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 2014085

TEST CODE **01230010**

MAY/JUNE 2014

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INTEGRATED SCIENCE
(Single Award)

Paper 01 – General Proficiency

1 hour 15 minutes

10 JUNE 2014 (a.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 how it is done in 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 answer space (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 this item later. Your score will be the total number of correct answers.

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

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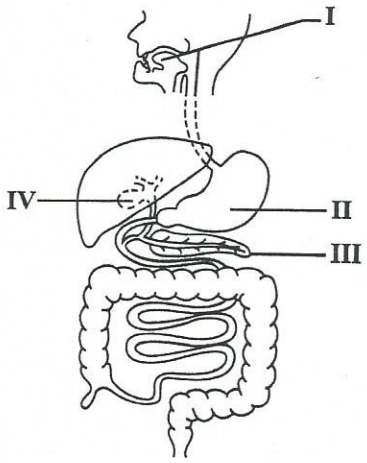
1. Photosynthesis occurs in the

(A) nucleus
(B) cell wall
(C) chloroplast
(D) mitochondrion

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

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

Items 3–4 refer to the following diagram of the human digestive tract.



3. The organ labelled IV is the

(A) liver
(B) stomach
(C) pancreas
(D) gall bladder

4. Hydrochloric acid is produced in

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

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5. Which of the following pollutant gases combines with the haemoglobin in red blood cells?

(A) Methane
(B) Sulphur dioxide
(C) Nitrogen dioxide
(D) Carbon monoxide

6. Which of the following word equations represents the process of photosynthesis?

(A) Carbon dioxide + Water $\xrightarrow{\text{Energy}}$ Sucrose + Oxygen

(B) Carbon dioxide + Water $\xrightarrow{\text{Energy}}$ Glucose + Oxygen

(C) Alcohol + Oxygen $\longrightarrow$ Carbon dioxide + Water + Energy

(D) Oxygen + Glucose $\longrightarrow$ Carbon dioxide + Water + Energy

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7. Which of the following describes the shape of the molar tooth?

(A) Pointed
(B) Rounded
(C) Flat-topped
(D) Chisel shaped

8. Which of the following statements about respiration is true?

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

9. The component of blood which protects the body by engulfing bacteria is the

(A) plasma
(B) platelet
(C) red blood cell
(D) white blood cell

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

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

11. By which of the following processes does water move from the soil into the root hairs of a plant?

(A) Osmosis
(B) Diffusion
(C) Capillarity
(D) Transpiration

12. The testes of the human male correspond to the anthers of flowers because they both

(A) are separate organs
(B) have similar shapes
(C) produce male sex cells
(D) have tubes leading from them

13. 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

GO ON TO THE NEXT PAGE

14. Which of the following blood components is responsible for blood clotting?

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

Items **15–16** refer to the following hormones.

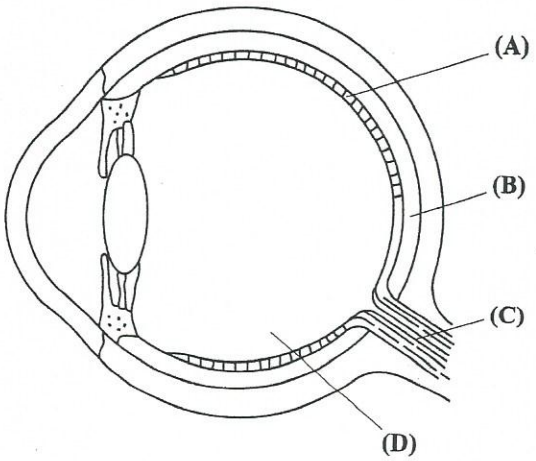
(A) Adrenaline
(B) Insulin
(C) Prolactin
(D) Secretin

Which of the above hormones

15. regulates the level of blood sugar in humans?

16. is produced in emergency situations?

17. By which of the labelled structures in the following diagram of the eye are impulses carried to the brain?



Item **18** refers to the following sexually transmitted diseases.

I. AIDS
II. Herpes
III. Syphilis
IV. Gonorrhoea

18. Which two diseases are caused by bacteria?

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

19. Sperm is produced in the

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

20. Which of the following BEST completes the path to fertilization in plants?

Pollen → ---------- → Ovary

(A) Petal
(B) Stigma
(C) Stamen
(D) Receptacle

21. Solar energy is transferred through space by

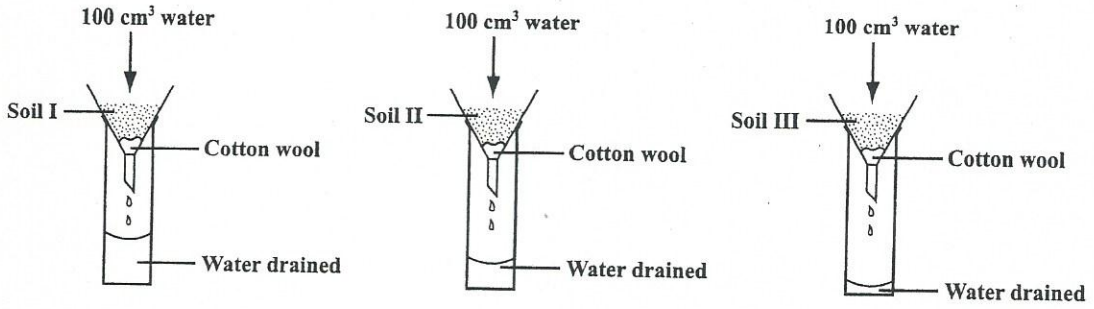
(A) radiation
(B) convection
(C) conduction
(D) evaporation

22. Liquids and gases normally expand when heated and contract when cooled. This principle explains the functioning of a

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

GO ON TO THE NEXT PAGE

Item 23 refers to the following diagrams which show an experiment to measure the rate at which water drains in clay, loam and sand.



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

(A) Soil I is loam.
(B) Soil II is sand.
(C) Soil III is clay.
(D) Soil III is sand.

Item 24 refers to the following simple food chain.

Plant → Animal I → Animal II → Animal III

24. The herbivore in this food chain is

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

25. The eye of the hurricane is the

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

26. Decayed organic matter in soil is called

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

27. The action of the bone and the biceps muscle in the human forearm is an example of a

(A) fixed pulley
(B) simple lever
(C) inclined plane
(D) movable pulley

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

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

29. Which of the following processes results in water moving from the ocean to the atmosphere?

(A) Respiration
(B) Precipitation
(C) Evaporation
(D) Condensation

30. Which of the following fishing methods is LEAST efficient?

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

31. 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.
IV. They may suffocate young children.

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

32. Which of the following methods of birth control is MOST likely to prevent the spread of sexually transmitted diseases?

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

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

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

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

(A) use of traps
(B) use of another organism
(C) use of screens on windows
(D) eradication of their breeding places

Items 35–36 refer to the following safety equipment.

(A) A pair of goggles
(B) A pair of gloves
(C) Helmet
(D) Chest mask

Which safety equipment is BEST suited when

35. welding a broken iron gate?

36. mixing dangerous chemicals in the laboratory?

Item 37 refers to the following safety symbols, I, II and III, found on three chemical bottles.



I II III

37. Which chemical(s) must be handled with EXTREME care?

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

38. Which of the following is NOT a conductor of electricity?

(A) Iron
(B) Plastic
(C) Copper
(D) Carbon

GO ON TO THE NEXT PAGE

39. The rusting of iron is an example of

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

40. Which of the following is an alloy?

(A) Tin
(B) Iron
(C) Brass
(D) Zinc

41. 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

42. Which of the following is a base?

(A) Sodium nitrate
(B) Sodium sulphate
(C) Sodium chloride
(D) Sodium hydroxide

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

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

44. The increased pressure encountered by divers at great depths below sea level can affect the

(A) ears
(B) eyes
(C) nose
(D) mouth

45. Which solvent would be BEST suited to remove nail polish from fingernails?

(A) Acetone
(B) Alcohol
(C) Turpentine
(D) Methylated spirit

46. The unit used to measure electric current is the

(A) volt
(B) ohm
(C) watt
(D) ampere

47. Which of the following groups is comprised ONLY of the primary colours of light?

(A) Red, blue, cyan
(B) Red, green, blue
(C) Red, green, purple
(D) Red, blue, orange

48. 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

49. 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) $0.45 + 24$

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

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

51. The type of energy found in petrol is

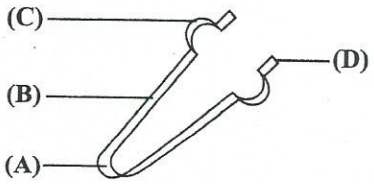
(A) kinetic
(B) potential
(C) chemical
(D) electrical

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

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

53. The diagram below shows a pair of tongs with parts labelled (A), (B), (C) and (D).

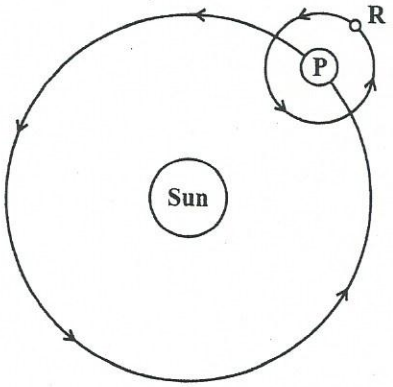
In which of the labelled parts is the effort usually applied?



54. 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

Items 55–56 refer to the following diagram which illustrates a body, P, that revolves around the sun and another body, R, that revolves around P.



55. Which of the following terms BEST describes P?

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

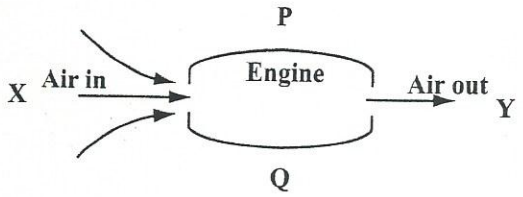
56. Which of the following terms BEST describes R?

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

57. 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 58 refers to the following diagram which represents the passage of air through the engine of a jet plane.



58. 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

59. 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

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

(A) an insulator and will absorb 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.