



TEST CODE **01253010**

SPEC 2019/01253010

**CARIBBEAN EXAMINATIONS COUNCIL
CARIBBEAN SECONDARY EDUCATION CERTIFICATE®
EXAMINATION**

HUMAN AND SOCIAL BIOLOGY

SPECIMEN PAPER

Paper 01 – General Proficiency

1 hour 15 minutes

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

Abnormally high blood pressure is called

- (A) distension
- (B) hypotension
- (C) hypertension
- (D) hyperglycaemia

Sample Answer



The correct answer to this item is “hypertension”, so (C) 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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01253010/SPEC 2019

1. Which part of the cell controls ALL activities that take place within it?

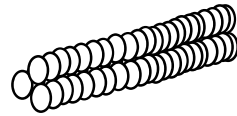
- (A) Nucleus
- (B) Lysosome
- (C) Cytoplasm
- (D) Chloroplast

2. Which of the following specialized cells is found in the gut?

(A)



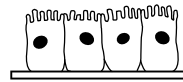
(B)



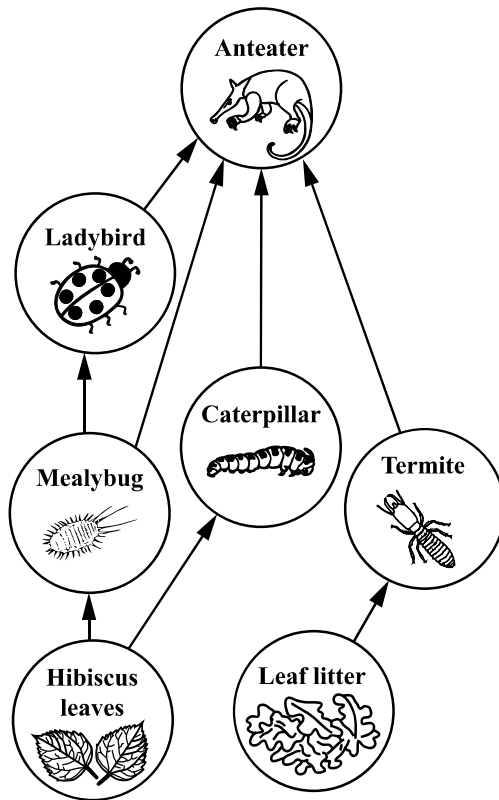
(C)



(D)

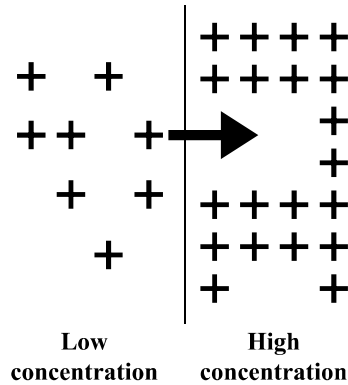


Item 3 refers to the following food web which shows the feeding relationships for animals in a forest.



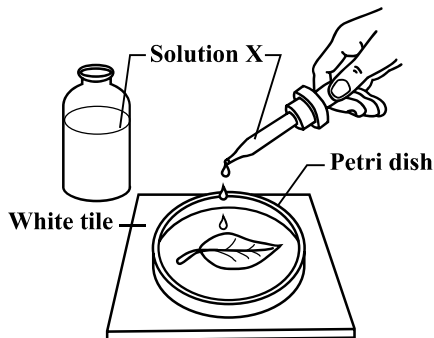
3. Which of the following outcomes will occur if the mealybug becomes extinct?
- (A) The hibiscus leaves will decrease.
 - (B) The anteater population will die out.
 - (C) The ladybird population will die out.
 - (D) The caterpillar population will increase.

Item 4 refers to the following diagram which shows a process that occurs in the human body.



4. The process illustrated in the diagram above is referred to as
- (A) osmosis
 - (B) diffusion
 - (C) transpiration
 - (D) active transport

Item 5 refers to the following diagram which shows the final step involved in testing for the presence of starch in a leaf.



5. When Solution X is dropped on the leaf, assuming photosynthesis has occurred, the leaf will become
- (A) pale
 - (B) black
 - (C) yellow
 - (D) wrinkled

6. Which of the following minerals plays an important role in the nucleus of the cell and is necessary for the formation of bones and teeth?

- (A) Iron
- (B) Iodine
- (C) Calcium
- (D) Phosphorus

7. Which of the following vitamins is classified as water soluble?

- (A) A
- (B) D
- (C) C
- (D) K

8. The BEST reason for including water in the diet is that it
- (A) dissolves nutrients during digestion
 - (B) is necessary to prevent the development of scurvy
 - (C) is the medium in which certain minerals are stored
 - (D) stops hunger from returning too early after a meal is eaten

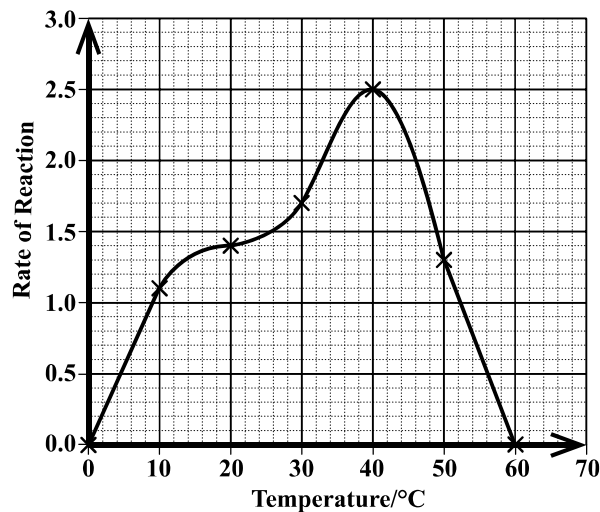
9. Which of the following measures can be used to categorize obesity?
- (A) Height
 - (B) Weight
 - (C) Blood pressure
 - (D) Body mass index

10. Which of the following teeth, present in children and adults, is responsible for grinding food into smaller pieces?
- (A) Molar
 - (B) Canine
 - (C) Incisor
 - (D) Premolar

11. Which row in the following table correctly matches the enzyme with its site of production?

	Enzyme	Site of Production
(A)	Sucrase	Pancreas
(B)	Maltase	Salivary glands
(C)	Pepsin	Walls of stomach
(D)	Amylase	Walls of small intestine

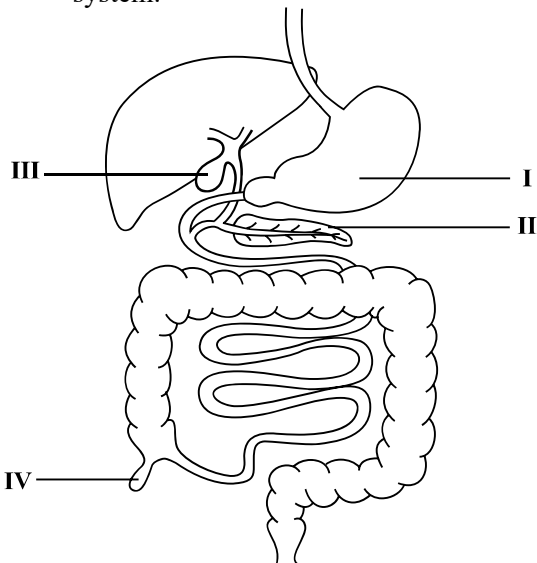
Item 12 refers to the following graph which shows how the rate of reaction varies with temperature for a certain enzyme.



12. Which of the following conclusions can be deduced from the graph above?
- (A) The rate of reaction reaches a maximum at 20 °C.
 - (B) The optimum temperature for the reaction is 30 °C.
 - (C) The rate of reaction is slower at lower temperatures.
 - (D) The rate of reaction decreases as the temperature increases.

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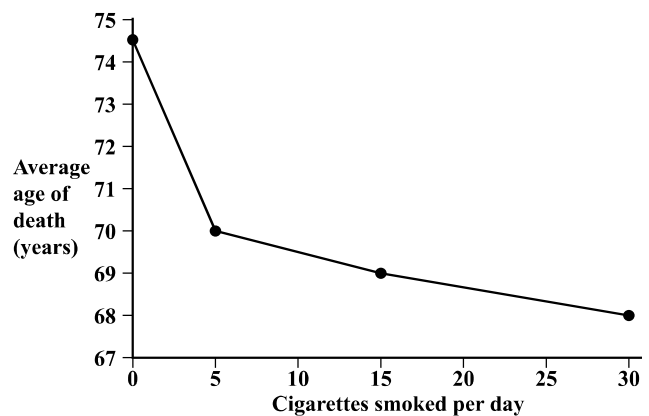
Item 13 refers to the following diagram which shows the organs of the digestive system.



13. Which of the labelled organs above is the pancreas?
- (A) I
(B) II
(C) III
(D) IV
14. A villus is BEST able to perform its function because it has
- (A) a thick epithelial lining
(B) a very small surface area
(C) few carrier proteins within its cell membrane
(D) several projections (microvilli) present on its surface
15. In which of the following organs does chemical digestion occur **only**?
- (A) Mouth
(B) Stomach
(C) Small intestine
(D) Large intestine

16. Which of the following factors may NOT affect the breathing rate of an individual?
- (A) Drugs
(B) Height
(C) Weight
(D) High altitudes

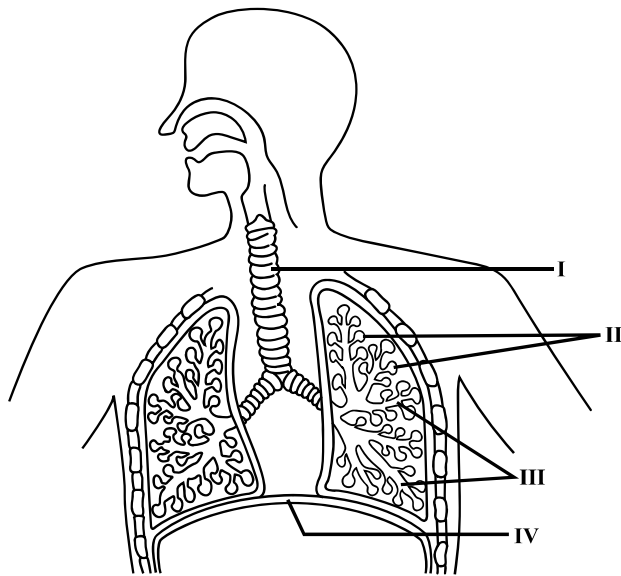
Items 17–18 refer to the following graph which shows the relationship between the average age of death and the number of cigarettes smoked per day.



17. If an individual died at 70 years old, how many cigarettes did he/she smoke per day?
- (A) 0
(B) 5
(C) 10
(D) 15
18. At what average age did non-smokers die?
- (A) 75.5 years
(B) 75.0 years
(C) 74.5 years
(D) 74.0 years

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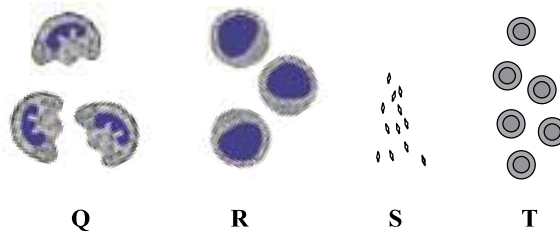
Item 19 refers to the following diagram which shows the structures of the human respiratory system.



19. In which of the labelled structures above does gaseous exchange take place?
- (A) I
 - (B) II
 - (C) III
 - (D) IV
-
20. Which chamber of the heart has the **thickest** wall?
- (A) Left atrium
 - (B) Right atrium
 - (C) Left ventricle
 - (D) Right ventricle
21. Systolic pressure is defined as the
- (A) lowest pressure when the heart relaxes
 - (B) highest pressure when the heart relaxes
 - (C) lowest pressure when the heart contracts
 - (D) highest pressure when the heart contracts
22. Lymph is different from tissue fluid because lymph contains a higher concentration of
- (A) nutrients and oxygen
 - (B) amino acids and water
 - (C) carbon dioxide and urea
 - (D) plasma proteins and blood cells

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Item 23 refers to the following diagrams which show four components of the blood.



23. Which row in the following table correctly identifies each component of blood above?

	Q	R	S	T
(A)	Phagocytes	Lymphocytes	Platelets	Red blood cells
(B)	Platelets	Red blood cells	Phagocytes	Lymphocytes
(C)	Red blood cells	Phagocytes	Lymphocytes	Platelets
(D)	Lymphocytes	Platelets	Phagocytes	Red blood cells

24. The role of an artificial pacemaker is to

- (A) control the heartbeat
- (B) initiate the heartbeat
- (C) speed up the heartbeat
- (D) slow down the heartbeat

25. Tendons are tissues which

- (A) attach bones at a joint
- (B) prevent the rubbing of bones
- (C) prevent the dislocation of bones
- (D) attach the ends of muscles to bones

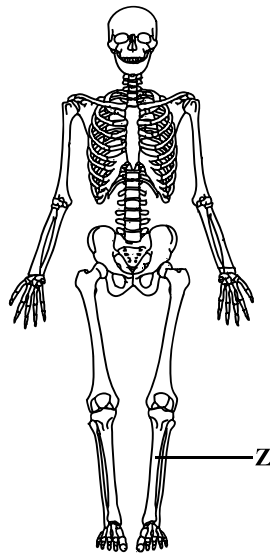
26. Which row in the following table describes the action of the antagonistic muscles when flexing the lower arm?

	Biceps	Triceps
(A)	Relaxes	Relaxes
(B)	Relaxes	Contracts
(C)	Contracts	Relaxes
(D)	Contracts	Contracts

27. At which type of joint are bones separated by cartilage pads and allowed slight movement?

- (A) Fixed
- (B) Hinge
- (C) Synovial
- (D) Ball and socket

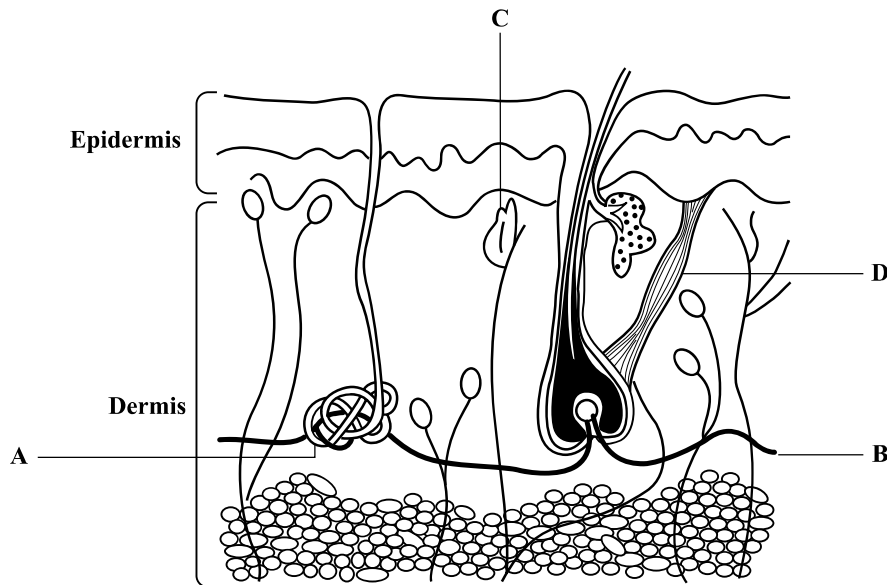
Item 28 refers to the following diagram of a skeleton.



28. The bone labelled Z is the

- (A) ulna
- (B) tibia
- (C) fibula
- (D) radius

Items 29–30 refer to the following diagram which shows the internal structure of the skin.

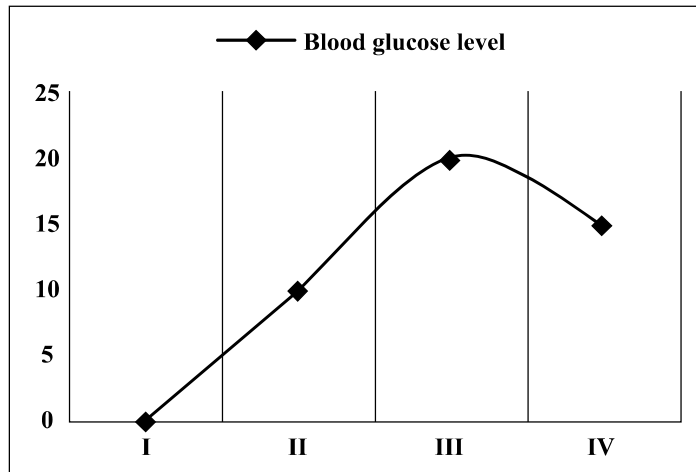


In answering Items 29–30, each option may be used one, more than once or not at all.

- 29. Which of the structures above secretes sweat?
- 30. Which of the structures above is stimulated when a person feels cold?

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Item 31 refers to the following graph which shows the level of glucose in the blood of an individual at various times throughout the day.







31. Which of the following activities is MOST likely occurring during Phase III?
- (A) Sleeping.
 - (B) Fasting between meals.
 - (C) Vigorous exercise was just completed.
 - (D) A meal rich in carbohydrates was just consumed.
-
32. Which of the following activities would cause the body to release antidiuretic hormone?
- (A) Eating salty food
 - (B) Excessive sweating
 - (C) Drinking a lot of water
 - (D) Drinking sugary liquids
33. Which of the following types of reflexes is pupil dilation?
- (A) Spinal
 - (B) Cranial
 - (C) Voluntary
 - (D) Conditioned

34. Which of the following describes the functions of sense organs?

- I. Warn of danger
 - II. Detection of stimuli
 - III. Inform about the environment
- (A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

35. Linda is looking at a coconut tree. If she has normal vision, how would the image of the tree appear on her retina?

- (A) 
- (B) 
- (C) 
- (D) 

36. Brent has low blood sugar levels. Which of the following hormones is being secreted to ensure that he has sufficient energy to continue his activities?

- (A) Insulin
(B) Glucagon
(C) Growth hormone
(D) Antidiuretic hormone

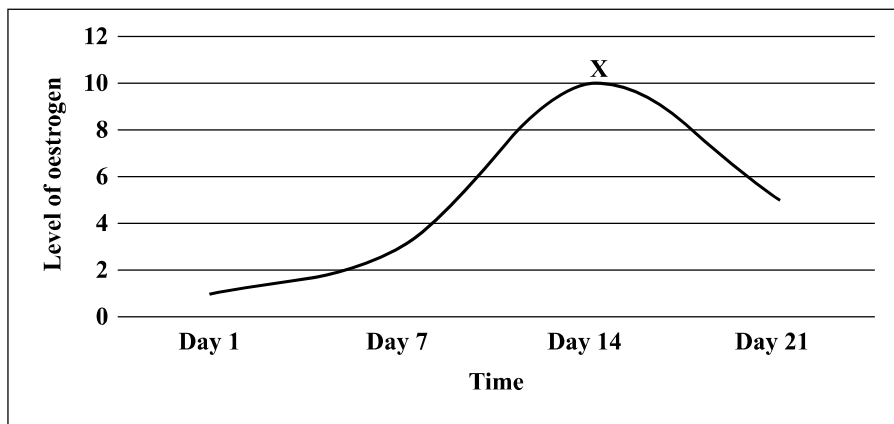
37. Michael has diabetes mellitus. Which of the following vision disorders is he at risk of developing?

- (A) Cataracts
(B) Glaucoma
(C) Astigmatism
(D) Short-sightedness

38. Which of the following comparisons about sexual and asexual reproduction is true?

	Sexual	Asexual
(A)	Requires one parent.	Requires two parents.
(B)	Offspring are genetically identical.	Offspring are not genetically identical.
(C)	Involves the fusion of gametes.	Does not involve the fusion of gametes.
(D)	Large number of offspring produced.	Small number of offspring produced.

Item 39 refers to the following graph which shows the level of oestrogen produced during the menstrual cycle.



39. Which of the following processes is MOST likely occurring at Point X?

- (A) Ovulation
- (B) Conception
- (C) Implantation
- (D) Menstruation

40. Which of the following structures is expelled from the vagina shortly after childbirth?

- (A) Placenta
- (B) Amniotic sac
- (C) Amniotic fluid
- (D) Umbilical cord

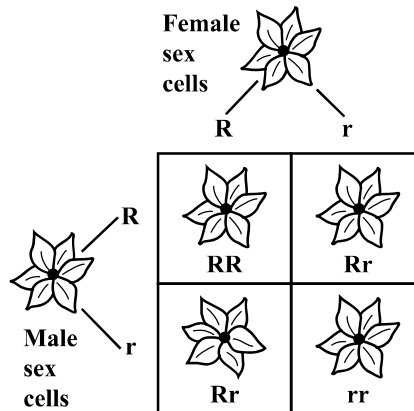
41. Which of the following methods of birth control prevents ovulation and implantation?

- (A) Barrier
- (B) Natural
- (C) Surgical
- (D) Hormonal

42. Georgia does not complete her course of antibiotics because she is feeling better. Which of the following outcomes is likely to occur as a result of her NOT finishing her course of antibiotics?

- (A) She is feeling well, nothing else should happen.
- (B) She is likely to contract another type of infectious disease.
- (C) Resistant bacteria in her body are left to grow and multiply.
- (D) Resistant viruses in her body are left to grow and multiply.

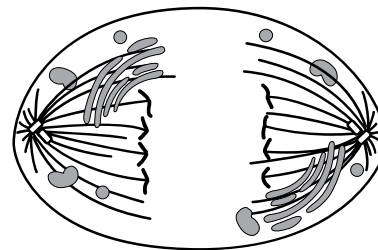
Item 43 refers to the following Punnett square for flower colour where R = red and r = white.



43. What is the genotypic ratio of red flowers to white flowers?

- (A) 2:1
- (B) 3:1
- (C) 1:2:1
- (D) 1:3:1

Item 44 refers to the following diagram which shows a cell undergoing the process of mitosis.



44. Which of the following phases of mitosis is occurring in the cell above?

- (A) Prophase
- (B) Anaphase
- (C) Telophase
- (D) Metaphase

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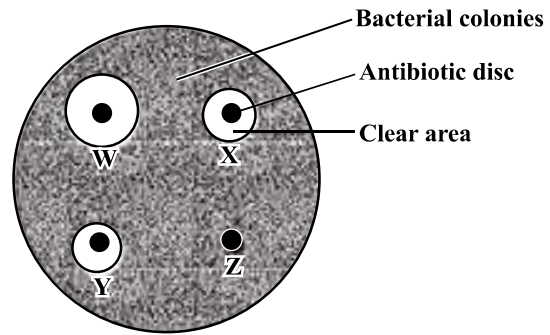
45. Alternative genes for eye colour are referred to as
- (A) alleles
 - (B) mutations
 - (C) chromatids
 - (D) chromosomes

46. The human papillomavirus (HPV) vaccine for young women may help prevent
- (A) lung cancer
 - (B) skin cancer
 - (C) breast cancer
 - (D) cervical cancer

47. Organisms that transmit disease-causing microbes to other organisms are called
- (A) vectors
 - (B) infectors
 - (C) parasites
 - (D) pathogens

48. Glucose is found in the urine of diabetics because
- (A) stored fats in the body are being oxidized
 - (B) too much glucose is absorbed by the kidney cells
 - (C) not enough glucose in the blood is converted to glycogen
 - (D) there is an increased uptake and use of glucose by body cells

49. Bacteria were grown on an agar plate, until the plate was covered with visible bacterial colonies. Four discs containing equal amounts of different antibiotics were then placed on the agar plate. After two days, clear areas had formed around some of the discs, as shown in the diagram below.



Which of the following conclusions about the experiment is correct?

- (A) Antibiotic Z is the most effective of the four antibiotics.
- (B) Antibiotic W is more effective against these bacteria than Antibiotic X.
- (C) Antibiotic Y is more effective against these bacteria than Antibiotic X.
- (D) Antibiotic Y is more effective against these bacteria than Antibiotic W.

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50. Infectious diseases, such as colds and influenza, are MOST commonly spread by

- (A) hand-to-face contact
- (B) drinking infected water
- (C) eating contaminated food
- (D) inhaling airborne pathogens

51. Which of the following factors contributes MOST to the development of obesity?

- (A) Age
- (B) Gender
- (C) Lifestyle
- (D) Genetics

52. The correct sequence of the stages in the life cycle of a mosquito is

- (A) egg, larva, pupa, adult
- (B) egg, pupa, larva, adult
- (C) larva, pupa, egg, adult
- (D) pupa, egg, larva, adult

53. Mala is vaccinated against a disease and her antibody concentration increases rapidly. However, over the next few days, there is a gradual decrease in her antibody concentration. What type of immunity does Mala experience?

- (A) Active natural
- (B) Active artificial
- (C) Passive natural
- (D) Passive artificial

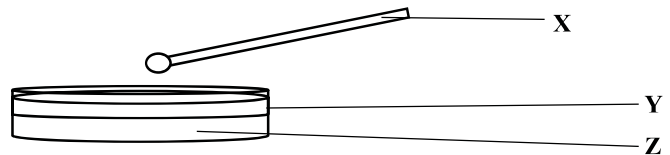
54. What is the correct order of the processes involved in large-scale water purification?

- (A) Chlorination, screening, sedimentation, filtration
- (B) Sedimentation, screening, chlorination, filtration
- (C) Screening, sedimentation, filtration, chlorination
- (D) Filtration, screening, sedimentation, chlorination

55. What is the role of bacteria in sewage treatment?

- (A) Creates sludge
- (B) Aerates the sludge
- (C) Decomposes organic matter
- (D) Causes the solid matter to settle

56. A student used the apparatus below to test water for bacteria.



Which row in the following table shows the correct labels for X, Y and Z?

	X	Y	Z
(A)	Swab	Watch glass	Agar gel
(B)	Swab	Petri dish	Agar gel
(C)	Spatula	Watch glass	Petroleum jelly
(D)	Spatula	Petri dish	Petroleum jelly

57. Aaron lives down river from a farm. One year he notices that algae are covering the surface of the river and fish are washing up dead on the shore. The MOST likely reason the fish died is due to
- (A) a lack of oxygen
 - (B) the overgrowth of algae
 - (C) pesticides from the farm
 - (D) fertilizers from the farm

Item 58 refers to the following table which shows the types of garbage generated on a weekly basis in the households of persons in a rural village.

Type of Garbage	Number of Bags Produced in a Week
Peelings/garden trimmings	6
Tins/glass bottles	25
Plastic	10
Paper waste	3

58. What would be the BEST method of domestic refuse disposal for the villagers to utilize to help reduce the amount of garbage sent to the landfill?
- (A) Burning
 - (B) Biodiesel
 - (C) Recycling
 - (D) Composting

59. Surav burns his household garbage every weekend. Which of the following is an effect of the smoke?
- (A) Silicosis
 - (B) Eutrophication
 - (C) Global warming
 - (D) Ozone depletion

60. Which of the following components is common to both the biological filter method and activated sludge method?
- (A) Grit pit
 - (B) Aeration tank
 - (C) Percolating filter
 - (D) Stones covered with aerobic bacteria

END OF TEST

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

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CANDIDATE'S RECEIPT

INSTRUCTIONS TO CANDIDATE:

1. **Fill in all the information requested clearly in capital letters.**

TEST CODE:

0	1	2	5	3	0	1	0
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SUBJECT: HUMAN AND SOCIAL BIOLOGY – Paper 01

PROFICIENCY: GENERAL

REGISTRATION NUMBER:

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FULL NAME: _____
(BLOCK LETTERS)

Signature: _____

Date: _____

2. **Ensure that this slip is detached by the Supervisor or Invigilator and given to you when you hand in this booklet.**
3. **Keep it in a safe place until you have received your results.**

INSTRUCTION TO SUPERVISOR/INVIGILATOR:

Sign the declaration below, detach this slip and hand it to the candidate as his/her receipt for this booklet collected by you.

I hereby acknowledge receipt of the candidate's booklet for the examination stated above.

Signature: _____
Supervisor/Invigilator

Date: _____

SPECIMEN 01253010 KEY

Item Number	Key	Specific Objective	Item Number	Key	Specific Objective
1	A	A.3	31	D	B5.7
2	D	A.4	32	B	B5.8
3	C	A.11	33	B	B6.5
4	D	A.6	34	C	B6.8
5	B	A.9	35	D	B6.10
6	D	B1.3	36	B	B6.15
7	C	B1.5	37	A	B6.12
8	A	B1.7	38	C	B7.1
9	D	B1.12	39	A	B7.3
10	D	B1.14	40	A	B7.5
11	C	B1.20	41	D	B7.7
12	C	B1.21	42	C	C.10
13	B	B1.22	43	C	C.6
14	D	B1.26	44	B	C.2
15	C	B1.24	45	A	C1
16	B	B2.4	46	D	D.6
17	B	B2.12	47	A	D.2
18	C	B2.12	48	C	D.9
19	B	B2.2	49	B	D.19
20	C	B3.6	50	D	D.2
21	D	B3.7	51	C	D.9
22	B	B3.14	52	A	D.13
23	A	B3.4	53	B	D.20
24	A	B3.6	54	D	E.8
25	D	B4.5	55	C	E.13
26	C	B4.9	56	B	E.7
27	A	B4.6	57	A	E.21
28	B	B4.1	58	C	E.14
29	A	B5.4	59	C	E.2
30	D	B5.4	60	D	E13