

CARIBBEAN EXAMINATIONS COUNCIL  
CARIBBEAN SECONDARY EDUCATION CERTIFICATE®  
EXAMINATION

HUMAN AND SOCIAL BIOLOGY

Paper 01 – General Proficiency

*1 hour 15 minutes*

03 JUNE 2019 (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

Abnormally high blood pressure is called

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

Sample Answer



The best 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.

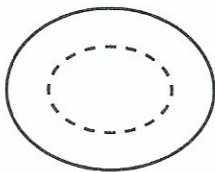
**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.**

1. Plants obtain nitrates
- (A) directly from nitrogen gas
  - (B) by the process of photosynthesis
  - (C) when nitrates diffuse into the stomata
  - (D) by absorbing nitrates through their roots

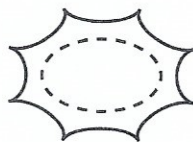
2. Which of the following is an example of a terrestrial food chain?
- (A) Seaweed → fish → seagull
  - (B) Pondweed → tadpole → fish
  - (C) Plant → grasshopper → bird
  - (D) Pondweed → tadpole → duck

3. In which of the following structures does photosynthesis occur?
- (A) Ribosomes
  - (B) Golgi bodies
  - (C) Chloroplasts
  - (D) Mitochondria

Item 4 refers to the following diagrams which show a red blood cell before and after being placed in a concentrated salt solution for one hour.



Before one hour  
I



After one hour  
II

4. The change in the red blood cell shown in II occurs because water
- (A) enters the cell by osmosis
  - (B) leaves the cell by osmosis
  - (C) leaves the cell by diffusion
  - (D) enters the cell by diffusion

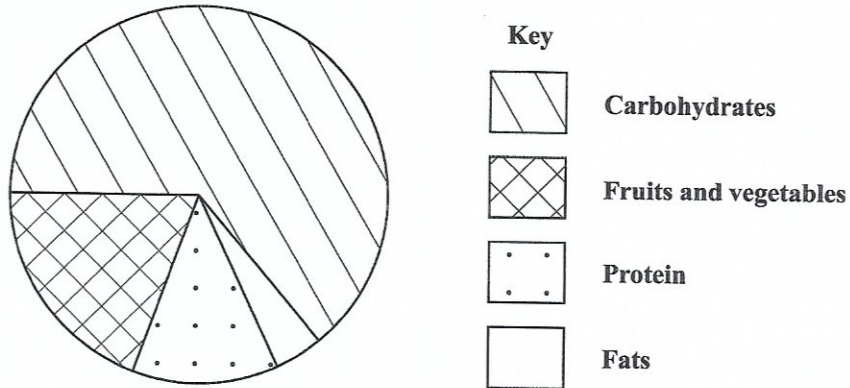
Item 5 refers to the following aquatic food chain.

Phytoplankton → zooplankton → fish → water bird

5. The producer in this food chain is the
- (A) fish
  - (B) water bird
  - (C) zooplankton
  - (D) phytoplankton
6. To which of the following food groups do oats belong?
- (A) Fruits
  - (B) Staples
  - (C) Legumes
  - (D) Vegetables
7. Which of the following statements is true about pepsin?
- (A) Is secreted in pancreatic juice
  - (B) Converts proteins to amino acids
  - (C) Converts proteins to polypeptides
  - (D) Functions best in alkaline conditions

8. Which of the following vitamins can be produced by the skin as well as obtained from food?
- (A) Vitamin A
  - (B) Vitamin B
  - (C) Vitamin C
  - (D) Vitamin D

Item 9 refers to the following pie chart which shows the proportions of food groups in a balanced meal.



9. A person diagnosed with diabetes mellitus should

- (A) increase fat intake
- (B) decrease protein intake
- (C) decrease carbohydrate intake
- (D) increase fruit and vegetable intake

10. Which of the following teeth aid in grinding food into smaller pieces?

- (A) Incisors and premolars
- (B) Molars and premolars
- (C) Incisors and canines
- (D) Canines and molars

12. Which of the following represents the correct sequence of events in the formation of a dental cavity?

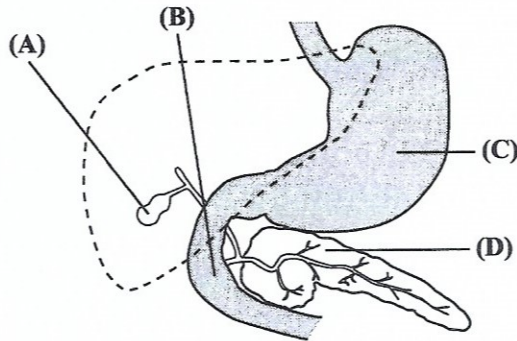
- I. Abscess
- II. Dentine decay
- III. Enamel decay
- IV. Plaque formation

11. Kwashiorkor is a deficiency disease caused by a lack of

- (A) fats
- (B) protein
- (C) glycogen
- (D) carbohydrates

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

Item 13 refers to the following diagram which shows a part of the human digestive tract.



13. Which organ is responsible for the digestion of protein **only**?
14. The process of egestion is defined as the removal of
- (A) toxic waste
  - (B) non-toxic waste
  - (C) metabolic waste
  - (D) undigested waste

Item 15 refers to the following table which shows the functions of some structures of the respiratory system.

Structure	Function
I	Filters, warms and moistens air
II	Prevents food from entering the trachea
III	Provides air passage to each lung
IV	Produces sound with voice box (vocal cords)

15. The structures labelled I, II, III and IV are

	I	II	III	IV
(A)	Epiglottis	Larynx	Nasal passage	Bronchus
(B)	Bronchus	Nasal passage	Larynx	Epiglottis
(C)	Nasal passage	Epiglottis	Bronchus	Larynx
(D)	Larynx	Bronchus	Epiglottis	Nasal passage

16. Which of the following reagents is used to test for glucose?

- (A) Iodine solution
- (B) Copper sulphate
- (C) Sodium hydroxide
- (D) Benedict's solution

17. To deliver mouth-to-mouth resuscitation, the following steps should be taken:

- I. Press the head back with one hand and push jaw upward with the other.
- II. Pinch the nose and seal your mouth with the casualty's mouth.
- III. Give four quick blows into the casualty's mouth and repeat every five seconds.
- IV. Place casualty on the back.

The correct order in which these steps should be taken is

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

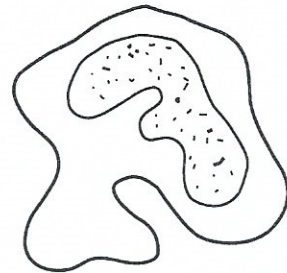
18. Which of the following is NOT a characteristic of gaseous exchange surfaces?

- (A) Moist
- (B) Thin-walled
- (C) Small surface area
- (D) Well supplied with gases

19. Which of the following substances found in cigarette smoke is addictive?

- (A) Tar
- (B) Nicotine
- (C) Carbon dioxide
- (D) Carbon monoxide

Item 20 refers to the following diagram of a cell.



20. The diagram MOST likely represents a

- (A) liver cell
- (B) phagocyte
- (C) lymphocyte
- (D) red blood cell

Item 21 refers to the following incomplete table which shows blood vessels and the organs they supply.

Blood Vessel	Organ Supplied
I	Lung
Hepatic artery	II
III	Intestine
Renal artery	IV

21. Which of the following correctly labels I, II, III and IV?

	I	II	III	IV
(A)	Iliac artery	Liver	Carotid artery	Kidney
(B)	Carotid artery	Kidney	Iliac artery	Liver
(C)	Pulmonary artery	Liver	Mesenteric artery	Kidney
(D)	Mesenteric artery	Kidney	Pulmonary artery	Liver

22. Which of the following BEST describes the function of a pacemaker in the heart?

- (A) Increases the heart rate
- (B) Decreases the heart rate
- (C) Regulates the heart rate
- (D) Prevents the heart from overworking

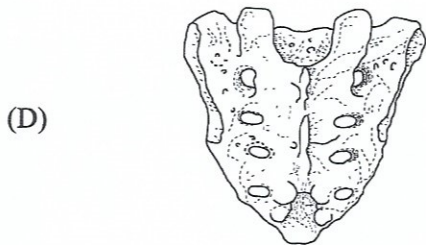
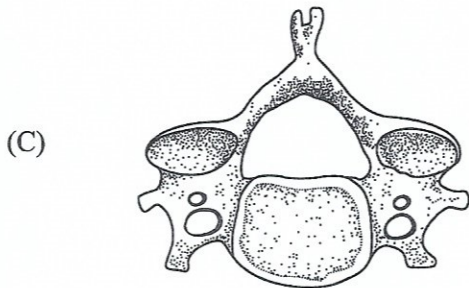
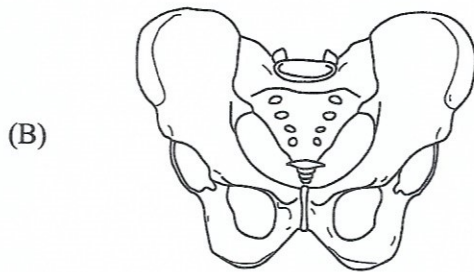
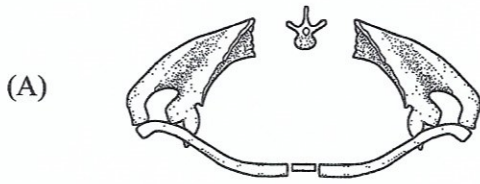
23. High blood pressure MOST likely leads to

- (A) cardiac problems
- (B) stomach ulcers
- (C) liver damage
- (D) lung damage

24. Blood pressure is HIGHEST in the

- (A) veins
- (B) arteries
- (C) arterioles
- (D) capillaries

25. Which of the following diagrams represents the pelvic girdle?



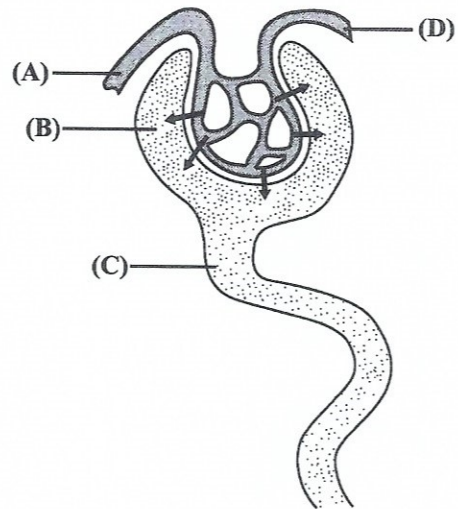
26. The function of the marrow in long bones is to

- (A) store iron
- (B) reduce friction
- (C) make blood plasma
- (D) make red blood cells

27. Muscle groups that oppose each other to produce movement are described as

- (A) synergistic
- (B) contracting
- (C) antagonistic
- (D) counteracting

Items 28–29 refer to the following simplified diagram of a kidney tubule.



In answering Items 28–29, each labelled part may be used once, more than once or not at all.

28. Which labelled part collects filtrate from the glomerulus?

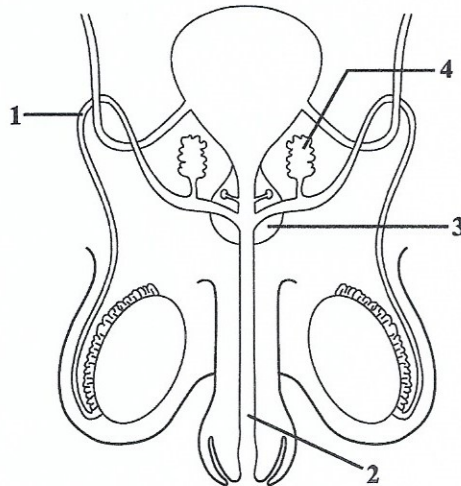
29. Which labelled part brings blood to the glomerulus?

30. Which of the following joints allows movement in **all** directions?

- (A) Knee
- (B) Ankle
- (C) Elbow
- (D) Shoulder

31. The part of the skin which acts as an insulating layer, holding heat in the body is the
- (A) subcutaneous fat
  - (B) sebaceous gland
  - (C) sweat gland
  - (D) hair follicle
32. Which of the following is an involuntary action?
- (A) Eating
  - (B) Walking
  - (C) Breathing
  - (D) Riding a bicycle
33. Which of the following actions occurs to bring about accommodation in the eye?
- (A) Tightening of suspensory ligaments through relaxation of the ciliary muscles
  - (B) Loosening of suspensory ligaments through relaxation of the ciliary muscles
  - (C) Tightening of suspensory ligaments with no change in the ciliary muscles
  - (D) Loosening of suspensory ligaments with no change in the ciliary muscles
34. Which of the following hormones is responsible for causing the liver to convert excess sugar to glycogen?
- (A) Insulin
  - (B) Glucagon
  - (C) Adrenalin
  - (D) Antidiuretic hormone
35. Which of the following statements is NOT true about the endocrine and nervous systems?
- (A) They both respond to stimuli.
  - (B) They are both responsible for co-ordination and control of the body.
  - (C) They both have specialized cells for transmitting and receiving information.
  - (D) They both have the same response time for transmitting and receiving information.
36. Which of the following hormones plays a major role in the growth of humans?
- (A) Insulin
  - (B) Glucagon
  - (C) Thyroxine
  - (D) Adrenalin

**Item 37** refers to the following diagram which represents the front view of the male reproductive system.



37. Which of the following correctly identifies the structures labelled 1, 2, 3 and 4?

	1	2	3	4
(A)	Sperm duct	Prostate gland	Seminal vesicle	Urethra
(B)	Prostate gland	Seminal vesicle	Urethra	Sperm duct
(C)	Sperm duct	Urethra	Prostate gland	Seminal vesicle
(D)	Urethra	Sperm duct	Seminal vesicle	Prostate gland

38. Which of the following is the correct sequence of activities that occurs when a person picks up a plate?

- I. Impulses are sent down the white matter of the brain through the spinal cord to the arm.
- II. Receptor detects the plate and an impulse is sent to the brain to make a decision.
- III. Effector contracts or relaxes to pick up the plate.
- IV. Touch receptors in the skin and eyes keep the brain informed to coordinate action.

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

39. Sexual reproduction is defined as the

- (A) fusion of zygotes
- (B) fusion of gametes
- (C) fission of gametes
- (D) production of offspring by mitosis

40. Which of the following methods of contraception functions by preventing sperm from entering the uterus?

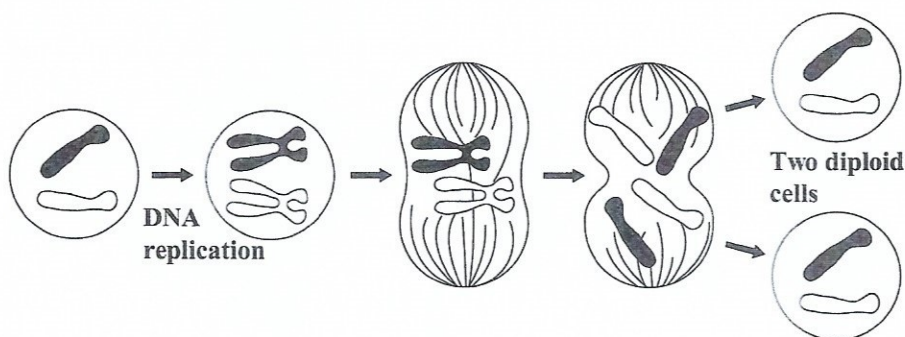
- (A) Barrier
- (B) Natural
- (C) Surgical
- (D) Hormonal

41. Ovulation is the process by which

- (A) a female becomes pregnant
- (B) a male and a female gamete fuse
- (C) an egg is implanted in the uterus
- (D) a mature egg is released into the oviduct

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Item 42 refers to the following diagram which shows a process occurring in humans.



42. The process illustrated above is

- (A) mitosis
- (B) meiosis
- (C) cell transport
- (D) cell transmutation

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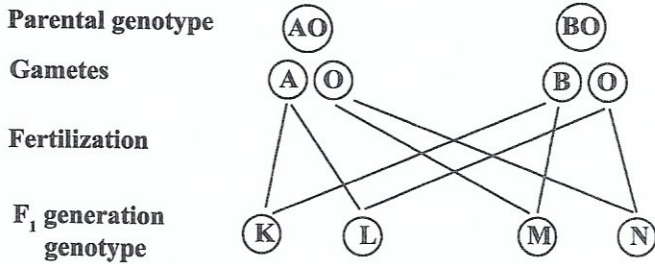
43. Chromosomes are made up of protein and

- (A) DNA
- (B) RNA
- (C) starch
- (D) fat

44. Which of the following shows correct examples of genetic and environmental variation?

	Genetic Variation	Environmental Variation
(A)	Height	Tongue rolling
(B)	Tongue rolling	Height
(C)	Eye colour	Tongue rolling
(D)	Height	Eye Colour

Item 45 refers to the following genetic cross which shows the inheritance of blood groups in humans. Alleles A and B are codominant to each other and both are dominant to O.



45. Which of the following offspring inherited the homozygous recessive allele?

- (A) K
- (B) L
- (C) M
- (D) N

46. Seema has the following signs/symptoms: constriction of bronchial tubes, coughing and wheezing. She is MOST likely suffering from

- (A) asthma
- (B) malaria
- (C) typhoid
- (D) tuberculosis

47. Hypertension does NOT occur as a result of

- (A) obesity
- (B) anaemia
- (C) arteriosclerosis
- (D) high cholesterol levels

Items 48–49 refer to the following terms.

- (A) Antibody
- (B) Antibiotic
- (C) Antitoxin
- (D) Antiserum

In answering Items 48–49, each term may be used once, more than once or not at all.

Which term refers to a

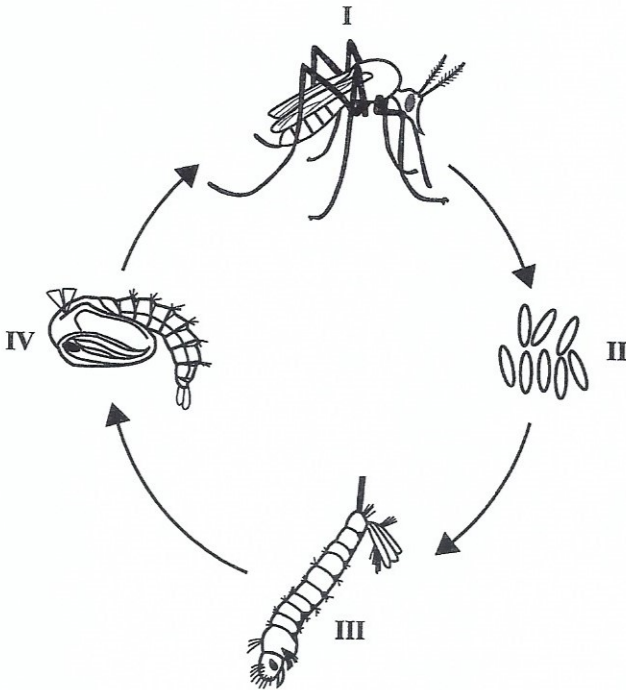
48. protein produced by blood plasma cells derived from B-lymphocytes?

49. substance released by the body to neutralize harmful chemicals produced by microorganisms?

50. Which of the following diseases causes severe diarrhoea and abdominal pains?

- (A) Typhoid
- (B) Ringworm
- (C) Gonorrhoea
- (D) Tuberculosis

Item 51 refers to the following diagram which shows the stages in the life cycle of the mosquito.



51. Which of the following stages are found in or on water?
- (A) II and III only
  - (B) III and IV only
  - (C) I, III and IV only
  - (D) II, III and IV only
52. What type of immunity is acquired from the antibodies that are produced when a vaccine is administered?
- (A) Artificial active
  - (B) Artificial passive
  - (C) Natural acquired
  - (D) Natural passive
53. Beriberi is an example of a disease that is classified as
- (A) hereditary
  - (B) pathogenic
  - (C) sexually transmitted
  - (D) nutritional deficiency
54. Which of the following gases is produced in a landfill site?
- (A) Ozone
  - (B) Steam
  - (C) Oxygen
  - (D) Methane
55. What is the effect of carbon monoxide on the human body?
- (A) Prevents oxygen uptake by blood
  - (B) Damages cilia present on the trachea
  - (C) Causes eye irritation and reduced visibility
  - (D) Has toxic effects on the nervous system
56. Chlorine bleach can be added to drinking water to
- (A) improve the taste
  - (B) prepare it for filtration
  - (C) destroy microorganisms
  - (D) remove unpleasant smells
57. Which of the following substances contribute to the excessive growth of algae in waterways?
- (A) Nitrates and sulphates
  - (B) Nitrates and phosphates
  - (C) Carbonates and sulphates
  - (D) Carbonates and phosphates

58. Which of the following are effects of releasing untreated sewage into rivers and lakes?
- I. Increase in bacteria
  - II. Decrease in oxygen
  - III. Death of fishes
- (A) I and II only  
(B) I and III only  
(C) II and III only  
(D) I, II and III
59. Which of the following is an example of a non-biodegradable pollutant?
- (A) Lead  
(B) Paper  
(C) Cotton  
(D) Sewage
60. Contamination of water sources is detrimental to humans because of the spread of water-borne diseases such as
- (A) rabies  
(B) cholera  
(C) influenza  
(D) tuberculosis

**END OF TEST**

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