



ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

Second Term Examination - 2018



Sub :Life Science

Class: 9

FM: 75

Duration:2hrs 30 Mins.

Date: 06.08.2018

Group A

1. MCQ:

1x10=10

- Respiratory system is a- excretory system/ enzyme system/ energy producing system/ hormone producing system.
- Inverts are outside living body as- bacteria/ virus/ microplasm/ DNA.
- Cell organelle known as protein factory is- lysosome/ plastids/ Golgi body/ ribosome.
- Photosynthesis produces- CO_2 / O_2 / glucose/ water.
- Photophosphorylation is formation of- glucose/ ATP/ sunlight/ CO_2
- Photolysis forms- H_2O / OH^- / H^+ / H_2 .
- ATP molecule generated in aerobic respiration is- 36/ 38/ 40/ 42
- R.Q. of 1 gm mole glucose is- 0.8/ 0.9/ 1/ 1.1
- In aerobic respiration heat generated is- 37Kcal/ 38Kcal/ 40Kcal/ 50Kcal
- Tissue that covers the body surface is a skeletal muscle/ lymph/ epithelial tissue/ bone tissue.

Group B

2. Match the column:

1x5=5

A	B
a. Osteomalacia	I. Epithelial tissue
b. Xerophthalmia	II. Aerobic respiration
c. Basement membrane	III. Retinol
d. Kerbs cycle	IV. Anaerobic respiration
e. Glycolysis	V. Calciferol

3. State true or false:

1x5=5

- DNA is Denucleotide acid
- Chalice cell is also known as goblet cells
- Oxyntic cells secrete HCL
- Pancreas gland produces adrenaline.
- Chlorophyll converts solar energy to chemical energy

4. Fill in the blanks:

1x6=6

- Total number of ATP produced during respiration is _____.
- Full form of HMP is _____
- Full form of ETC is _____
- Optimum temperature range for photosynthesis is _____ to _____
- Heart is surrounded by a protective membrane called _____

5. Answer in one word (any 6):

1x6=6

- a. Name one non-nucleated animal cell.
- b. Which connective tissue constitutes a tendon?
- c. Mention the location of apical Meristamatic tissue.
- d. Which vitamin cures scurvy?
- e. Why do we need iron?
- f. Name one catabolic process.
- g. Write the full form of PGA

Group C

6. Answer any nine:

2x9=18

- a. What is prokaryotic cell?
- b. What is photolysis?
- c. What is ascent of sap?
- d. What do you mean by solarisation?
- e. What is collenchyma?
- f. Why striated muscles are called skeletal muscle?
- g. Name the parts of small intestine.
- h. What is the function of testosterone?
- i. What are the functions of ovary?
- j. What is photophosphorylation?
- k. Define calorie.
- l. Why photolysis is called the rate limiting step of photosynthesis?
- m. What is anaerobic respiration?
- n. What is osmosis?

Group D

7. Answer the following:

5x5=25

- a. Describe photolysis of water and how oxygen is evolved.
Or
Describe the Dark Phase of photosynthesis.
- b. What are the components of photosynthesis and what is their importance?
Or
What are the significances of photosynthesis?
- c. What is B.M.R.? What do you understand by "balanced diet"? What is malnutrition?
Or
Describe the digestion by pancreatic enzyme.
- d. Describe the structure and function of epithelial tissue
Or
Draw the diagram of a neuron and state its functions
- e. Differentiate parenchyma with callenchyma.
Or
Describe the Kerbs cycle.



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Second Term Test - 2018

Sub: Life Science Class: 9 F. M. 75

Duration: 2 hr 30 min Answer Keys Date: 06/08/2018

Group A

1. MCQ:

1x10=10

- energy producing system
- virus
- ribosome
- glucose
- ATP
- H⁺
- 38
- 1
- 50Kcal
- epithelial tissue

Group B

2. Match the column:

1x5=5

A	B
a. Osteomalacia	Calciferol
b. Xerophthalmia	Retinol
c. Basement membrane	Epithelial tissue
d. Kerbs cycle	Aerobic respiration
e. Glycolysis	Anaerobic respiration

3. State true or false:

1x5=5

- False
- True
- True
- False
- True

4. Fill in the blanks:

1x6=6

- 38
- Hexose mono phosphate
- Electron transport chain
- 10°C to 35°C
- Pericardium

5. Answer in one word (any 6):

1x6=6

- Erythrocyte

- b. Fibrous connective tissue
- c. Apex of root and shoot
- d. Vitamin C
- e. Formation of haemoglobin
- f. Respiration
- g. Phosphoglyceric acid

Group C

6. Answer any nine: 2x9=18
- a. Prokaryotic cells are cells that do not have true nucleus. They are primitive type of cells
 - b. The splitting of water molecules with the help of light energy is called photolysis.

$$\text{H}_2\text{O} \longrightarrow \text{H}^+ + \text{OH}^-$$
 - c. The process of upward movement of sap against the force of gravity from the passage cells through the xylem vessels to the leaves is called ascent of sap.
 - d. Strong light slows down or even stops the process of photosynthesis. This phenomenon is called solarization.
 - e. The simple permanent plant tissues, whose cell walls are unevenly thickened by additional cellulose deposition, are called callenchyma.
 - f. The cells of this muscular tissue are connected which forms two different bands- light band and dark band causing an effective striation. Hence the skeletal muscle is called striated muscle.
 - g. Duodenum, jejunum and ileum.
 - h. Testosterone influences various primary and secondary sex characters in human male.
 - i. Ovary produces ovum in healthy normal adults. It also produces estrogen and progesterone that controls the sex characters in female.
 - j. The process of esterification of compounds with phosphoric acid in presence of light, during photosynthesis is called photophosphorylation.
 - k. Amount of heat required to rise the temperature of 1 gm of water through 1°C is called calorie. 14.5°C to 15 is the experimental temperature.
 - l. Formation of $\text{C}_6\text{H}_{12}\text{O}_6$ in photosynthesis depends on the rate of formation of H^+ in photolysis. Hence photolysis is called rate limiting step of photosynthesis.
 - m. Anaerobic respiration is the process of incomplete oxidation of respiratory substances in presence of bound oxygen with partial release of energy.
 - n. The movement of solvent molecules through a semi permeable membrane for the concentration gradient is called osmosis.

Group D

7. Answer the following: 5x5=25
- a. Water molecule breaks up into H^+ (hydrogen ion) and OH^- (hydroxyl ion) by light activated chlorophyll molecule. Oxygen formed from the hydroxyl ion is liberated through stomata. Hydrogen ion is accepted by NADP^+ whereby it gets converted to NADPH. Water is produced from the hydroxyl ion. Hydrogen of water reduces carbon dioxide to glucose.

$$\text{H}_2\text{O} \longrightarrow \text{H}^+ + \text{OH}^- , \text{OH}^- - e^- (\text{electron}) = \text{OH radical}; 4\text{OH} = 2 \text{H}_2\text{O} + \text{O}_2$$

Or

Ribulose biphosphate is the primary acceptor of CO_2 . CO_2 is first incorporated into a 5 carbon sugar phosphate called ribulose 1, 5 biphosphate to form an intermediate which splits up into two molecules of 3 phosphoglycerate (P6A) ultimately. This is the first stable pproduct of dark phase of photosynthesis. Fixation of $\text{CO}_2 \longrightarrow$ formation of P6A \longrightarrow resynthesis of RuBP \longrightarrow synthesis of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)

- b. Carbon dioxide- the carbon element of the gaseous compound carbon dioxide is directly taken by green plants from the atmosphere.

Water- water is one of the chief components of photosynthesis.

Sunlight- solar radiation composed of highly energized invisible solar particles called quanta or photon is required for photosynthesis.

Pigments- Chlorophyll and Carotenoids- the main photosynthetic pigment is chlorophyll

Or

Significance of photosynthesis-

1. Entrapping and conversion of solar energy into food for plants and other organisms- the radiant energy of the sun passes through space as electromagnetic radiation. This radiation is composed of small packets of energy, the highly energized invisible solar particles called 'quanta' or 'photon'. These photon particles activate chlorophyll molecules when they strike the surface of green leaves. The chlorophyll molecules and accessory molecules form photosynthetic units 'quantasome' present on the inner surface of thylakoids of the chloroplasts. Quatasomes absorb and entrap solar particles and converts solar energy to chemical energy. Activated chlorophyll molecules expel the extra energy along with an electron in the pigment systems.
2. Oxygen-carbon dioxide balance in the atmosphere- oxygen used during respiration and combustion causing oxygen deficit in the atmosphere is balanced by the carbon dioxide liberated during respiration, and combustion. This carbon dioxide is balanced by taking it during photosynthesis by green plants. Thus oxygen-carbon dioxide balance is maintained.

- c. The amount of energy expended by the body per hour per square meter of body surface at complete physical and mental rest is known as BMR.

A diet which contains carbohydrates, fats, proteins, vitamins, mineral salts in correct proportion so as to meet the energy requirement of working capability of an organism is known as balanced diet.

A diet deficient of a particular nutrient is known as malnutrition.

Or

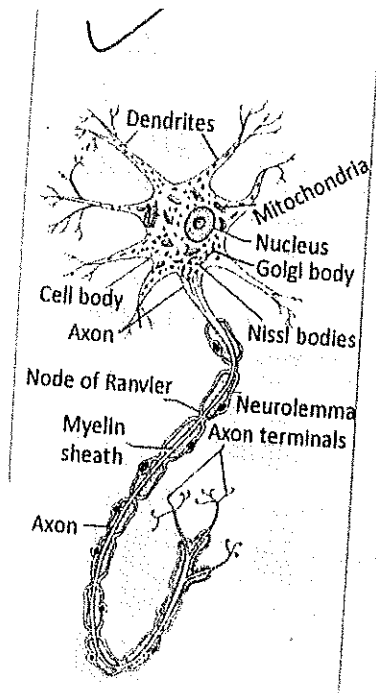
Pancreas is a mixed gland which is about 20 cm long and 4 cm broad situate beneath the stomach within the 'C'-shaped space of duodenum. It is composed of pancreatic alveoli which secretes pancreatic juices (digestive juice). The α and β cells of islet of Langerhans tissue of pancreas secretes two hormones in the blood, insulin and glucagon. These pancreatic juices continue the digestion of proteins, starch, fats and oils.

- d. Epithelial tissue is composed of closely packed cell. Due to close packing the cells are held together by a very thin layer of intercellular substance (it resembles the cementing substance present in between brick walls). In the epithelial tissue the cells are situated on a membrane

known as basement membrane. It covers the free surfaces of different parts and visceral organs of the body. It is devoid of any blood vessels and lymph vessels.

The most important function of the epithelial tissue is to cover the outer surface and inner surface of the body. It helps to protect the underlying structures from external injury. Epithelial tissue is also involved in the absorption and secretion of important biological substances. In some places this tissue acts as a filtering membrane.

Or



The chief function of the nervous tissue is to bring about co-ordination in the activities of many interdependent cells of the multicellular animals. Moreover, this tissue enables an organism to become aware of the changes taking place in the surrounding and to respond appropriately and quickly to those changes so as to maintain its own existence.

e.

Parenchyma	Collenchyma
Isodiametric cells with thin cell wall	Elongated cells unevenly thickened cell wall, generally thick at corners
Perform as packing tissue of all organs of plant	Distributed in the hypodermal cells in cases of dicot stems and leaves
Provides turgidity to softer organs and acts as storage tissue	Provides both mechanical strength and also provides flexibility, acts as storage

Or

Krebs cycle is the cyclic, aerobic, oxidative, biochemical pathway that occurs in mitochondria where the cycle starts from citric acid and through different enzymatic steps ends in oxaloacetic acid.

Site of Krebs cycle- mitochondria

End products of Krebs cycle- 2 molecules of carbon dioxide + 2 molecules of water + 3 molecules of NADH_2 + 1 molecule of FADH_2 + 1 molecule of ATP.

