

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

MAY 2015

Biology Paper I

Time: 35 minutes Marks: 25

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 25 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.

Correct Way				Incorrect Ways					
1	(A)	(B)	●	(D)	1	(A)	(B)	(C)	(D)
					2	(A)	(B)	(C)	(D)
					3	(A)	(B)	(C)	(D)
					4	(A)	(B)	(C)	(D)

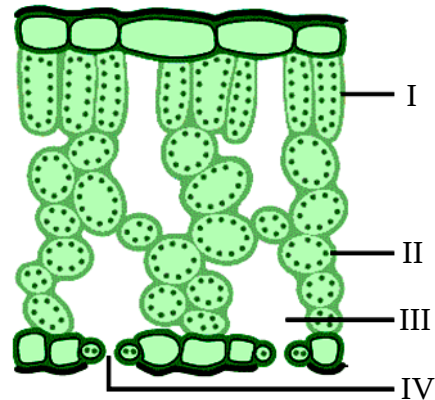
Candidate's Signature

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. The diagram shows the inner structure of a leaf.

Which of the labelled structures help plants in the exchange of gases?

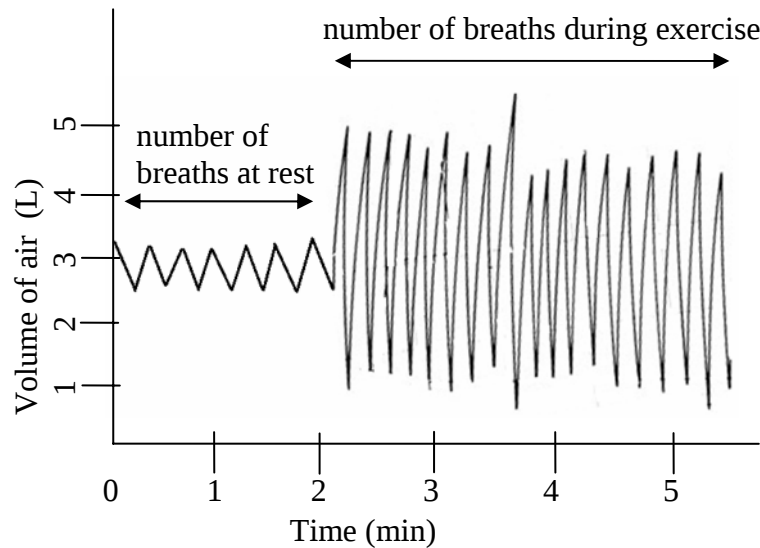
- A. I and II
- B. II and III
- C. II and IV
- D. III and IV



2. Which of the following is CORRECT about the changes that take place when a person inhales air?

	Rib Muscles	Ribcage	Diaphragm
A	Contract	Moves upward	Relaxes
B	Contract	Moves upward	Contracts
C	Relax	Moves downward	Relaxes
D	Relax	Moves downward	Contracts

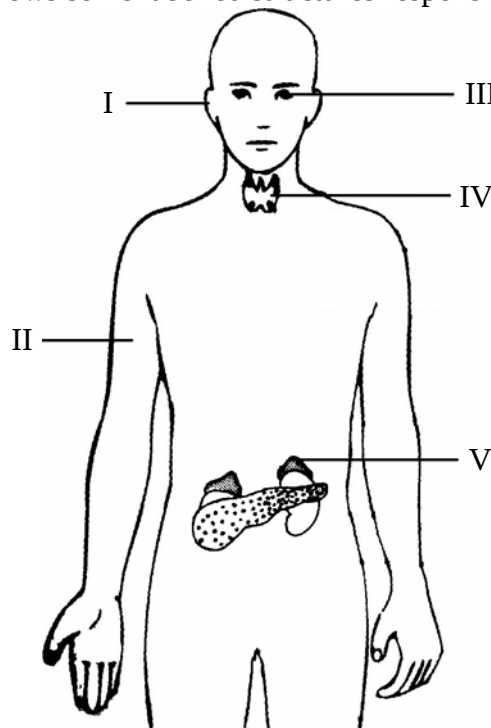
3. The graph below shows the breathing rate of a person during rest and exercise.



From the given graph it can be observed that

- A. only the number of breaths increases during rest.
- B. only the number of breaths increases during exercise.
- C. the number of breaths as well as the amount of exchanged air increase during exercise.
- D. the number of breaths increases while the amount of exchanged air decreases during exercise.

4. Broad leaves, thin cuticle and large number of stomata are the characteristic features of plants found in
- A. forests.
 - B. deserts.
 - C. fresh water.
 - D. sea water.
5. Which of the following groups of organs is mainly responsible to maintain body temperature?
- A. Skin, lungs and kidneys
 - B. Heart, pancreas and skin
 - C. Heart, lungs and kidneys
 - D. Skin, pancreas and kidneys
6. The diagram shows some labelled structures responsible for co-ordination.

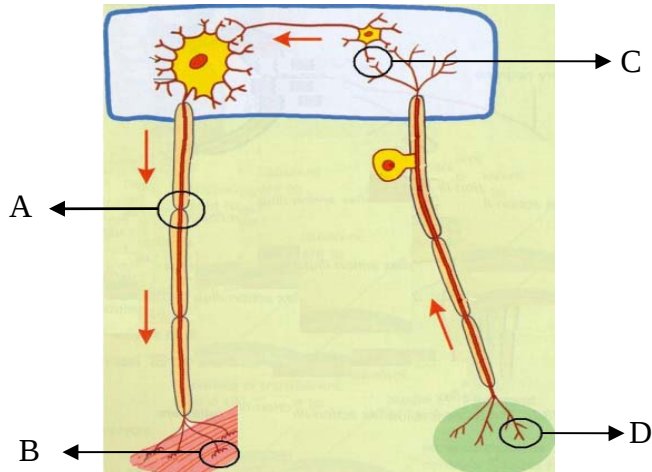


Which of the following is a set of effectors in the given diagram?

- A. I and III
- B. III and IV
- C. II and IV
- D. I and V

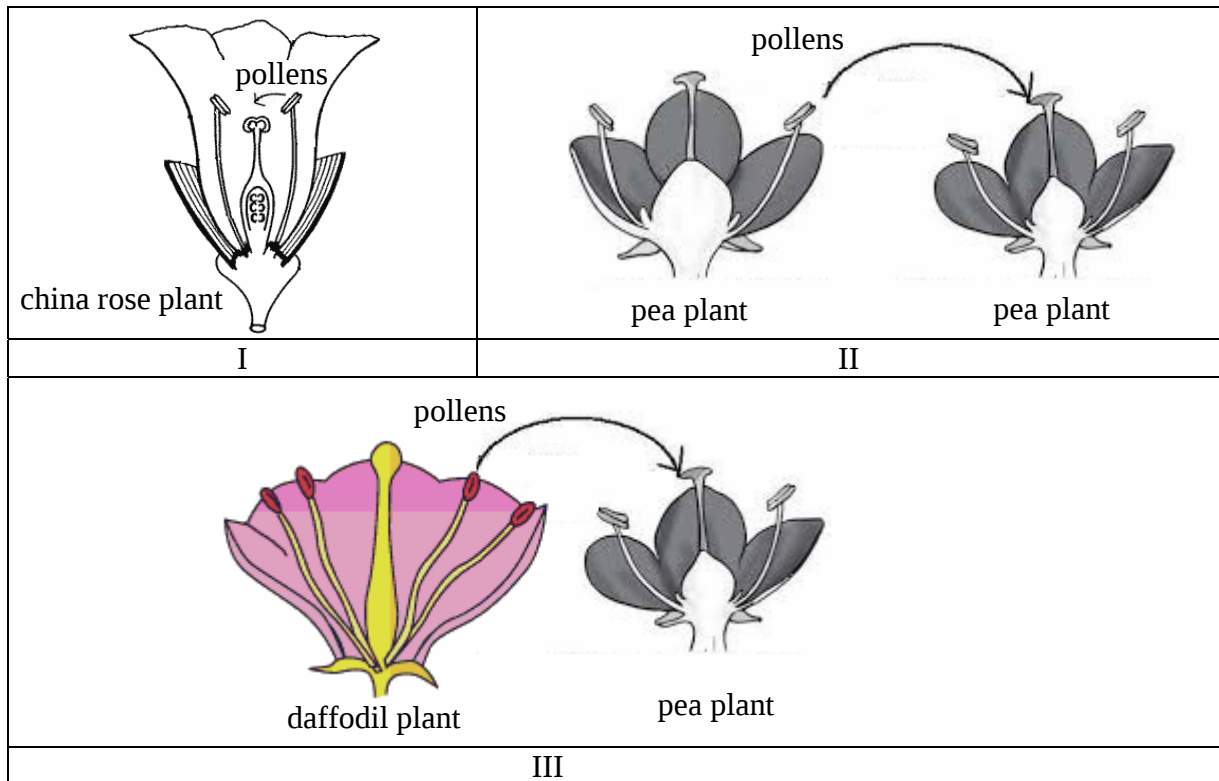
7. The diagram shows the relationship among a sensory neuron, a motor neuron and the central nervous system.

Which of the following labelled structures shows a synapse?



8. The blind spot in an eye is a point where
- A. the highest density of cone cells is found.
 - B. refraction of light rays takes place.
 - C. a jelly like substance is present.
 - D. the optic nerve leaves the eye.
9. Support and movement in epiglottis, larynx and trachea are brought about by the
- A. cartilage.
 - B. ligaments.
 - C. spongy bone.
 - D. compact bone.
10. Which of the following states the contribution of Vi Salius in the field of biology?
- A. He discovered sex in plants.
 - B. He described bones and muscles in his book.
 - C. He described circulation of blood in human body.
 - D. He used X-rays to understand the structure of DNA.
11. Arthritis is a disorder of the skeletal system in which
- A. tendons fail to keep bones and muscles together.
 - B. cartilage between bones breaks down.
 - C. a disc between vertebrae is displaced.
 - D. the bones become weak and porous.

12. Fertilization will occur in which of the following cases?



- A. II only
 B. III only
 C. I and II
 D. I and III
13. Which of the following is CORRECT about epigeal germination?
- A. Cotyledon appears above the ground and plumule remains under the ground.
 B. Both cotyledon and plumule appear above the ground.
 C. Cotyledon remains under the ground and plumule appears above the ground.
 D. Both cotyledon and plumule remain under the ground.
14. A student conducts a breeding experiment with cats. He crosses two black cats and finds that 25% of their offspring are grey.
- Which of the following conclusions is CORRECT?
- A. One of the parent cats is homozygous for the dominant allele.
 B. All the offspring carry two copies of the recessive allele.
 C. Grey offspring are homozygous for the recessive allele.
 D. Grey colour is dominant over black colour.

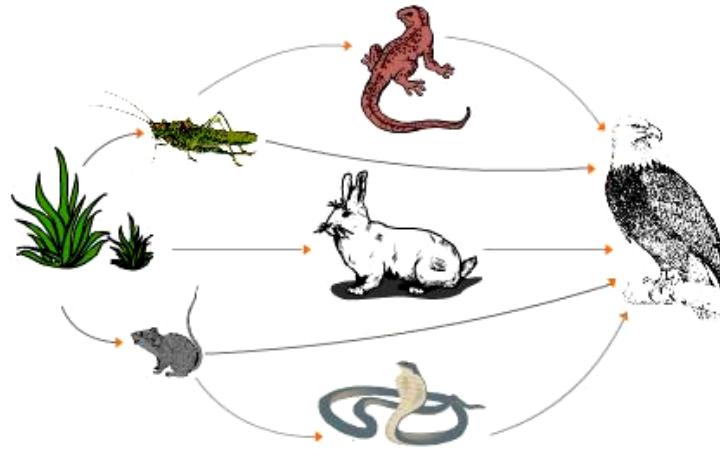
15. In a certain plant the allele for brown seed coat (B) is dominant over the allele for white seed coat (b). The Punnet square below shows a cross between a brown seed coated plant and a white seed coated plant.

	B	b
b	Bb	bb
b	Bb	bb

If a heterozygous offspring from the above generation is crossed with another heterozygous individual, what is the probability that their offspring will have a white seed coat?

- A. 25%
- B. 50%
- C. 75%
- D. 100%
16. Which of the following blood groups is an example of co-dominance?
- A. Blood group A
- B. Blood group B
- C. Blood group AB
- D. Blood group O
17. The population of a green plant disappears from an ecosystem due to increased temperature and decreased light. In the given case, the reason for extinction of green plants is
- A. an increase in the commercial use of green plants.
- B. a change in the abiotic factors of the ecosystem.
- C. a change in the biotic factors of the ecosystem.
- D. a decrease in competition among green plants.
18. A food chain includes a snake, grass and rabbit.
- Which of the following statements CORRECTLY describes the flow of energy between the organisms in the given food chain?
- A. Energy flows from snake to rabbit and then grass.
- B. Energy flows from grass to rabbit and then snake.
- C. Energy flows from rabbit to both snake and grass.
- D. Energy flows from both grass and snake to rabbit.

19. The diagram below shows a food web of an ecosystem.



Due to the use of insecticides, the population of grass hoppers is greatly reduced. Which of the following will also show significant decrease in number by this change in the food web?

- A. Hawk
 - B. Snake
 - C. Lizard
 - D. Rabbit
20. Which of the following human activities is a major part of the carbon cycle?
- A. Building dams
 - B. Burning fossil fuels
 - C. Using inorganic fertilizers
 - D. Removing species from their habitat
21. Liver fluke lives in the liver of humans where it eats liver cells.
- Which of the following should happen to categorize this situation as parasitism?
- A. Human liver cells should digest liver fluke.
 - B. Humans should remain unaffected by the liver fluke.
 - C. Liver fluke should provide nutrients to human liver cells.
 - D. Amount of nutrients available to the humans should decrease.
22. 'The bacteria act on lactose and convert it to lactic acid.'
- The above statement is one of the steps in the production of
- A. yogurt.
 - B. bread.
 - C. alcohol.
 - D. antibiotics.

23. Following are some basic steps followed in genetic engineering.

- I. Transfer of recombinant DNA into host organism
- II. Expression of the gene of interest
- III. Isolation of the gene of interest
- IV. Insertion of the gene into a vector

Which of the following is the CORRECT sequence to be followed when carrying out genetic engineering?

- A. II, I, IV and III
- B. II, IV, III and I
- C. III, IV, I and II
- D. III, I, IV and II

24. Aspirin is an example of a drug

- A. extracted from plants.
- B. obtained from bacteria.
- C. synthesized artificially.
- D. produced from minerals.

25. Following are some characteristics of a drug X.

- Acts directly on central nervous system
- Relieves pain
- Has a high potential for addiction

The above characteristics identify the drug X as

- A. polio vaccine.
- B. tetracycline.
- C. morphine.
- D. diazepam.