FORM TP 2019086

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.

_____

TEST CODE **01230010**

MAY/JUNE 2019

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INTEGRATED SCIENCE

Paper 01 – General Proficiency

1 hour 15 minutes

29 MAY 2019 (p.m.)

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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

   Benzene dissolves stains caused by

   (A) tar
   (B) fruit
   (C) paint
   (D) starch

   Sample Answer

   ● Ⓑ Ⓒ Ⓓ

   The best answer to this item is "tar", so (A) 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.

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

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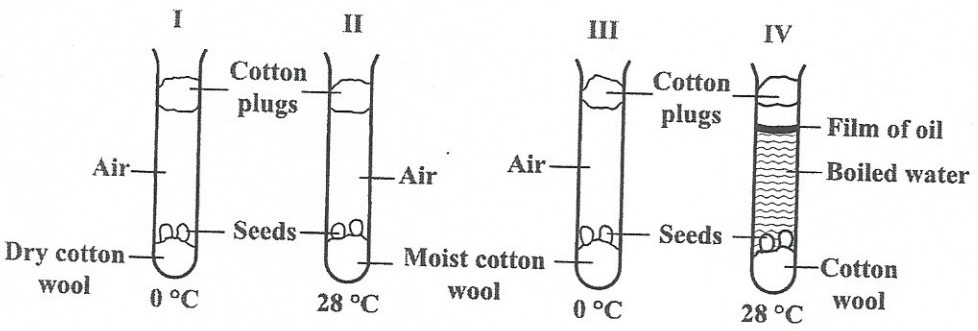
1. The structure responsible for the transfer of characteristics from parents to offspring is found in the

(A) cell membrane
~~(B)~~ chromosome
(C) cytoplasm
(D) vacuole

2. Which of the following structures is responsible for energy production in an animal?

(A) Nucleus
(B) Cell wall
~~(C)~~ Mitochondrion
(D) Cell membrane

Item 3 refers to the following diagrams which display seeds under different conditions in four test tubes, plugged with cotton wool.



3. In which test tube is germination MOST likely to take place?

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

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4. Which part of the flower is the site where male gametes are produced?

(A) Ovule
(B) Ovary
~~(C)~~ Anther
(D) Filament

Items 5–6 refer to the following hormones.

(A) Adrenaline
(B) Insulin
(C) Testosterone
(D) Progesterone

In answering Items 5–6, each option may be used once, more than once, or not at all.

5. Which hormone regulates the level of blood sugar in humans? B

6. Which hormone is produced in emergency situations? A

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7. Which of the following processes are associated with excretion by the kidneys?

I. Evaporation
II. Filtration
III. Reabsorption

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

8. The release of an egg from the ovary is called

~~(A)~~ ovulation
(B) fertilization
(C) implantation
(D) gestation

9. Which of the following statements concerning respiration is true?

(A) Anaerobic respiration produces more energy than aerobic respiration.
(B) Aerobic respiration requires carbon dioxide while anaerobic respiration requires oxygen.
~~(C)~~ Aerobic respiration requires oxygen while anaerobic respiration does not require oxygen.
(D) Aerobic respiration produces oxygen while anaerobic respiration produces carbon dioxide.

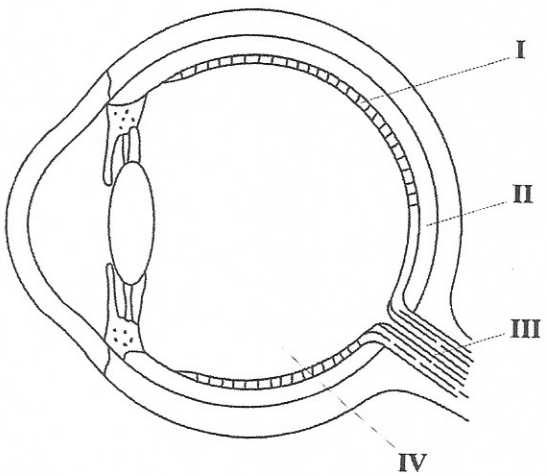
10. Condoms and diaphragm caps are examples of the method of birth control known as

~~(A)~~ barrier
(B) natural
(C) hormonal
(D) sterilization

11. Which of the following components of blood protects the body by engulfing bacteria?

(A) Plasma
(B) Platelet
(C) Red blood cell
~~(D)~~ White blood cell

Item 12 refers to the following diagram which shows several structures in the eye.



12. Which structure is responsible for carrying impulses to the brain?

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

13. The MOST effective method used in controlling pests is the

(A) use of traps
(B) use of chemicals
(C) use of another organism
~~(D)~~ eradication of their breeding places

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14. The amount of water entering the tissues of the body is controlled by

(A) egestion
(B) nutrition
(C) excretion
(D) osmoregulation

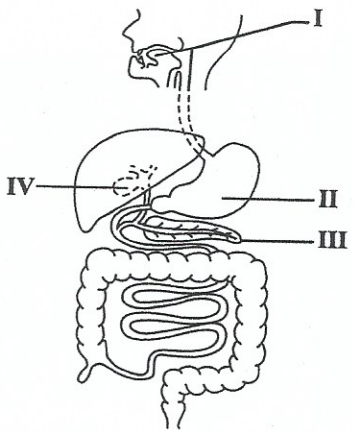
15. Which method of birth control is LEAST effective in preventing pregnancies?

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

16. Which of the following blood groups has no antigen?

(A) A
(B) B
(C) O
(D) AB

Item 17 refers to the following diagram of the human digestive tract.



17. Hydrochloric acid is produced in

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

18. Sperm is stored in the

(A) testes
(B) urethra
(C) prostate gland
(D) seminal vesicle

Item 19 refers to the following diagram of a simple food chain.

Plant → Animal I → Animal II → Animal III

19. The herbivore in this food chain is

(A) the plant
(B) Animal I
(C) Animal II
(D) Animal III

20. White light is separated into its component colours by a process of dispersion using a

(A) ray box
(B) glass prism
(C) colour wheel
(D) chromatograph

21. Which of the following are DISADVANTAGES of using plastic bags?

I. They are usually non-biodegradable.
II. They may form toxic gases when burnt.
III. They may collect water and breed mosquitoes when discarded.

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

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22. The rusting of iron is an example of

(A) reduction
(B) oxidation
(C) precipitation
(D) neutralization

23. Which of the following sequences correctly represents the order of the processes involved in the reproduction and growth of plants?

(A) Fertilization, germination, pollination
(B) Germination, fertilization, pollination
(C) Pollination, fertilization, germination
(D) Pollination, germination, fertilization

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24. Solar energy is transferred through space by

(A) radiation
(B) convection
(C) conduction
(D) evaporation

25. Which of the following formulae is used to calculate the mechanical advantage (MA) of a machine?

(A) $MA = \frac{\text{Load}}{\text{Effort}}$

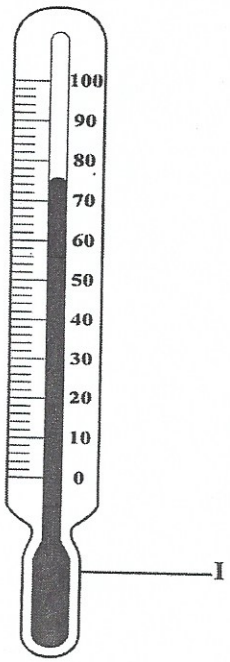
(B) $MA = \frac{\text{Effort}}{\text{Load}}$

(C) MA = Effort – Load

(D) MA = Effort × Load

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Item 26 refers to the following diagram of a thermometer.



26. The part labelled **I** is the

(A) stem
(B) bore
(C) bulb
(D) glass

27. Plastic is usually used in electrical plugs because it

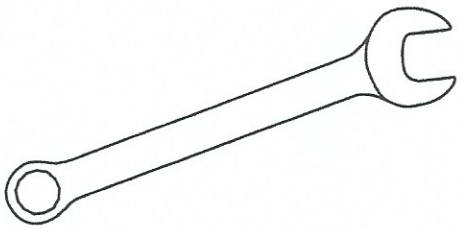
(A) is fairly strong
(B) has a low density
(C) is a poor conductor of heat energy
(D) is a poor conductor of electricity

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28. The following data were obtained in an experiment investigating the soil pH in which different crops grow best. Which crop grew best in neutral soil?

Crop	pH Value of Soil
(A)	4.0–6.0
(B)	6.0–8.0
(C)	8.0–10.0
(D)	10.0–12.0

Item **29** refers to the following diagram of a spanner.



29. The spanner is an example of

(A) a lever
(B) a pulley
(C) an inclined plane
(D) a hydraulic press

30. Which of the following energy conversions takes place during the process of photosynthesis?

(A) Heat to light
(B) Light to kinetic
(C) Chemical to heat
(D) Light to chemical

Item **31** refers to the following diagram of an athlete jumping over a hurdle.



31. What type of energy is the athlete using to jump over the hurdle?

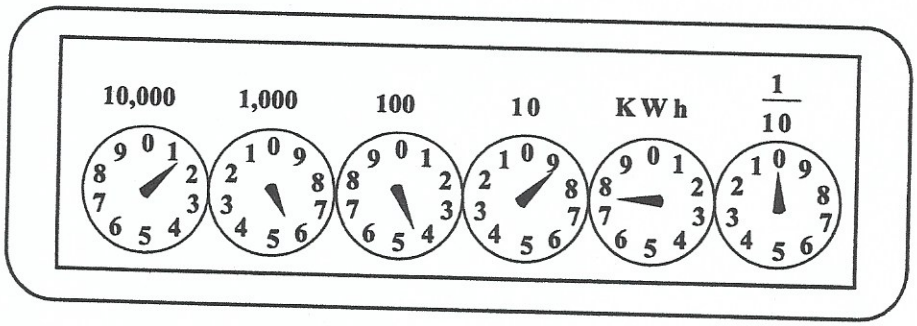
(A) Heat
(B) Sound
(C) Kinetic
(D) Potential

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Item 32 refers to the following diagram which represents an analogue meter used to measure the amount of electricity used.



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32. What is the reading on the meter?

(A) 15 487.0 kWh
(B) 16 597.0 kWh
(C) 25 487.0 kWh
(D) 26 597.0 kWh

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33. Which of the following energy changes takes place in a power station that uses natural gas?

(A) Kinetic to heat
(B) Electrical to heat
(C) Kinetic to chemical
(D) Chemical to electrical

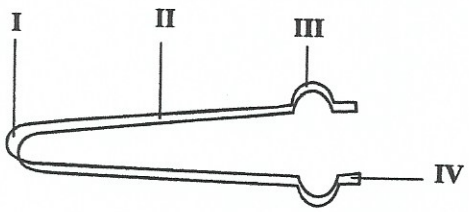
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34. The function of a fuse in a circuit is to

(A) reduce the current in the circuit
(B) store current in the circuit for later use
(C) monitor the amount of kWh being used by the device
(D) protect the components in the circuit if the current gets too large

35. The following diagram shows a pair of tongs with labels I, II, III and IV.

In which of the labelled positions is the effort usually applied?



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

36. Which of the following substances do NOT form a solution with water?

I. Sugar
II. Flour
III. Sand

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

37. Electrical wires are usually coated with plastic or rubber so that they

(A) can be easily installed
(B) are properly insulated
(C) can be easily packaged
(D) are protected from breakage

38. Which of the following forms a suspension in water?

(A) Salt
(B) Soil
(C) Sugar
(D) Oxygen

39. Liquids and gases expand when they are heated and contract when they are cooled. These properties are used by the

(A) water pump
(B) vacuum cleaner
(C) tyre-pressure gauge
(D) mercury thermometer

40. Decayed organic matter in soil is called

(A) sand
(B) humus
(C) sediment
(D) limestone

41. A refrigerator has a rating of 0.45 kW. The electricity used, in kWh, by this refrigerator for one day is equal to

(A) 0.45
(B) $\frac{0.45}{24}$
(C) 0.45×24
(D) $0.45 + 24$

42. The type of energy contained in fossil fuels is

(A) solar
(B) kinetic
(C) electrical
(D) chemical

43. A substance, X, has a pH of 2. This means that X is

(A) a salt
(B) a base
(C) an acid
(D) an alkali

44. There are limits to the height and mass of material which can be transported by a vehicle. The reason for this is

(A) to ensure that the vehicle's centre of gravity is not raised beyond safe limits
(B) that the vehicle would not be able to move fast enough
(C) to ensure that the road is not damaged by the weight
(D) that the vehicle is too weak to carry the load

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45. Which of the following fishing methods is LEAST efficient for commercial purposes?

(A) Drift net
(B) Trawl net
~~(C)~~ Hand line
(D) Long line

46. The force which acts on all bodies in water, causing them to appear to have less weight is called

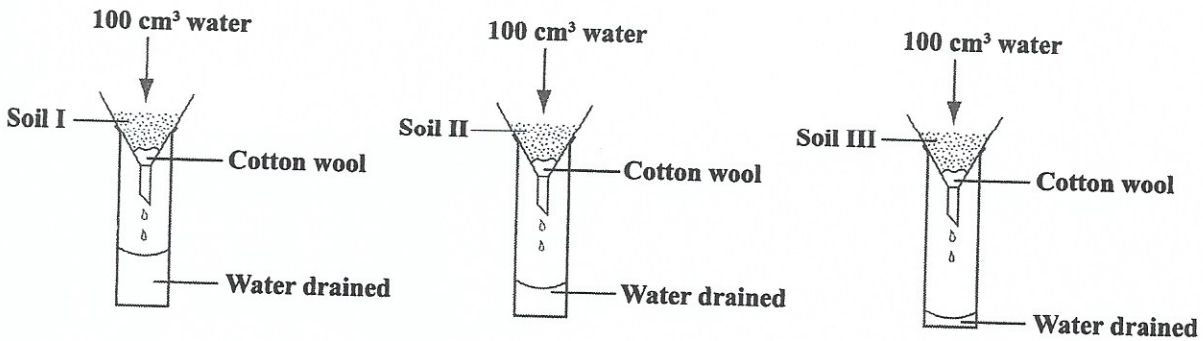
(A) upthrust
~~(B)~~ gravity
(C) thrust
(D) lift

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47. Earthworms found living in a compost heap are correctly classified as

(A) carnivores
(B) consumers
(C) herbivores
~~(D)~~ decomposers

Item **48** refers to the following diagrams which show an experiment to measure the rate at which water drains in clay, loam and sand.



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48. Which of the following conclusions is MOST likely to be true?

(A) Soil I is loam.
(B) Soil II is sandy soil.
~~(C)~~ Soil III is clay.
(D) Soil III is sandy soil.

49. Sea water can be made fit for drinking by the process of

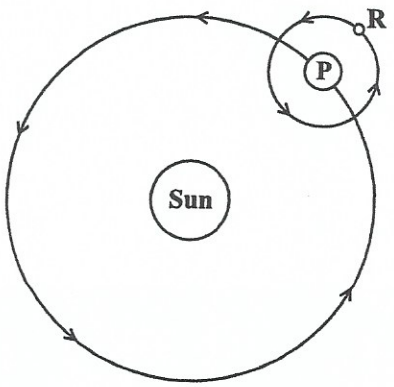
(A) filtration
(B) distillation
(C) evaporation
(D) neutralization

50. Which of the following is NOT associated with the use of fossil fuels?

(A) Erosion
(B) Pollution
(C) Acid rain
(D) Global warming

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Item **51** refers to the following diagram which illustrates a body, P, that revolves around the sun, and another body, R, that revolves around P.

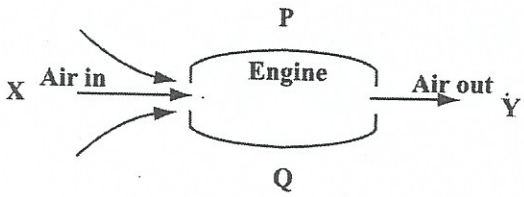


51. Which of the following terms BEST describes R?

(A) Planet
(B) Galaxy
(C) Asteroid
(D) Satellite

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Item **52** refers to the following diagram which represents the passage of air through the engine of a jet plane.



52. The direction in which the plane is moving is

(A) X to Y
(B) Y to X
(C) P to Q
(D) Q to P

Items **53–54** refer to the following methods of water purification.

(A) Distillation
(B) Filtration
(C) Chlorination
(D) Sedimentation

In answering Items **53–54**, each option may be used once, more than once or not at all.

53. Which method involves the settling of heavy suspended material?

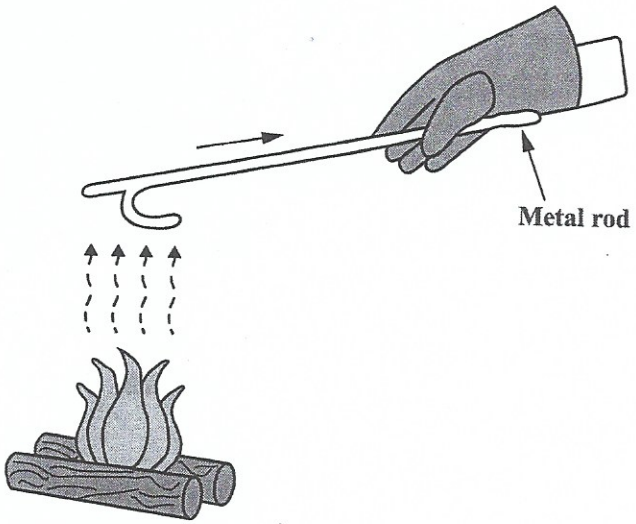
54. Which method involves the boiling and condensing of water?

55. Which of the following is NOT an alternative source of energy?

(A) Solar
(B) Wind
(C) Candle
(D) Waves

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Item **56** refers to the following diagram showing the methods of heat transfer.



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56. The method of heat transfer through the metal rod is

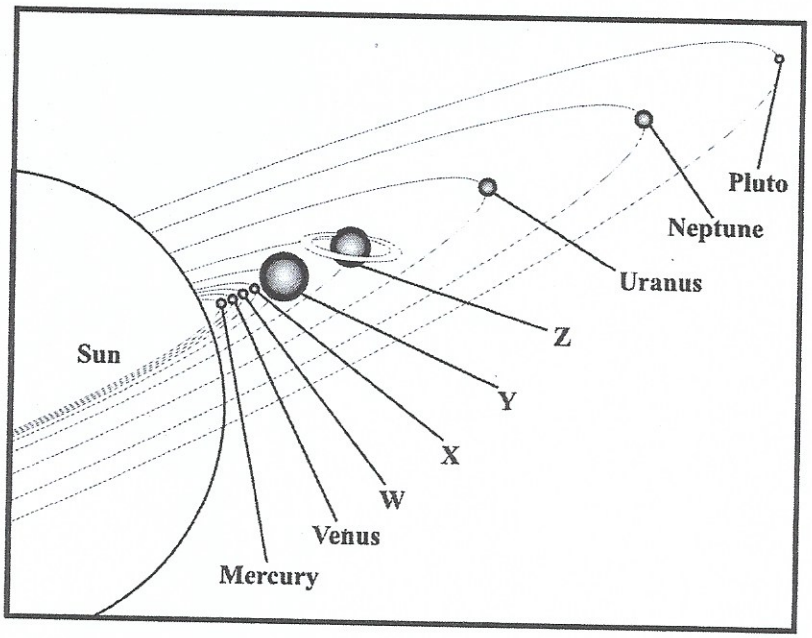
(A) radiation
~~(B)~~ convection
(C) conduction
(D) evaporation

57. The eye of the hurricane is the

(A) centre of the hurricane
(B) region in which the hurricane is located
~~(C)~~ path along which the hurricane is moving
(D) region where the winds reach maximum speed

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Items **58–59** refer to the following diagram of the solar system.



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58. Earth is labelled

~~(A)~~ W
(B) X
(C) Y
(D) Z

59. Saturn is labelled

(A) W
(B) X
(C) Y
~~(D)~~ Z

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60. An electrician may use rubber gloves to hold a live electrical wire because the gloves act as

(A) an insulator and will conduct the current
~~(B)~~ a conductor and will not allow the current to pass through
(C) a conductor and conducts the current away from the gloves
(D) an insulator and does not allow current to pass through

END OF TEST

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