AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX EXAMINATION

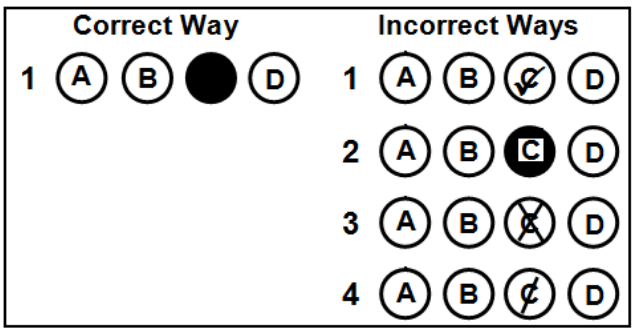
APRIL/ MAY 2019

Biology Paper I

Time: 45 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question, there are four choices A, B, C, D. Choose ONE. On the answer grid, black out the circle for your choice with a pencil as shown below.



Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.

1. Akber studies the processes of transpiration and translocation in plants as a part of his research work.

   His work is related to which branch of biology?

   A. Histology
   B. Physiology
   C. Taxonomy
   D. Morphology

2. The level of organisation of life to which deoxy ribonucleic acid (DNA) belongs is

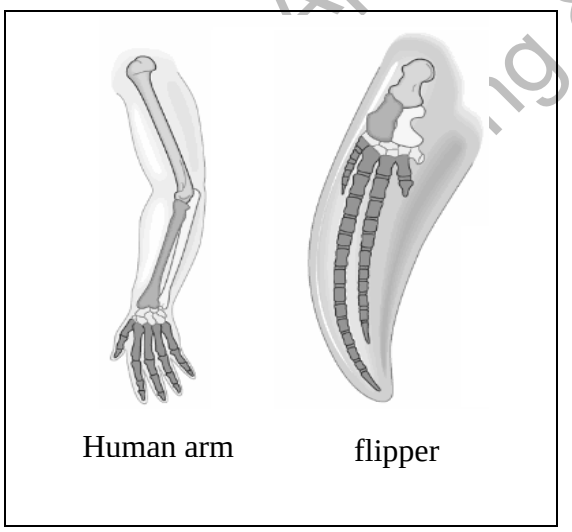
   A. tissue level.
   B. cellular level.
   C. organelle level.
   D. molecular level.

3. Kashif wants to investigate the effect of different factors on the activity of salivary amylase. He designs an experiment in order to reach a conclusion.

   The MOST appropriate first step for Kashif to undertake is to

   A. test a variable.
   B. put forward a theory.
   C. formulate a hypothesis to test.
   D. gather and set up the required material.

4. The arrangement of bones in the given diagrams show homology because they have



   A. same structure same function.
   B. different structure same function.
   C. same structure different function.
   D. different structure different function.

5. The given table shows the biological classification of *Amanita*, a fungus, in the hierarchal order.

I	Fungi
II	Basidiomycota
III	Homobasidiomycetae
IV	Agaricales
V	Amanitaceae
VI	*Amanita*
VII	*Amanita muscari*

With reference to the given hierarchy, the level that represents the class of *Amanita* is

A. II
B. III
C. IV
D. V

6. The given table shows structural characteristics of an organism.

Property	**Present or Absent**
Cell wall	Present
Nuclear membrane	Present
Ribosomes	Present
Multi-cellularity	Absent

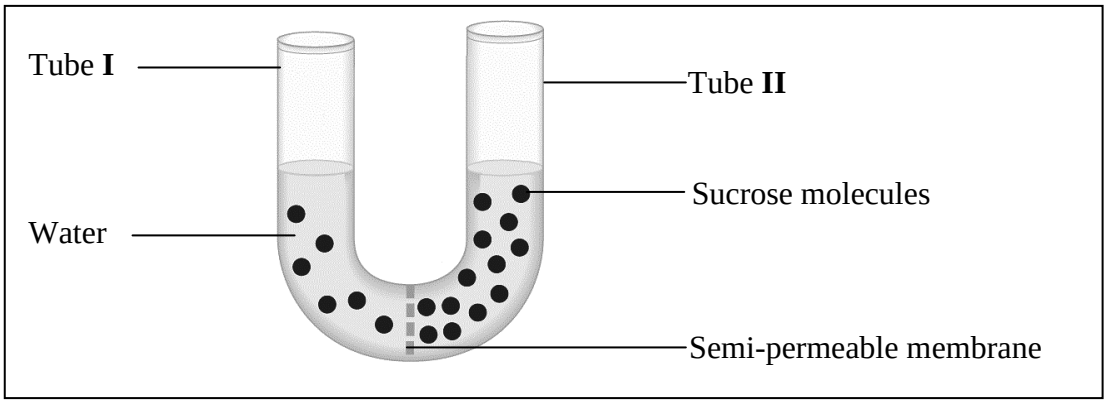
On the basis of the given characteristics, the organism could be placed in kingdom

A. Fungi.
B. Plantae.
C. Protista.
D. Prokaryotae.

7. In living cells, the function of ribosomes is the

A. synthesis of proteins.
B. metabolism of lipids.
C. production of energy.
D. recycling of material.

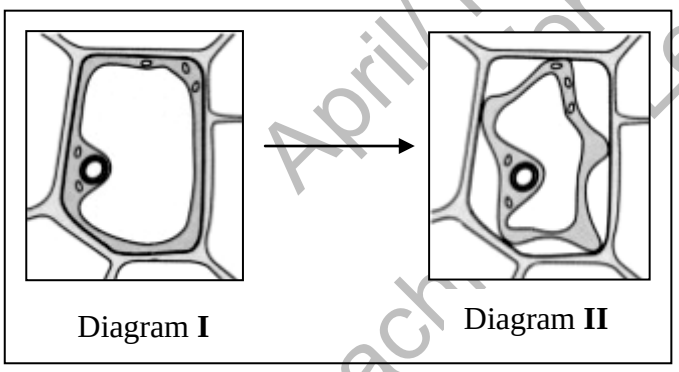
8. The given apparatus shows a setup to study the movement of material across a semi-permeable membrane.



After three hours, the

A. level of water in tube **I** will rise.
B. level of water in tube **II** will rise.
C. number of sucrose molecules in tube **I** will increase.
D. number of sucrose molecules in tube **II** will increase.

9. Diagram **I** shows the structure of a plant cell under normal conditions. When this cell is placed in a solution, its structure changes as shown in diagram **II**.



The solution in which the cell was placed would be

A. distilled water.
B. isotonic to the cell.
C. hypotonic to the cell.
D. hypertonic to the cell.

10. Cells in the skin epithelium of human beings are closely packed together. The closely packed cells are significant for

A. secretion of mucus.
B. absorption of material.
C. protection of inner parts.
D. conduction of nerve impulse.

11. A scientist wants to study the effect of different minerals on the growth of plants. For this purpose, she selects meristematic tissues from plants.

These tissues are best suited for her study because they

A. cover the plant body.
B. have the ability to divide.
C. can produce food for plants.
D. support the plant's structure.

12. The process of breathing involves

A. inhalation and exhalation of gases.
B. diffusion of oxygen into body cells.
C. breakdown of glucose in body cells.
D. movement of gases from blood to alveoli.

13. Which of the following is the CORRECT difference between respiration and photosynthesis?

	Respiration	**Photosynthesis**
A	It is a catabolic process.	It is an anabolic process.
B	It takes place in animals only.	It takes place in plants only.
C	It produces oxygen gas as a by-product.	It requires oxygen gas as a reactant.
D	It occurs in the presence of darkness only.	It occurs in the presence of light only.

14. The part of the respiratory system of human beings which is responsible for the production of sound is the

A. glottis.
B. larynx.
C. pharynx.
D. epiglottis.

15. In the cells of human beings, one of the functions of enzymes is the conversion of toxic chemicals into harmless products. This should happen quickly; so that, there is no accumulation of toxic chemicals in the cells.

The property of enzymes depicted in the given information is

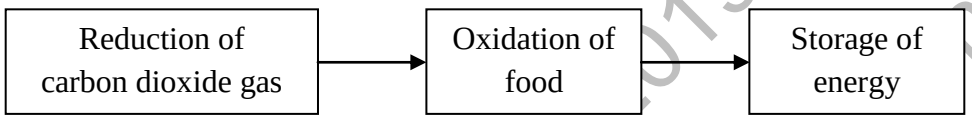
A. greater specificity.
B. higher reaction rate.
C. requirement in less amounts.
D. sensitivity to changing conditions.

16. During the process of cellular respiration, glucose is converted into glucose-6-phosphate with the utilisation of a molecule of adenosine triphosphate (ATP). The process takes less time in the presence of glucokinase.

The substrate and enzyme used in the given reaction are

	Substrate	**Enzyme**
A	glucose-6-phosphate	ATP
B	glucose-6-phosphate	glucokinase
C	glucose	glucokinase
D	glucose	ATP

17. The given flowchart shows three steps of energy transformation in living organisms.



The biological processes that occur at steps **I** and **II** are

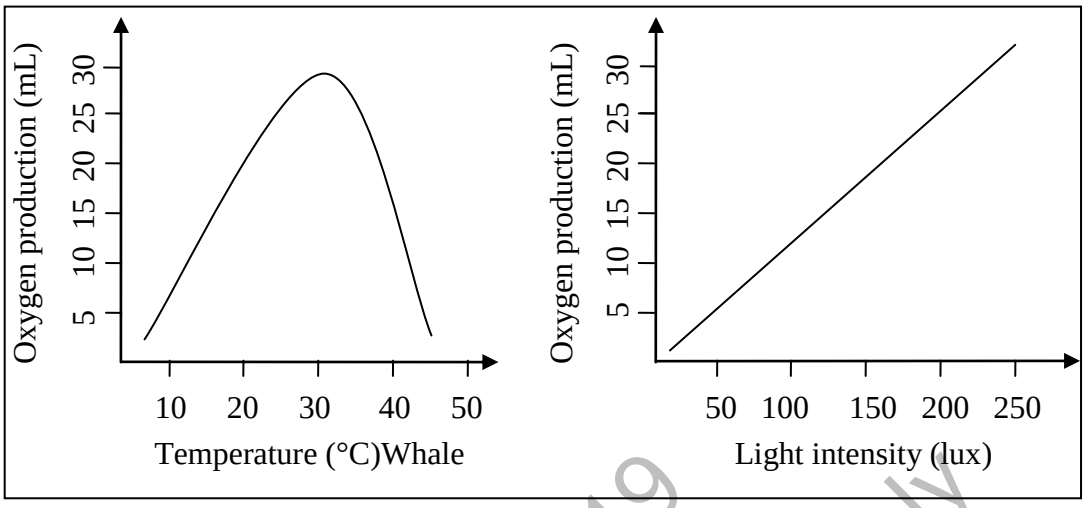
	Biological Process at Step I	**Biological Process at Step II**
A	respiration	photosynthesis
B	photosynthesis	respiration
C	photosynthesis	photosynthesis
D	respiration	respiration

18. The dark reactions of photosynthesis are not dependent on light. If plants are deprived of light, then dark reactions would NOT occur because they use

(**Note**: NADPH = Nicotinamide adenine dinucleotide phosphate)

A. water formed in the presence of light.
B. oxygen gas formed in the presence of light.
C. carbon dioxide formed in the presence of light.
D. ATP and NADPH formed in the presence of light.

19. The given graphs show the effect of temperature and light intensity on the rate of photosynthesis in plants.



With reference to the given graphs, which of the following conditions is best for plants to perform photosynthesis?

A. Temperature around 20°C with light intensity of 150 lux
B. Temperature around 30°C with light intensity of 250 lux
C. Temperature around 40°C with light intensity of 150 lux
D. Temperature around 50°C with light intensity of 250 lux

20. In the cells of human beings, the product(s) formed after complete oxidation of glucose along with ATP is/ are

A. lactic acid.
B. pyruvic acid.
C. carbon dioxide gas and water.
D. ethyl alcohol and carbon dioxide gas.

21. The step(s) of cellular respiration that produce(s) energy in the form of ATP and nicotinamide adenine dinucleotide (NADH) is/ are

I. glycolysis
II. Krebs cycle
III. electron transport chain

A. I only.
B. III only.
C. I and II.
D. II and III.

22. Which of the following is CORRECT about iron?

	Dietary Source	Function
A	Red meat and egg yolk	Helps in healing of wounds
B	Cheese and cabbage	Helps in healing of wounds
C	Cheese and cabbage	Helps in transport of oxygen
D	Red meat and egg yolk	Helps in transport of oxygen

23. A child visits a doctor with the following symptoms.

- Dry skin
- Poor growth
- Night blindness

The vitamin which is deficient in his body would be

A. Vitamin A.
B. Vitamin C.
C. Vitamin D.
D. Vitamin K.

24. The example of assimilation of food in the human body is

A. release of bile by the liver.
B. use of glucose in respiration.
C. breakdown of starch into glucose.
D. entry of food from oesophagus to stomach.

25. In the digestive system of human beings, the digestive enzymes are secreted by

A. liver, pancreas and gall bladder.
B. stomach, liver and large intestine.
C. stomach, pancreas and small intestine.
D. gall bladder, small intestine and large intestine.

26. In the alimentary canal of human beings, the molecules of starch are converted into maltose in

I. mouth
II. stomach
III. duodenum

A. I only.
B. II only.
C. I and III.
D. II and III.

27. Emulsification is a process which occurs in the human digestive system to convert

A. protein molecules to amino acids molecules.
B. larger fat molecules to smaller fat molecules.
C. fat molecules to fatty acids and glycerol molecules.
D. larger protein molecules to smaller protein molecules.

28. Xylem vessels are long, narrow and hollow tubes. These structural features of xylem vessels help to transport water from roots to leaves through

A. translocation.
B. root pressure.
C. capillary action.
D. transpiration pull.

29. The types of white blood cells that kill germs by producing antibodies are

A. basophils.
B. monocytes.
C. neutrophils.
D. lymphocytes.

30. The right side of the human heart is completely separated from the left side by means of atrioventricular septum. This is to

A. allow easy flow of blood to the lungs.
B. reduce friction when the heart is beating.
C. avoid mixing oxygenated blood with deoxygenated blood.
D. prevent backflow of blood from the ventricles to the auricles.

END OF PAPER

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