

	<b>09</b>	<b>E</b>	<b>I</b>
<b>First Term Test – 2018 (November)</b>			
<b>Grade 12</b>			
<b>Biology I</b>		<b>Time: 1 hour</b> <i>Enu</i>	

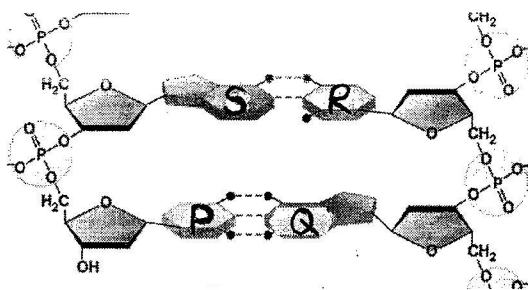
**Instructions:**

- This questions paper consists of 25 questions.
  - Answer all the questions.
  - In each of the questions 1 to 25, pick one of the alternatives (1) , (2) , (3) , (4) , (5)
  - Which is correct or most appropriate and mark on the number corresponding to your choice in the answer sheet provided.
- ❖ Question number (1) and (2) are based on following statements

“X” is a single membrane bound cell organelle, and it forms the cell organelle “Y”.  
 Carbohydrate metabolism is a function of single membrane bound cell organelle “Z”

- (1) Which can be the function of “X”
1. Storage of  $Ca^{2+}$
  2. Collection, packaging and distribution of materials
  3. Digest food particles received by phagocytosis
  4. Detoxification of peroxides
  5. Form cleavage furrow in the cytokinesis of animal cell
- (2) What can be the “Y” and “Z” cell organelles respectively
1. Ribosome and SER
  2. Peroxisome and Golgi complex
  3. Glyoxysome and RER
  4. Lysosome and SER
  5. Lysosome and RER
- (3) Select the **incorrect** relationship

	Property of water	Example
1	Cohesive behavior	Transportation of water and dissolved substances inside the vascular tissues
2	Versatility as a solvent	Dissolving of glucose and NaCl in water
3	Cohesive behavior	Aquatic small insects can live inside water
4	Ability to moderate temperature	Having high specific heat capacity in water
5	Expansion upon freezing	Organisms in aquatic bodies can survive during winter



(4) Select the **incorrect** statement about P, Q, R and S Nitrogenous bases

1. P and Q are found in both DNA and RNA
2. R cannot be cytosine
3. S can be the most abundant N base in living organisms
4. SR and PQ pairing can be only found in DNA
5. R can be thymine

❖ (5) and (6) questions are based on following table

Experiment	Solution X	Solution Y	Solution Z
Benedict test	Brick red precipitate	No precipitate	Brick red precipitate
Biuret test	Light blue colour	Purple colour	Purple colour
Iodine test	Blue black colour	Brown colour	Brown colour
Sudan III test	Pink colour solution	Red colour globules	Red colour globules

(5) The solution "X" can be

1. Glucose
2. Glucose and starch
3. Reducing sugar and starch
4. Sucrose and Protein
5. Reducing sugar, starch and oil

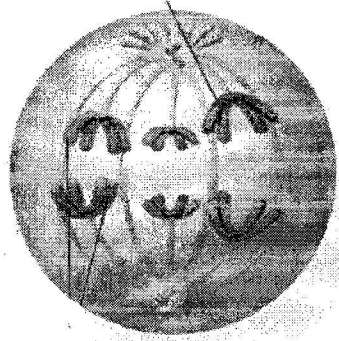
(6) Y and Z solutions can be

	Solution Y	Solution Z
1	Starch and Protein	Reducing sugar, starch and protein
2	Protein and oil	Starch, Protein and oil
3	Protein and oil	Reducing sugar, Protein and oil
4	Reducing sugar and protein	Reducing sugar, Starch and oil
5	Sucrose and oil	Reducing sugar, Protein and oil

(7) Select the N base sequence of the mRNA molecule that is formed by using the complementary strand of DNA having CCATGCATC

1. GGTACGTAG
2. CCTAGCTAC
3. GGUACGUAG
4. CCATGCATC
5. CCAUGCAUC

(8) following diagram represents



1. Metaphase of meiosis II
  2. Anaphase of Mitosis
  3. Anaphase of meiosis II
  4. Anaphase of meiosis I
  5. Telophase meiosis II
- (9) Select the **incorrect** statement about cancers, tumors and galls
1. Growth factors are essential for cancer cells
  2. The spread of cancer cells from original site to distant site is metastasis
  3. Benign tumors do not cause serious problem
  4. Galls are formed due to uncontrolled mitotic division of plant cell
  5. Galls are formed due to infection by virus, bacteria and fungi
- (10) Which of the following statement is **incorrect** about ATP
1. It has ribose sugar
  2. Single nucleotide
  3. ATP is converted into light energy within the cells for thermoregulation
  4. N base of ATP is not a pyrimidine
  5. By breaking of last high energy bond of ATP  $-30.5 \text{ KJmol}^{-1}$  energy is released
- (11) Which of the following statement is **incorrect** about enzyme inhibitors
1. Most competitive inhibitors are reversible
  2. Toxin and poisons are reversible inhibitors
  3. Competitive inhibitors have similar shape with substrate
  4. Non competitive inhibitors are attached with the site, other than active site
  5. The action of competitive inhibitor can be reduced by increasing the substrate concentration
- (12) Select the **incorrect** statement about the allosteric regulation of enzymes
1. Most enzymes regulated by allosteric regulation are made up of 2 or more sub units
  2. Each sub unit is composed of a polypeptide chain, active site and allosteric site
  3. When an inhibitor binds with the regulatory site, it stabilizes the inactive form of the enzyme
  4. The end product of a metabolic pathway is involved in feedback inhibition
  5. Cooperactivity is an another type of allosteric activation

- (13) Select the **correct** statement about the denaturation of enzymes
1. Happens due to increasing or decreasing of the temperature than the optimum value
  2. At high temperature only H bonds and ionic bonds are broken down
  3. Only temperature affects for the denaturation
  4. Complementary binding of enzyme active site and substrate molecules is occurred
  5. Complementary nature of the active site of enzyme molecule is changed
- (14) Select the **incorrect** statement about glycolysis
1. Reactions of this are not depend on molecular oxygen
  2. 2 ATP are used initially
  3. During the breakdown of glucose, 4 H<sup>+</sup> and 4 electrons are released
  4. One CO<sub>2</sub> is released
  5. Substrate level phosphorylation happens
- (15) The reason for the less ATP production in fermentation, when compare with aerobic respiration
1. more energy is needed for the initiation of fermentation
  2. fermentation happens outside the mitochondria
  3. formation of incompletely oxidized end products
  4. less CO<sub>2</sub> production
  5. synthesis of more NADH
- (16) Select the **incorrect** statement about respiratory substrates.
1. NH<sub>3</sub> is released when protein is used
  2. Glycerol from lipids is used for glycolysis as G3P
  3. Amino acids can be used for Krebs cycle
  4. Both fatty acids and amino acids form acetyl CoA in cellular respiration
  5. Fatty acids are always used in glycolysis
- (17) Select the **incorrect** statement about photosynthetic pigments
1. They are the molecules, that absorb visual light
  2. There are chlorophylls and carotenoids inside the chloroplast
  3. Chlorophyll a is directly used for light reaction
  4. All carotenoids are involved in photo protection
  5. Chlorophyll a has more absorbance at blue and red range
- (18) Select the **incorrect** statement about photosystems
1. Chlorophyll molecules, other organic molecules and proteins are clustered together in the thylakoid membranes
  2. There are several light harvesting complexes and reaction center complex within photosystem
  3. There is a pair of specialized chlorophyll a molecules in the reaction center complex
  4. There are different types of photosystems in thylakoid membranes
  5. There is a primary electron acceptor in the reaction center complex

(19) Select the **correct** statement about the linear photophosphorylation

- Both PS I and PS II are used
- Electrons are flow in one direction through the photosystems and other molecules
- Only light stimulate the splitting of water
- NADP reductase catalyzes the reduction of  $\text{NADP}^+$
- Only ATP is formed

- Only a, b and c
- Only b, c, and d
- Only c, d and e
- Only a, b and d
- Only a, d and e

(20) **Incorrect** statement about Calvin cycle

- (5 C) RuBP is the  $\text{CO}_2$  acceptor
- The first product of carboxylation is an unstable compound
- 3-Phosphoglycerate is the first stable product
- ATP and NADPH are used
- For the net synthesis of one G3P molecule, the Calvin cycle must take place 6 times

❖ The responses for questions 21 to 25 should be chosen as follows. One or more responses could be correct.

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

1	2	3	4	5
A,B and D are correct	A,C and D are correct	A and B are correct	C and D are correct	any other response or combination of responses is correct

- (21) **Correct** statement/s about cilia and flagella
- A) Both prokaryotic and eukaryotic flagella have 9+2 arrangement
  - B) Flagella and cilia are important for locomotion
  - C) There are numerous cilia than the flagella on cell surface
  - D) They are formed by membrane bound microtubules
  - E) There is a center microtubule at basal body
- (22) **Not** a function or functions of extracellular matrix of animal cell
- A) Form a protective layer over the cell surface
  - B) Link extracellular matrix and cytoskeleton
  - C) Prevent the leakage of extracellular fluid
  - D) Limits and controls cell growth
  - E) Influences the cell behavior
- (23) **Correct** statement/s about the photorespiration
- A)  $O_2$  and  $CO_2$  are competitive substrates during photorespiration
  - B) The oxygenase reaction forms one 3PGA molecule and two 2phosphoglycolate molecules
  - C) Inherent specificity factor of RuBisCo leads to more affinity for oxygen
  - D) At high temperature, solubility of  $O_2$  is higher than the solubility of  $CO_2$
  - E) On a hot & dry day, photorespiration is not happened due to closing of stomata
- (24) In photosynthesis
- A)  $CO_2$  is converted into  $HCO_3^-$  by carbonic anhydrase, inside the mesophyll cells
  - B) OAA is the first stable product in  $C_4$  mechanism
  - C) OAA is rapidly convert into malate or aspartate
  - D) Only light reaction is occurred in mesophyll cells
  - E) Chloroplasts of bundle sheath cells are poorly developed
- (25) Common reactions for lactic acid fermentation and ethyl alcohol fermentation
- A) Glucose is converted into pyruvate
  - B) Pyruvate is converted into acetaldehyde
  - C) NADH is converted into  $NAD^+$
  - D) Net ATP production is 2
  - E) Conversion of pyruvate into lactate