CANDIDATE – PLEASE NOTE!

PRINT your name on the line below and return this booklet with your answer sheet. Failure to do so may result in disqualification.

FORM TP 02025053

TEST CODE **01207010**

MAY/JUNE 2025

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

BIOLOGY

Paper 01 – General Proficiency

1 hour 15 minutes

03 JUNE 2025 (p.m.)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This test consists of 60 items. You will have 1 hour and 15 minutes to answer them.

2. In addition to this test booklet, you should have an answer sheet.

3. Each item in this test has four suggested answers lettered (A), (B), (C), (D). Read each item you are about to answer and decide which choice is best.

4. On your answer sheet, find the number which corresponds to your item and shade the space having the same letter as the answer you have chosen. Look at the sample item below.

   Sample Item

   Which of the following diseases is due to a dietary deficiency?

   (A) Malaria
   (B) Diabetes
   (C) Influenza
   (D) Anaemia

   Sample Answer

   Ⓐ Ⓑ Ⓒ ●

   The correct answer to this item is "Anaemia", so (D) has been shaded.

5. If you want to change your answer, erase it completely before you fill in your new choice.

6. When you are told to begin, turn the page and work as quickly and as carefully as you can. If you cannot answer an item, go on to the next one. You may return to that item later.

7. Figures are not necessarily drawn to scale.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

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1. Which of the following features is used to classify a group of organisms as Class Insecta?

(A) Size
(B) Shape
(C) Colour
(D) Number of segments

2. Which of the following options correctly defines a niche and a habitat?

	Niche	Habitat
(A)	The role that an organism plays in the habitat	The place where an organism lives
(B)	The place where an organism lives	The role that an organism plays in the habitat
(C)	A community of living organisms which share the environment	The abiotic and biotic factors of the ecosystem
(D)	The biotic factors of the ecosystem where an organism lives	The abiotic factors of the ecosystem where an organism lives

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3. Which of the following relationships may present harm to one of the organisms involved?

I. Commensalism
II. Parasitism
III. Predation

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

4. Which of the following organisms are MOST important in biodegradation?

(A) Bacteria
(B) Vultures
(C) Omnivores
(D) Earthworms

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Items 5 and 6 refer to the following food chain which shows the feeding relationship in a freshwater lake.

Algae → larvae → eel → pike

5. Which of the organisms would be considered the secondary consumer in the food chain shown above?

(A) Eel
(B) Pike
(C) Algae
(D) Larvae

6. Which of the organisms would be considered the herbivore?

(A) Eel
(B) Pike
(C) Algae
(D) Larvae

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7. Approximately 10% of the energy stored in food is available to the next organism in a food chain because

(A) most of the energy is lost as heat during the process of respiration
(B) most of the energy is lost during the process of excretion
(C) there are fewer consumers than producers in a food chain
(D) many consumers compete for the same food source

8. Which of the following materials are considered to be non-biodegradable?

(A) Cloths
(B) Newspapers
(C) Sardine cans
(D) Grass cuttings

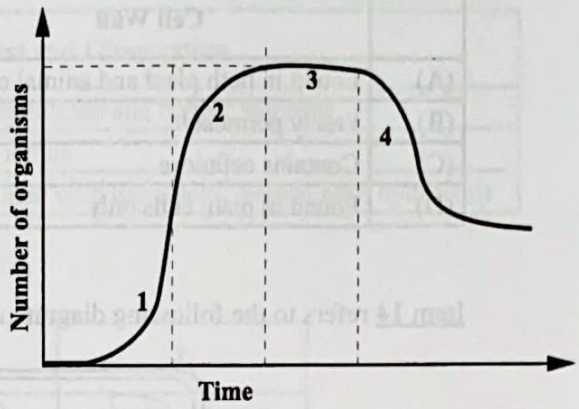
9. The GREATEST threat to the survival of coral reefs is

(A) increased dissolved oxygen levels
(B) increased ocean temperatures
(C) decreased greenhouse gases
(D) decreased nitrogen levels

10. Replanting trees on a bare hillside is an example of

(A) restoration and preservation
(B) reafforestation and restoration
(C) conservation and afforestation
(D) preservation and conservation

Item 11 refers to the following graph of population growth.



11. Phase 4 of the graph of population growth is MOST likely due to

(A) competition from invasive species
(B) adequate food and space
(C) a high natural birth rate
(D) disease resistance

12. When compared to a cheek cell, a muscle cell contains more

(A) vacuoles
(B) ribosomes
(C) mitochondria
(D) chromosomes

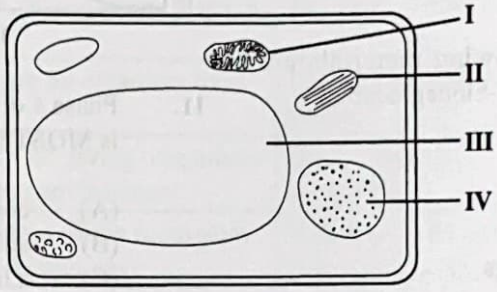
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13. Which of the following comparisons of a cell wall and cell membrane is INCORRECT?

	Cell Wall	Cell Membrane
(A)	Found in both plant and animal cells	Found in animal cells only
(B)	Freely permeable	Differentially permeable
(C)	Contains cellulose	Does not contain cellulose
(D)	Found in plant cells only	Found in both plant and animal cells

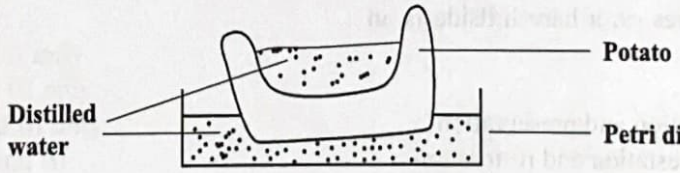
Item **14** refers to the following diagram of a cell.



14. Which of the labelled structures is responsible for controlling cellular activities?

(A) I
(B) II
(C) III
(D) IV

Item **15** refers to the following apparatus.



15. What can be done to cause the level of solution in the Petri dish to rise after 20 minutes?

(A) Add 5 g of salt to the distilled water in the potato only.
(B) Add 5 g of salt to the distilled water in the Petri dish only.
(C) Add 5 g of salt to the distilled water in both the Petri dish and the potato.
(D) Add 0 g of salt to the distilled water in both the Petri dish and the potato.

Item 16 refers to the following table which shows the results of food tests performed on three food samples, X, Y and Z.

Food Sample	Test and Observation
X	Violet colour with sodium hydroxide and copper sulphate
Y	Blue/black precipitate with iodine
Z	Orange precipitate when heated with Benedict's reagent after hydrolysis

16. The samples X, Y, and Z MOST likely contain

	X	Y	Z
(A)	protein	starch	non-reducing sugar
(B)	protein	reducing sugar	starch
(C)	starch	protein	reducing sugar
(D)	non-reducing sugar	starch	protein

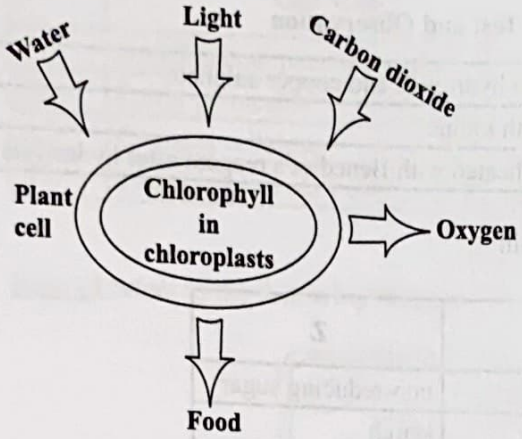
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17. Which of the following features would NOT enhance a leaf's ability to absorb solar energy?

(A) Numerous chloroplasts in the palisade cells
(B) Presence of a vascular bundle
(C) Transparent cuticle
(D) Large surface area

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Item **18** refers to the following diagram which represents a metabolic process carried out in plants.



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18. The food produced is

(A) fat
(B) glucose
(C) protein
(D) amino acid

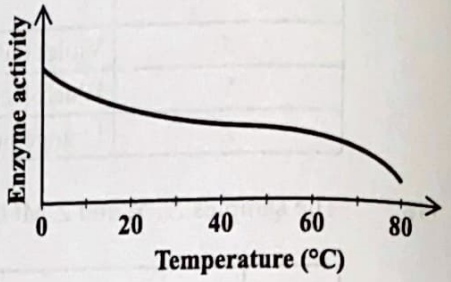
19. An enzyme is BEST defined as a molecule which

(A) increases the rate of a chemical reaction
(B) decreases the rate of a chemical reaction
(C) increases the rate of a chemical reaction but which remains unchanged at the end of the reaction
(D) decreases the rate of a chemical reaction but which remains unchanged at the end of the reaction

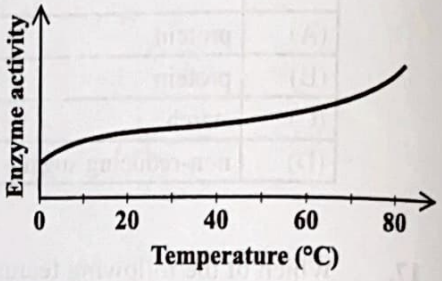
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20. Which of the following graphs shows the effect of temperature on an enzyme-controlled reaction?

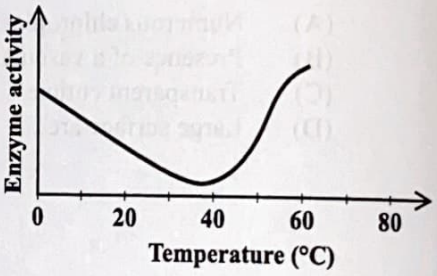
(A)



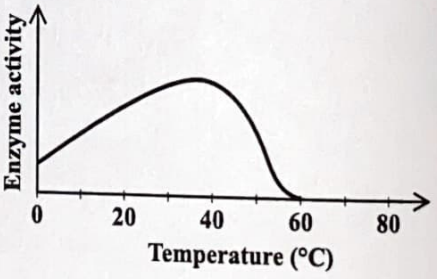
(B)



(C)

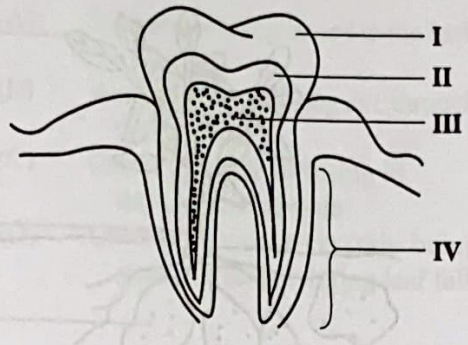


(D)



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Item 21 refers to the following longitudinal section of a tooth.



21. Which region of the tooth contains a large number of blood vessels and nerves?

(A) I
(B) II
(C) III
(D) IV

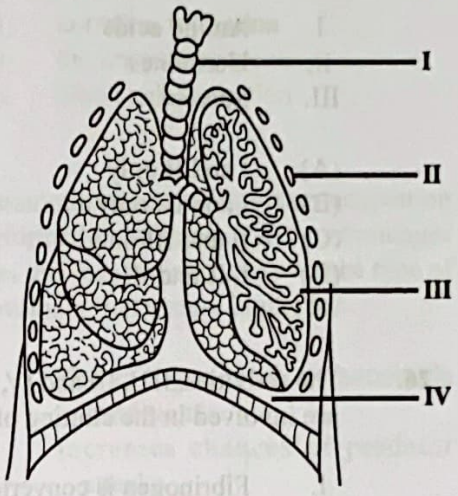
Item 22 refers to the following equation which shows the oxidation of glucose in cells.

$$C_6H_{12}O_6 + O_2 \xrightarrow{\text{Release of energy}} CO_2 + H_2O$$

22. The energy released from the process above is

(A) converted to ADP
(B) converted to ATP
(C) stored in a high energy bond in ADP
(D) stored in a high energy bond in ATP

Item 23 refers to the following diagram of the respiratory system, with some structures labelled I, II, III and IV.



23. Which of the labelled structures represents part of the ribcage?

(A) I
(B) II
(C) III
(D) IV

24. Which of the following is an effect of carbon monoxide found in cigarette smoke?

(A) Increased beating of cilia
(B) Damage to cells in the body causing cancer
(C) Reduced oxygen transport by the blood
(D) Increased mucus production in the cells lining the respiratory passage

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25. Which of the following options BEST identify some of the transport substances in animals?

I. Amino acids
II. Hormones
III. Sucrose

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

26. The activities, I, II, III and IV, listed below are involved in the clotting of blood.

I. Fibrinogen is converted to fibrin.
II. Blood cells are trapped.
III. Platelets are activated.
IV. Damage to blood vessels.

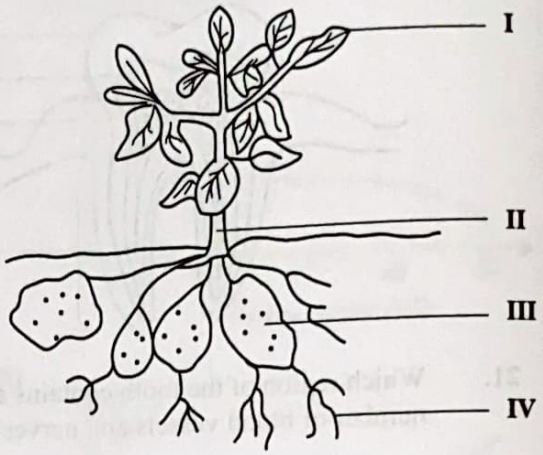
Which of the following correctly lists the sequence of activities?

(A) I, II, III, IV
(B) II, III, IV, I
(C) III, IV, I, II
(D) IV, III, I, II

27. Why is it difficult to develop a vaccine for the common cold?

(A) Vaccines cannot be developed for viruses.
(B) The antigens on the common cold virus change frequently.
(C) The antigens on the common cold virus remain the same.
(D) Human beings cannot produce antibodies for the common cold.

Item **28** refers to the following diagram of a potato plant.



28. Which part of the plant contains the MOST starch?

(A) I
(B) II
(C) III
(D) IV

29. Under which conditions will the rate of transpiration in plants be HIGHEST?

(A) Sunny and low wind speed
(B) Sunny and high wind speed
(C) Cloudy and low wind speed
(D) Cloudy and high wind speed

30. Which of the following substances is removed during egestion?

(A) Urea
(B) Bilirubin
(C) Excess water
(D) Undigested food

31. Which of the following processes is NOT a form of excretion in plants?

(A) Substances being stored in the bark of a tree
(B) Water vapour diffusing out, through the epidermis
(C) Carbon dioxide diffusing in, through the stomata
(D) Calcium oxalate crystals being stored in leaves during leaf fall

32. Which of the following changes in the concentration of substances is MOST likely to occur in the blood of persons who suffer from kidney disease?

(A) Increase in urea
(B) Decrease in urea
(C) Increase in glucose
(D) Decrease in glucose

33. Which of the following correctly describe(s) movement in plants?

I. Growth movement
II. Part movement
III. Whole body movement

(A) I only
(B) I and II only
(C) II and III only
(D) I, II and III

34. In humans, the skeletal system performs a variety of functions including

(A) mastication
(B) hormone formation
(C) the immune response
(D) blood cell formation

35. Locomotion is an evolutionary adaptation performed by animals. What advantages does this mechanism have over the type of movement that occurs in plants?

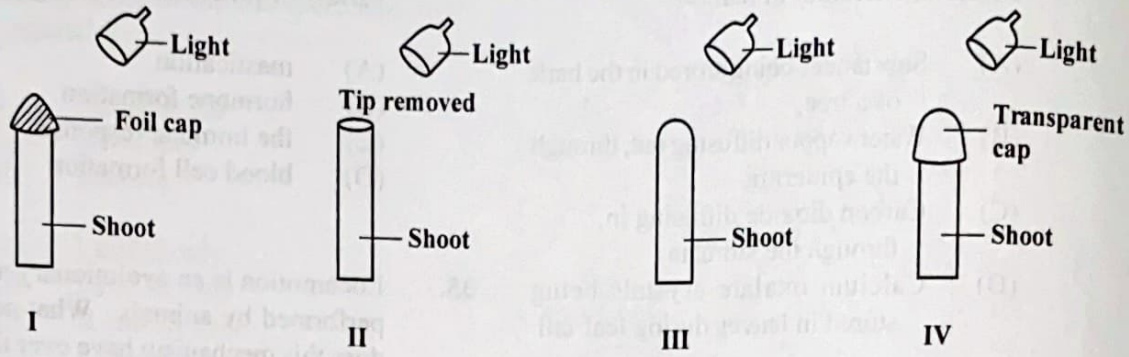
I. The ability to move to favourable conditions
II. Increases chances of predator attacks
III. The ability to find food

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

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Item 36 refers to the following diagrams illustrating the steps involved in an experiment.



36. After a few days, the TALLEST shoot would MOST likely be

(A) I
(B) II
(C) III
(D) IV

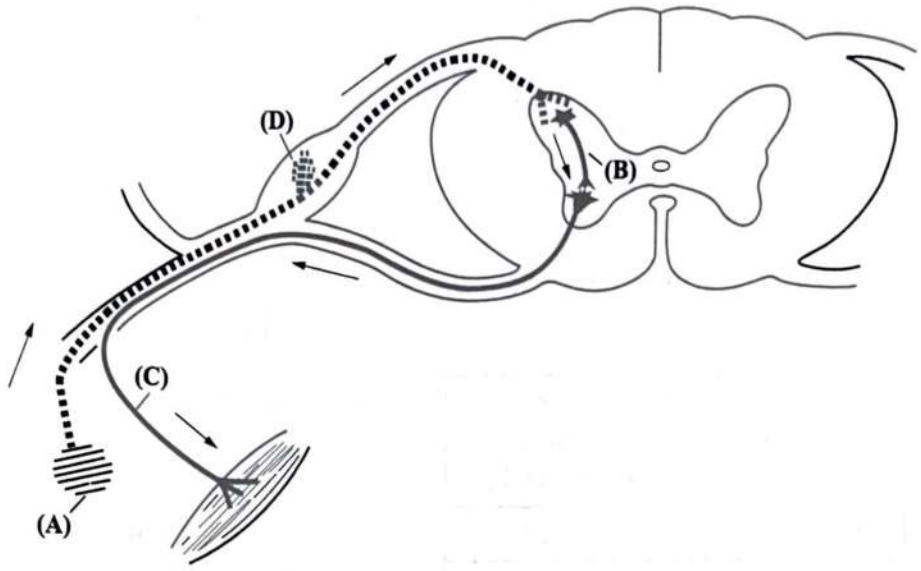
37. Which of the following options BEST describes the terms 'stimulus' and 'response'?

	Stimulus	Response
(A)	A deliberate provocation of an organism	The movement of an organism
(B)	An organism's exposure to sunlight	The growth of an organism away from light
(C)	A wave of excitement in an organism	Locomotion of an organism
(D)	A detectable change in an organism's environment	An organism's reaction to a stimulus

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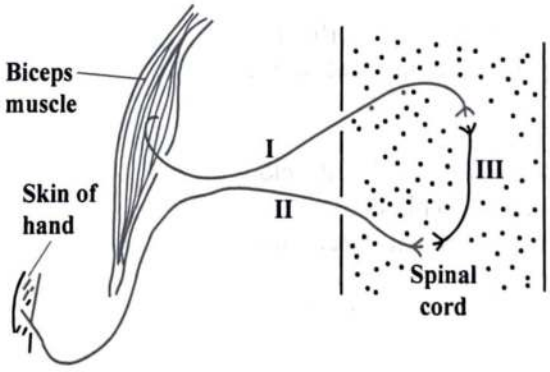
Item 38 refers to the following diagram of a reflex arc.



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38. Which labelled structure relays the impulse to an effector?

Item 39 refers to the following diagram of a spinal reflex.

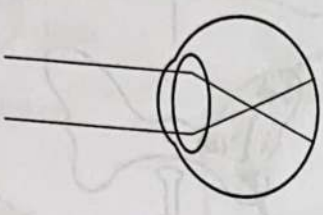


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39. The numbered structures are

	I	II	III
(A)	sensory neurone	motor neurone	relay neurone
(B)	sensory neurone	relay neurone	motor neurone
(C)	motor neurone	sensory neurone	relay neurone
(D)	motor neurone	relay neurone	sensory neurone

Item 40 refers to the following diagram which shows nearsightedness in an eye.



40. Which of the following shows how the defect can be corrected?

	Lens	Bending of Light Rays Before Entering the Eye
(A)	Diverging	Outwards
(B)	Diverging	Inwards
(C)	Converging	Outwards
(D)	Converging	Inwards

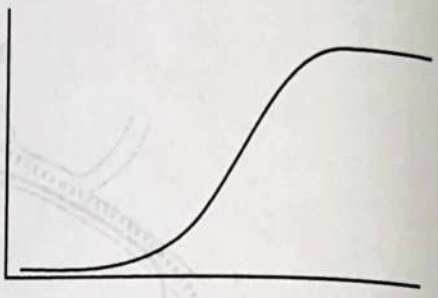
41. The statements below describe the processes taking place within a seed during germination.

I. The embryo uses food to develop the radicle and plumule.
II. Enzymes break down proteins into amino acids.
III. Soluble products move into the embryo.

Which of the following sequences of events occurs during the germination of the seed?

(A) I → II → III
(B) I → III → II
(C) II → I → III
(D) II → III → I

Item 42 refers to the following unlabelled graph which illustrates a measurement of growth in living organisms.



42. Which of the following labels would be INCORRECT on the *y*-axis?

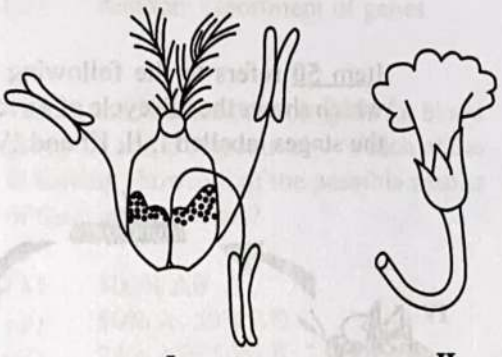
(A) Mass
(B) Length
(C) Units of time
(D) Number of leaves

43. Which row in the following table correctly states the cause, treatment, control and prevention of the disease AIDS?

	Causative Agent	Treatment	Control	Prevention
(A)	RNA virus	Antiretrovirals (such as AZT)	Monogamy	Abstinence
(B)	Bacterium	Antibiotics	Monogamy	Abstinence
(C)	DNA virus	Antigens	Vaccination	Public education
(D)	Bacterium	Penicillin	Vaccination	Abstinence

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Item **44** refers to the following diagrams of flowers, labelled I and II, from two different types of plants.



I II

44. Which of the following statements is true for both flowers?

(A) Both are wind pollinated.
(B) Petals are absent from both I and II.
(C) Both are pollinated by a hummingbird.
(D) I is pollinated by the wind while II is pollinated by a hummingbird.

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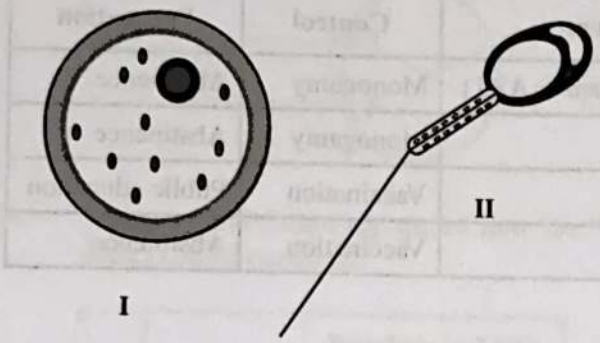
Item **45** refers to the following activities involved in the menstrual cycle.

I. Repair of the uterine lining
II. Ovulation
III. Shedding of the uterine lining
IV. Development of the Graafian follicle

45. Which of the following sequences shows the correct order of activities?

(A) I→ II→ III → IV
(B) II→ I→ III → IV
(C) IV→ I→ II → III
(D) IV→ III→ II → I

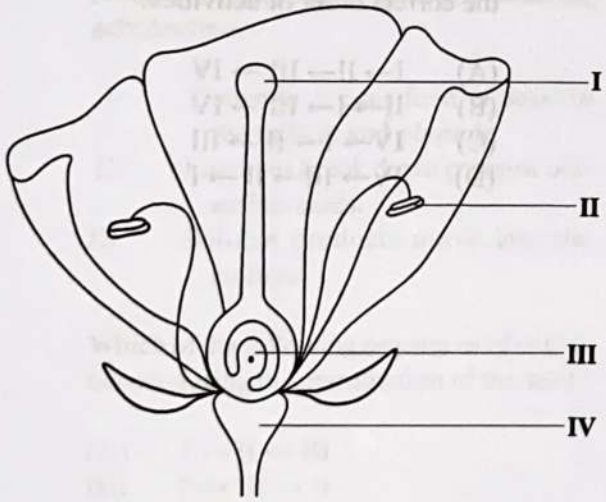
Item 46 refers to the following diagrams of specialized cells, labelled I and II.



46. Which of the following structures is common to both cells?

(A) Cilium
(B) Nucleus
(C) Cell wall
(D) Acrosome

Item 47 refers to the following diagram of a flower.



47. Which of the labelled parts is responsible for the production of male gametes?

(A) I
(B) II
(C) III
(D) IV

48. Which of the following are used in the management of diabetes?

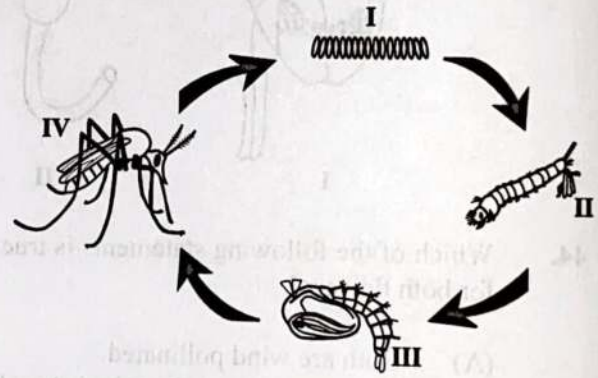
I. Diet
II. Exercise
III. Medication

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

49. A vector is defined as an organism that

(A) transmits disease organisms
(B) lives on other organisms
(C) causes diseases
(D) bites humans

Item 50 refers to the following diagram which shows the life cycle of a vector, with the stages labelled I, II, III and IV.



50. At which stage is this vector easily controlled by the use of aerosol insecticides?

(A) I
(B) II
(C) III
(D) IV

51. Which of the following descriptions BEST defines a chromosome?

(A) Two forms of the same gene
(B) Structure made up of DNA wrapped around histones
(C) Nucleic acid that contains all genetic information
(D) Part of the DNA which carries genetic information to produce a protein

52. Which of the following is NOT a characteristic of meiosis?

(A) Maintenance of the diploid number
(B) Genetic recombination of alleles
(C) Crossing over of chromosomes
(D) Random assortment of genes

53. Tarzan and Jane are heterozygous for blood groups A and B respectively. Which of the following shows all of the possible results of their genetic cross?

(A) 100% AB
(B) 50% A: 50% AB
(C) 25% AB: 50% B: 25% O
(D) 25% A: 25% B: 25% AB: 25% O

54. Which of the following terms refers to visible characteristics of living things?

(A) Gene
(B) Genotype
(C) Phenotype
(D) Chromosome

55. Albinism is caused by a recessive allele. Two normal parents produce an albino child. This is because

(A) both parents were homozygous recessive
(B) both parents were heterozygous for the gene
(C) one parent was homozygous dominant for the trait and the other heterozygous
(D) one parent was homozygous dominant for the trait and the other homozygous recessive

56. One example of a sex-linked disease is

(A) cancer
(B) hypertension
(C) colour blindness
(D) Down's syndrome

57. Variation in populations is due to

I. mutation
II. crossing over
III. asexual reproduction

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

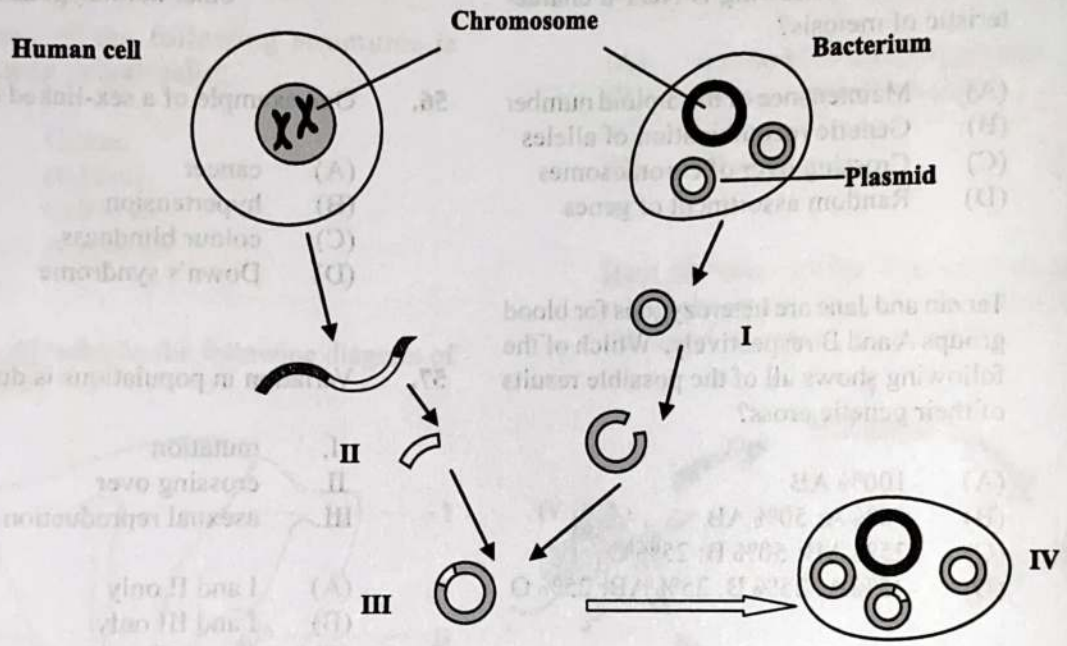
58. A group of closely related organisms that are able to interbreed and produce fertile offspring is called a

(A) niche
(B) species
(C) population
(D) community

59. Which of the following descriptions is true about natural and artificial selection?

	Natural Selection	Artificial Selection
(A)	Occurs in domestic populations	Occurs in natural populations
(B)	Involves genetic modification	Largely controlled by the environment
(C)	Produces great biological diversity	Produces very different organisms from natural populations
(D)	Is a faster process	Is a slower process

Item 60 refers to the following diagram which shows Stages I, II, III and IV in the production of insulin through genetic engineering.



60. In which of the stages above can insulin be produced by the bacterium?

(A) I
(B) II
(C) III
(D) IV

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.

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