

**RAMAKRISHNA VIVEKANANDA MISSION
MODEL ANSWER FOR ANNUAL EXAM 2020
SUBJECT- LIFE SCIENCE (ENGLISH MEDIUM)**

CLASS- IX

Full Marks - 90

Group – A

Answer to all questions is compulsory

1 X 14 = 14

1) Choose the correct answer :-

- a) ii) Ordovician
- b) ii) Malacology
- c) iii) Gymnosperms
- d) i) Protista
- e) ii) Mitochondria
- f) i) Dodder
- g) iii) Lipase
- h) iii) Calcium
- i) ii) Epitop
- j) i) IgM
- k) i) Copper
- l) ii) Porifera
- m) ii) Golgi Bodies
- n) ii) Chlorine

Group – B

2) Fill in the blank (answer any five) :-

1 X 5 = 5

- a) Basophil
- b) Brachial artery
- c) Pancreas
- d) Spleen
- e) Simple ciliated epithelium
- f) Kidney

3) Write true or false (any five) :-

1 X 5 = 5

- a) True
- b) False
- c) True
- d) True
- e) True
- f) False

4) Answer in one sentence (any ten) :-

1 X 10 = 10

- a) Cytokinin and Abscissic acid regulates the rate of transpiration.
- b) Berberine the major alkaloid in golden seal root powder is used for the treatment of eyes.
- c) Bilirubin and its oxidized form biliverdin are the two pigments present in bile.
- d) Natural coagulant is Heparin and one artificial coagulant is aluminium chloride.
- e) Papine is a proteolytic enzyme extracted from the raw fruit of papaya plant.
- f) The two enzymes present in intestinal juice are amylase and maltase.
- g) The two non-proteinaceous nitrogenous substance present in blood are urea and uric acid
- h) The mineral which prevents tetany is Calcium.
- i) The only living tissue in xylem is wood parenchyma.
- j) Centrosome plays an important role in cell-division and also in the formation of Cilia and flagella.
- k) The two parts of the body where stratified cubical epithelium tissue is found are pharynx and epiglottis.

5) **Answer in brief (any twelve) :-**

2 X 12 = 24

a)

Light Phase	Dark Phase
i) Light phase occurs in the grana of chloroplast and water is needed for this phase.	i) Dark phase occurs in the stroma of chloroplast and carbon dioxide is absorbed in this phase.
ii) Different steps of light reaction are dependent on photon particles of sunlight evolving oxygen.	ii) Different steps of dark phase are controlled by enzymes producing glucose.

b)

Epitope	Paratope
i) This is a function site of an antigen Which binds with the antibody	i) This is the functional part of an Antibody which binds with the epitope Of antigen

C) **The two important differences between chondrichthyes and osteichthyes are :**

Chondrichthyes	Osteichthyes
i) Condoskeleton is cartilaginous and mouth Is ventrally placed in the head.	i) Condoskeleton is mostly bony and Mouth is at the tip of the head
ii) Air bladder is absent and gills are not covered by operculum	ii) Air bladder is present and gills are Covered by operculum

D i) **First class protein:**

The protein that contains all essential amino acids and are capable of growth and maintenance are called First class proteins.

Examples: - Albumin, globulin proteins of egg , meat ,fish ,milk etc.

ii) **Second class protein:**

This type of protein contains few essential amino acids but not all and is also not suitable for growth and maintenance.

Examples: - zain of maize.(most of the plant protein are second class Protein) .

E) **The two differences between fatty and amino acid are :**

Amino acid	Fatty acid
i) It is the structural unit of protein	i)It is the structural unit of faith.
ii) Number of amino acids are interlinked by peptide bonds. Eg - glycine	ii) Fatty acid and glycerol combine together to form fat (easter) Eg- palmitic acid.

F) **Two important function of zinc in human body are :**

i) Zinc effects the transfer of CO₂ from tissue to lungs.

ii) Constituents of digestive enzymes which helps in hydrolysis of proteins.

G) **Carbon assimilation :**

During dark reaction of photosynthesis carbon of carbon-dioxide is absorbed and assimilated into glucose. Thus, the process of dark reaction is also called carbon assimilation.

H) **The four external factors that effect the rate of transpiration are:**

i) **Light** : transpiration increases in the presence of light and decreases in the absence of light as stomata opens during day and closes at night.

ii) **Humidity** : High humidity decreases the rate of transpiration.

iii) **Temperature** : High temperature decreases humidity and increases the rate of transpiration and low temperature increases humidity their by decreasing the rate of transpiration.

iv) **Wind velocity**: High wind velocity increases the rate of transpiration and vice-versa.

I) Four important functions of lymph are :

- Acts as a transport medium:** Lymph transport nutrients and oxygen and supplies them to the tissue cells where blood cannot reach directly.
- Transport of fatty materials:** Lymph absorbs fat from the intestine.
- Drainage of excess fluid and metabolite.
- Defensive functions:** The lymphocytes and monocytes present in the lymph protect the body by their phagocytic properties.

J) ICF: Intracellular fluid (ICF) is the fluid which is present inside the plasma membrane of a cell. It is also called cytosol or cytoplasmic matrix.

Cytosol = Cytoplasm - Cellular granules.

K) The two vitamins which are responsible for maturation of RBC are vitamin B₁₂ (Cyanocobalamin) and vitamin B₉ (folic acid.)

L) The four non nitrogenous excretory products in plants and animals are :

Plant : Resin, Tannin, Latex, Gum

Animal : CO₂, Bilirubin, Lactic acid, Carbonic acid.

M) Vaccination and its principle :

The process by which weak or dead pathogens (antigens) are injected into the body to produce immunity against infections and other infectious diseases by producing antibodies is called vaccination.

The principle of vaccination is based on the property of memory of the immune system.

Group – D

6) Answer four questions or Their Alternative given below.

(8×4=32)

a) The four important differences between annelida and arthropoda are : (4)

Annelida	arthropoda
i) Body segment ring like and separated by septum.	i) Body segment are not separate by septum
ii) Body is not covered by hard exoskeleton.	ii) Body is covered by hard chitinous exoskeleton.
iii) Absence of joining appendages.	iii) appendages are joined with the body by arthrodial membrane.
iv) Aemocoel absent Eg:- Earthworm, Leech.	iv) Haemocoel is present. Eg:- Prawn, Cockroach.

b) **Symbiotic nutrition :**

(4)

When two different species of organisms live in close association with each other for their mutual benefits in nutrition and shelter, the type of nutrition is called symbiotic nutrition. Each of the pair is called symbiont and the mode of their association is termed symbiosis.

Example: Lichen - an association between an algae and fungus (symbiosis between plant and plant). The fungus protects the photosynthetic organism while algae prepare food by photosynthesis which is shared by fungus. The both algae and fungus are benefitted.

OR- (4+2+2)

6 A) Accessory respiratory organs: The organs which partly accomplish respiration and are additional complementary respiratory structures are called accessory respiratory organs.

Eg – Koi, Magur, Singhi.

6 B) The accessory respiratory organs in –

- Koi (Anabas testudineus):** Presence of labyrinthine organ located within the cavities of the gill chamber. It is rose shaped and covered by epithelium having numerous blood vessels.
- Magur (Clarius batrachus) :** Presence of tree – like dendritic or arborescent organ located within the suprabranchial cavity of the gill chamber.

6 C) Trypsin

(2 ½ + 2 ½ =5)

Source : Trypsin is produced by the pancreas in an inactive form called trypsinogen.

Substrate : protein + polypeptides.

Role in digestion: Trypsin is an enzyme that helps us to digest protein. In the small intestine, trypsin breaks down proteins, continuing the process of digestion, that began in the stomach. It may thus be called proteolytic enzyme or proteinase, and its products are polypeptides and amino acids.

Lactase

Source : It is produced by cells that line the walls of the small intestine.

Substrate: Lactose

Role in digestion: This enzyme helps to digest lactose, a sugar found in milk and other dairy products. Lactase formation functions at the brush border to breakdown lactose into smaller sugar called glucose and galactose for absorption.

6 D) The important function of nephron are :

(3)

- Nephron plays an important role in the formation of urine involving three main steps – glomerular filtration, tubular reabsorption and tubular secretion.
- In the convoluted nephron, absorptive surface area is more which is useful for reabsorption.

OR

6 C) Mycorrhiza :

(2+2=4)

Symbiotic association of some fungi with roots of seed bearing plants is called mycorrhiza.

Mycorrhiza are of two types :

i) Ectotrophie mycorrhiza or Ectomycorrhiza :

In this type, the fungus lives outside the tissues root of pine , Oak , Eucalyptus Etc.

ii) Endotrophic mycorrhiza or Endomycorrhiza :

When a fungus lives inside the root cortex and does from a mantle on the surface of the root, this mycorrhiza association is called endotrophie mycorrhiza . These association are in found in herbaceous species like orchids and some woody plants.

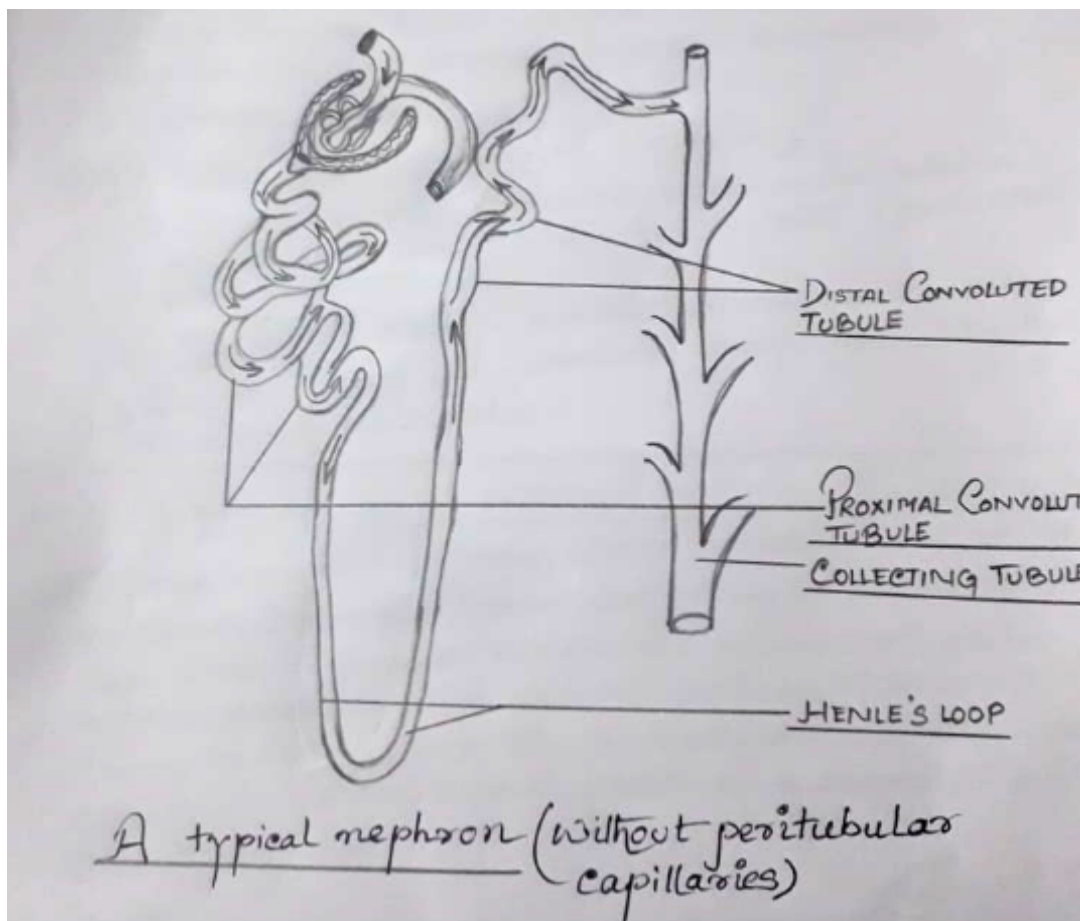
6 D) Match the following

(4)

Column A	Column B
a) Largest WBC	ii) Monocyte.
b) Grasshopper	i) Trachea .
c) Muscle fermentation	iv) Lactic acid .
d) Artificial Hill reagent	iii) Potassium ferric oxalate.

6.E) A typical nephron

(4 + 4)



6 E) Testis is a mixed gland having both endocrine and exocrine function.

- i) **Exocrine function** :- include the production of million of sperms (spermatogenesis) per day in a normal adult human male.
- ii) **Endocrine function** :- In the production of male sex hormone testosterone that influences various primary and secondary sexual characters in human male.

6 F) The two functions of brain are :-

- i) It is responsible for coordination and regulation of all activities of the body, both voluntary and involuntary.
- ii) It is the control centre for movement, sleep, hunger thirst and virtually every vital activity necessary to survive.

6 G) Ascent of sap as explained by Dixon and Jolly :

(5 + 3)

According to this theory, water molecules are in a continuous movement and are strongly attracted to each other to form a continuous column of water xylem elements and water is pulled upwards by transpiration, Thus the upwards movement of water from root to the aerial parts of a plant is called ascent of sap.

6 H) The significance of respiration are :

- i) **Release of energy** : Respiration is an energy producing process, In this process potential energy is converted into kinetic energy and this energy is conserved and stored as ATP in mitochondria,
- ii) **Maintenance of oxygen and carbon dioxide balance** :
Approximately normal percentage of O₂ and CO₂ in air is 20.4% and 0.03% respectively. During photosynthesis plant body utilizes CO₂ and releases O₂. This may cause increase of O₂ and decrease of CO₂ in the atmosphere, but it does not happen so. Because during respiration the living organism takes O₂ and releases CO₂. In this manner, the process of respiration maintains O₂ – CO₂ balance in the environment.

OR

(4 + 4)

6 G) Four important difference between of pulmonary artery and pulmonary vein are:

pulmonary artery		pulmonary vein	
i)	Carries less oxygenated venous blood from heart to lungs.	i)	Carries oxygenated arterial blood from lungs to hearts.
ii)	Absence of valve.	ii)	Presence of valve.
iii)	Wall contains thick muscular layer.	iii)	Wall contains thin muscular layer.
iv)	Blood flow with high pressure.	iv)	Blood flow with low pressure.

6 H) Transpiration is called necessary evil :

It is an evil as it involves loss of huge amount of water, often leading to water deficit in plants, bringing about reduction in photosynthesis, growth, premature leaf fall and above all it may also result in desiccation and finally death of the plant.

On the other hand loss is accepted because the beneficial effect of transpiration (such as osmoregulation, thermoregulation, ascent of sap etc), is much more than the harmful effect. Thus, transpiration is called a necessary evil.