secretion of saliva?

.....

iv). a. Indicate the exact location of human liver.

.....

.....

b. Name a substance that is produced by liver regarding digestion.

.....

c. Which is the storage part of the above mentioned substance in (iv-b)?

.....

d. Which hormone induce the ejection of the substance in (iv-b) from the stored part?

.....

v). What is internal hepatic circulation?

.....

.....

vi). Name a specific cell found in liver

.....

B. The followings are some enzymes and hormones associated with digestion.
Trypsin, enterokinase, Amino peptidase, Secritin, Gastrin, Enterogastrone.

i). Indicate the hormones and give their functions respectively.

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

ii). Name an enzyme which is not directly involved in digestion and give its function.

Enzyme

Function

iii). Give the digestive enzymes of the above and write their functions.

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.....
.....

C. i). What is lymph?

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.....

ii). Give three associated lymphoid tissues.

.....
.....

iii). Name lymph vessels that have semi lunar valves.

.....

iv). In which places the lymphatic system joins with blood circulatory system?

.....

v). Which is the largest organ of lymphatic system?

.....

vi). Indicate two functions of lymph.

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4. A. i). Indicate the major paths found in the plant roots for the conduction of water and briefly describe them.

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ii). Briefly describe the sugar – starch conversion mechanism of stomatal operation.

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iii). Lower epidermal peels of *Rhoeo* were placed sucrose solutions named as A and B. Solute potential of solution A is -1200 kPa. Solute potential of solution B is -980 kPa.. After equilibrium 50% of plasmolysed cells found in the solution A.

- a. What is the solute potential of *Rhoeo* peel?
.....
- b. What is the water potential of the peel that immersed in solution B?
.....
- c. What is the pressure potential of the cell that immersed in solution B?
.....

B. i). Indicate the major three aortic arches of human and in which arches they evolved from basic plan of the embryonic vertebrate?

| | |
|---------------------|-----------------------------|
| Human aortic arches | Aortic arches of basic plan |
|---------------------|-----------------------------|

| | |
|-------|-------|
| | |
| | |
| | |

ii). What are the components of conducting system of human heart?

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- iii). a. What is stroke volume of heart?
.....
.....
- b. What is the value of stroke volume of a normal adult human?
.....
- c. What is cardiac output?
.....
.....
- d. What is the volume of blood in a cardiac output of a healthy adult human who has a heart rate of 72 per minute?
.....

- C. i). What is hyper tension?
.....
.....
- ii). Give three reasons for hyper tension.
.....
.....
.....
- iii). What are the effects of hypotension?
.....
.....
- iv). Indicate three factors that regulate blood pressure.
.....
.....
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Biology II B

B. Essay

Answer any **two** questions only.

5.
 - a. Describe the structure of human stomach
 - b. Briefly describe the differences found in the stomach from the basic histological plan of the human gut.
 - c. Indicate the functions of human stomach

6. Explain the concept of water potential and describe the role of *Colocasia* petioles in the determination of water potential of plant tissues.

7. Write short notes on the followings:
 - a. Lipids
 - b. Plasma membrane
 - c. Mechanisms of enzyme activity