

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X




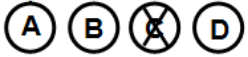

MODEL EXAMINATION PAPER 2020

Biology Paper I

Time: 45 minutes Marks: 30

INSTRUCTIONS

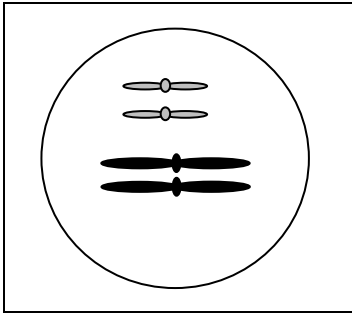
1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question, there are four choices A, B, C, D. Choose ONE. On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

Correct Way		Incorrect Ways	
1		1	
		2	
		3	
		4	

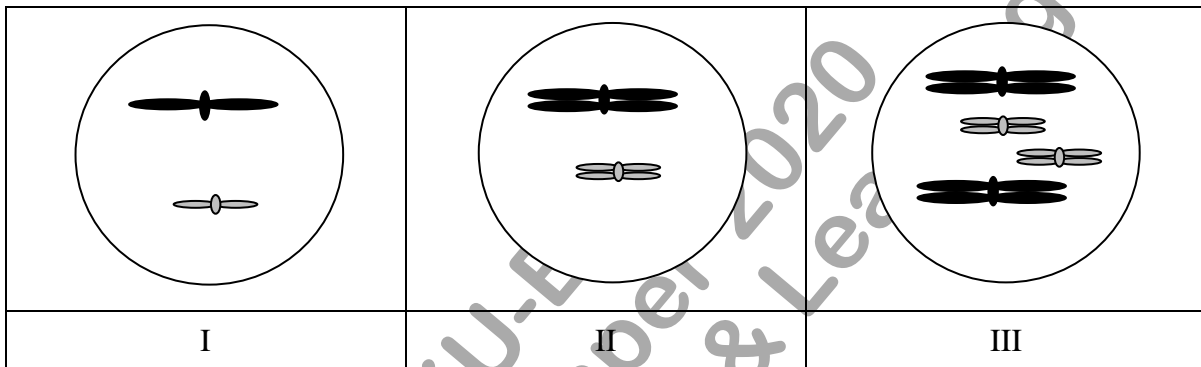
Candidate's Signature

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.

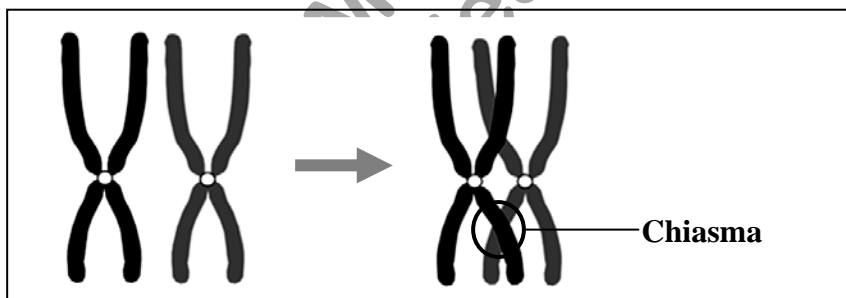
1. The given diagram represents an animal cell with four chromosomes.



Which of the following phase(s) represent(s) haploid number of chromosomes when the given cell undergoes meiosis?



- A. I only.
 B. I and II.
 C. I and III.
 D. II and III.
2. The given diagram shows an event of meiosis.



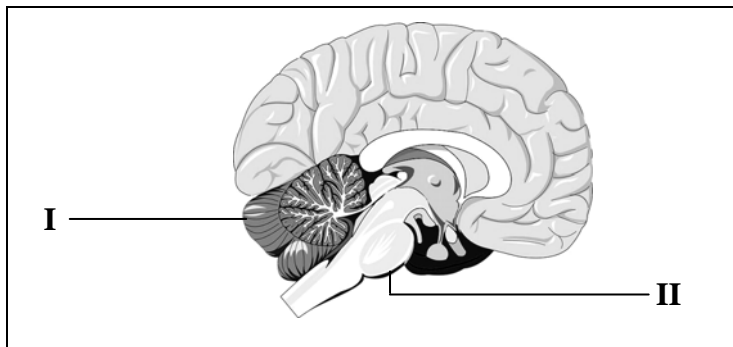
In the given diagram, chiasma formation takes place between

- A. sister chromatids.
 B. non-sister chromatids.
 C. unduplicated chromosomes.
 D. non-homologous chromosomes.

3. The U-shaped structural adaptation of the loop of Henle is to
 - A. create a gradient of increased osmolarity in the medulla.
 - B. transport maximum amount of filtrate to collecting duct.
 - C. secrete maximum number of hydrogen ions from blood.
 - D. reabsorb large number of glucose molecules from filtrate.
4. In the kidneys of human beings, blood pressure plays an important role in the process of urine formation. This is because blood pressure helps to
 - A. maintain salts in the filtrate.
 - B. form filtrate by the glomerulus.
 - C. secrete hydrogen ions in tubules.
 - D. reabsorb glucose in the loop of Henle.
5. In human nephron, the filtrate in the descending limb of loop of Henle becomes hypertonic because of the removal of
 - A. sodium chloride ions.
 - B. glucose molecules.
 - C. water molecules.
 - D. hydrogen ions.
6. Lithotripsy is a procedure that breaks large kidney stones into smaller ones by using
 - A. X-rays.
 - B. microwaves.
 - C. sound waves.
 - D. ultraviolet rays.
7. In contrast to nerve cells, the response produced by hormones takes longer because hormones
 - A. are specific in their action.
 - B. contain small sized molecules.
 - C. are transported through blood.
 - D. are produced in small amounts.

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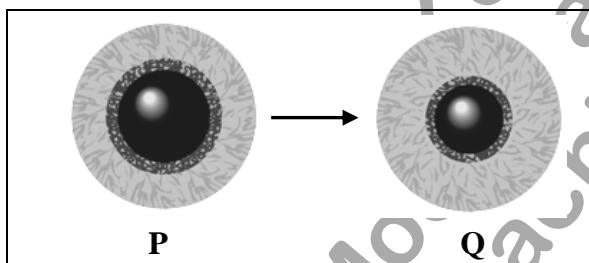
8. The given diagram shows human brain.



The parts of brain represented by **I** and **II** are

	I	II
A	cerebellum	pons
B	cerebrum	pons
C	cerebellum	medulla oblongata
D	cerebrum	medulla oblongata

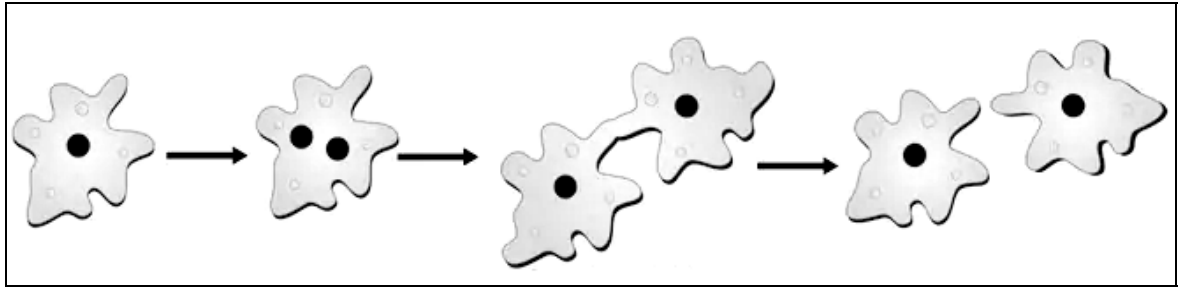
9. The given diagram shows change in the pupil of a person from state **P** to **Q**.



The state **Q** shows that the circular muscles of the iris have

- A. relaxed as the person entered a poorly lit room.
 - B. relaxed as the person entered a brightly lit room.
 - C. contracted as the person entered a poorly lit room.
 - D. contracted as the person entered a brightly lit room.
10. When Zain encounters a fighter bull, he experiences a sudden increase in his heart beat. The increase in heart beat would
- A. increase the rate of digestion.
 - B. decrease the air flow to his lungs.
 - C. convert maximum glucose to glycogen.
 - D. transfer glucose and oxygen to his muscles.

11. A motor neuron would transmit impulse from
- A. eye to skin.
 - B. eye to brain.
 - C. spinal cord to skin.
 - D. spinal cord to brain.
12. The given diagram represents reproduction in an organism.



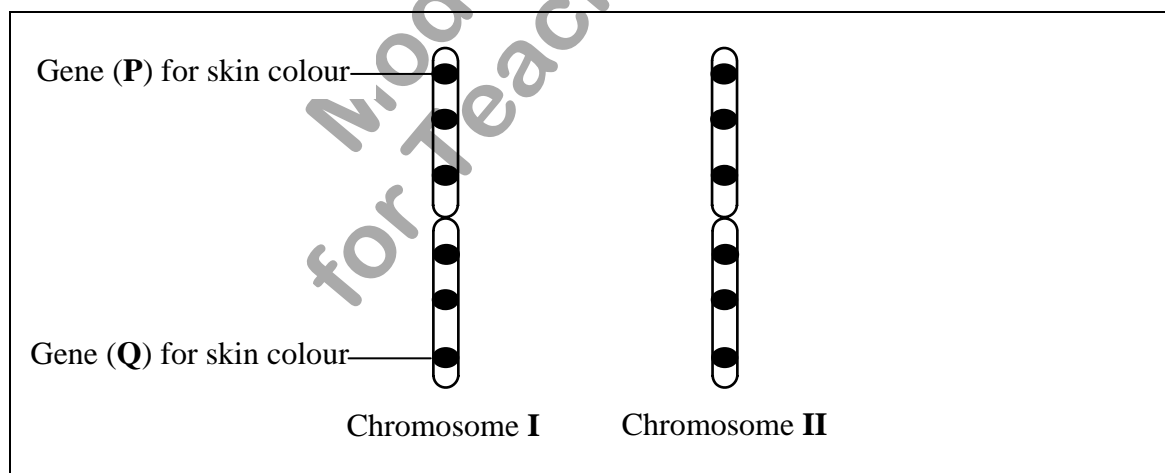
- In the given case, the offspring lack genetic variation because they
- A. are limited in number.
 - B. are produced asexually.
 - C. are unicellular organisms.
 - D. contain a single chromosome.
13. During the process of spermatogenesis in male rabbit, a spermatogonium undergoes mitosis to produce
- A. sperms.
 - B. spermatids.
 - C. primary spermatocytes.
 - D. secondary spermatocytes.
14. Which of the following is CORRECT about external fertilisation in animals?
- A. Dry medium is a necessary condition.
 - B. Embryo is protected inside the parental body.
 - C. The process takes place in most of the mammals.
 - D. Gametes are released in the surrounding environment.
15. A flower is MOST likely pollinated by wind if it has
- A. small petals with nectar.
 - B. large petals with feathery stigmas.
 - C. large petals with sticky pollen grains.
 - D. small petals with long slender filaments.

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16. Human immune deficiency virus (HIV) causes acquired immune deficiency syndrome (AIDS) in human beings by
- increasing the pH of blood.
 - decreasing white blood cells.
 - increasing the division of cells.
 - decreasing the oxygen carrying capacity of blood.
17. The bone that belongs to the appendicular skeleton of human beings is
- femur.
 - stapes.
 - sternum.
 - hyoid bone.
18. Which of the following is the condition of biceps during flexion and extension in the arm of human beings?

	The Condition of Biceps During	
	Flexion	Extension
A	Relax	Relax
B	Contract	Relax
C	Relax	Contract
D	Contract	Contract

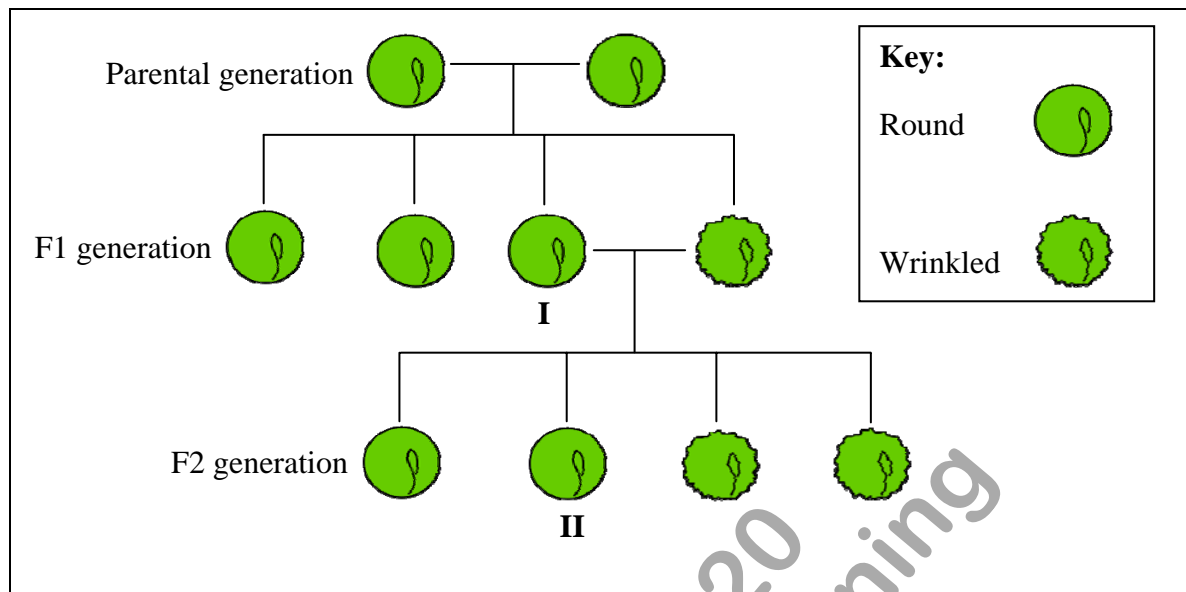
19. The given diagram shows genes on a pair of homologous chromosomes.



Allele for gene **P** on chromosome **II** of the given homologous pair could be

- P or p.
- P or q.
- P only.
- Q only.

20. The given diagram shows a genetic cross between two round pea seeds.



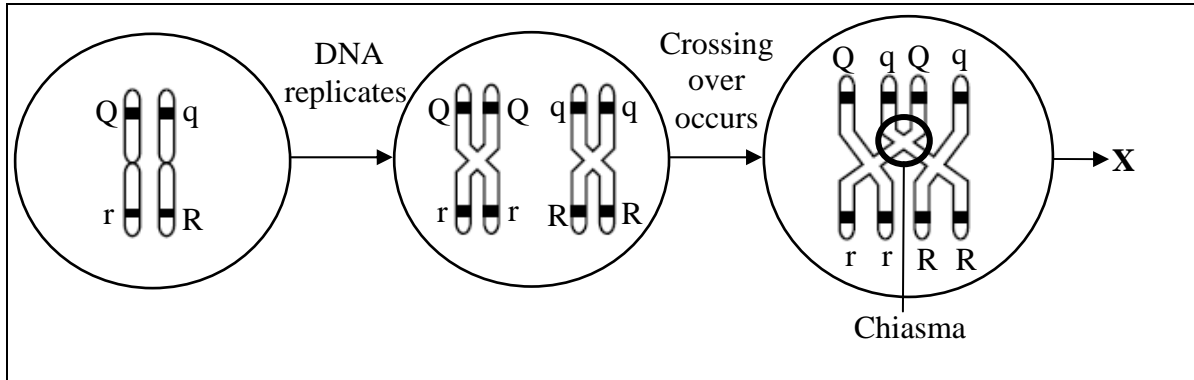
The genotypes of seed I and II would be

	Genotype of I	Genotype of II
A	homozygous	homozygous
B	homozygous	heterozygous
C	heterozygous	homozygous
D	heterozygous	heterozygous

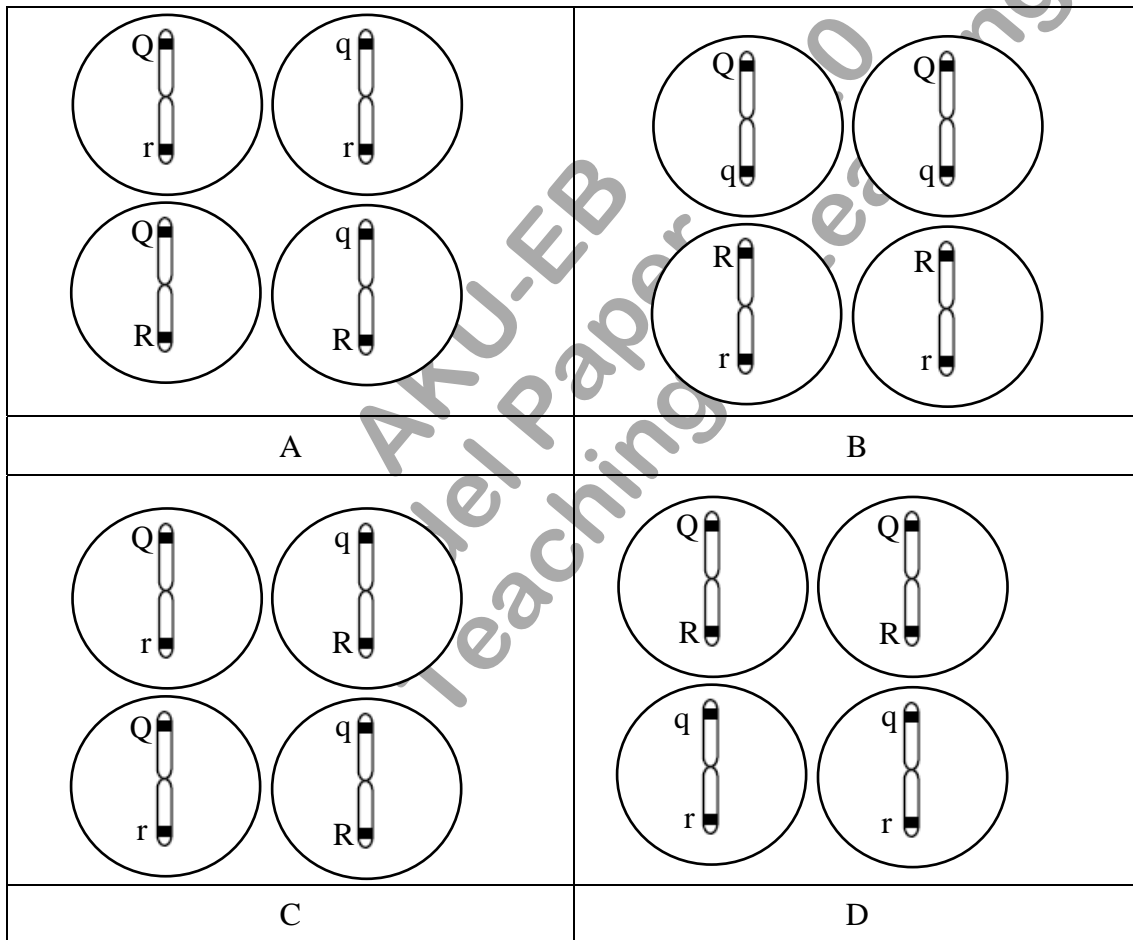
21. Which of the following is an example of artificial selection?
- Grapes are bred to produce large berry size.
 - Ladybirds are used to control aphids on crops.
 - Bacteria develop strains that are resistant to antibiotics.
 - Human gene is inserted into bacteria to produce insulin.

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22. The given diagram illustrates the Mendel's law of independent assortment.



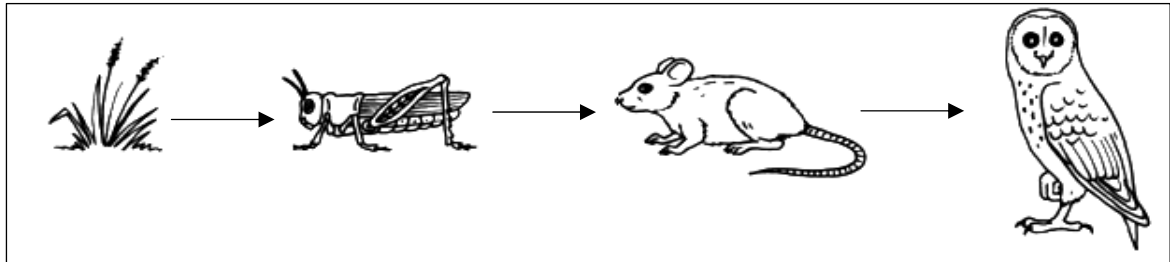
After the completion of meiosis, the types of gametes formed at X would be



23. The function of fungi in an ecosystem is to

- A. provide oxygen gas to producers.
- B. return nutrients to the environment.
- C. increase complexity of food chains.
- D. decrease competition among consumers.

24. In the given food chain, the trophic level that contains the largest biomass would be at



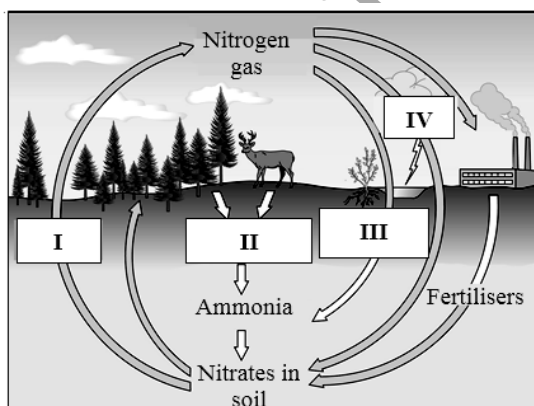
- A. rat.
- B. owl.
- C. grass.
- D. grasshopper.

25. Barnacles are a type of sea animals that attach to whales. Barnacles cannot move on their own; therefore, they use the whale to move around and find locations with food.

The type of animal association that best fits in the given situation is

- A. predation.
- B. parasitism.
- C. mutualism.
- D. commensalism.

26. Which of the following events of nitrogen cycle decreases soil fertility by depleting nitrogen from it?



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

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27. Interferons are special proteins produced by human cells that

- A. reduce pain.
- B. cure thalassemia.
- C. dissolve blood clots.
- D. limit spread of viral infections.

28. Which of the following CORRECTLY matches the drug with its source?

	Drug	Source of Drug
A	Streptomycin	Microorganism
B	Morphine	Animal
C	Penicillin	Plant
D	Aspirin	Mineral

29. The drugs that give relief from pain are

- A. antibiotics and heroin.
- B. caffeine and antibiotics.
- C. anaesthetics and caffeine.
- D. anaesthetics and analgesics.

30. Bacteriostatic antibiotics work by

- A. killing bacteria.
- B. inhibiting growth of bacteria.
- C. developing resistance in bacteria.
- D. producing immunity against bacteria.

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