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CANDIDATE - PLEASE NOTE!

You must sign below and return this booklet with the Answer Sheet. Failure to do so may result in disqualification.

Signature

FORM TP 21110

TEST CODE **002551**

MAY/JUNE 2001

CARIBBEAN EXAMINATIONS COUNCIL

SECONDARY EDUCATION CERTIFICATE EXAMINATION

INTEGRATED SCIENCE
(Single-award)

Paper 01 – General Proficiency

1 1/4 hours

13 JUNE 2001 (a.m.)

READ THE FOLLOWING DIRECTIONS CAREFULLY

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

2. 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.

3. 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) fruit
(B) paint
(C) starch
(D) tar

Sample Answer

Ⓐ Ⓑ Ⓒ ●

The best answer to this item is "tar", so answer space (D) has been shaded.

4. If you want to change your answer, be sure to erase your old answer completely before you fill in your new choice.

5. 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, omit it and go on to the next one. You can come back to the harder item later. Your score will be the total number of correct answers.

6. This test consists of 60 items. You will have 75 minutes to answer them.

7. Do not be concerned that the answer sheet provides spaces for more answers than there are items in this test.

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

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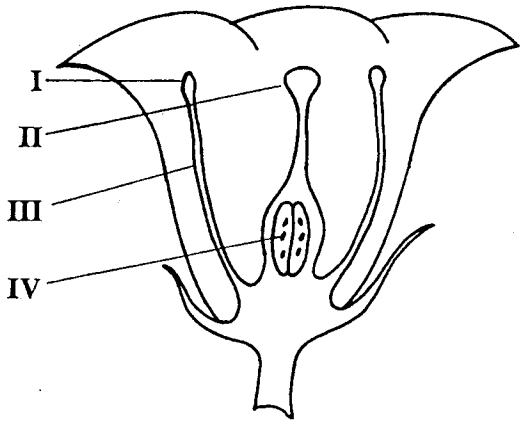
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1. Which of the following areas are MOST likely to be affected if human populations of countries are NOT controlled?

I. Recreational activities
II. Land availability
III. Food production
IV. Environmental conditions

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

2. The diagram below shows a flower with four of its parts labelled, I, II, III, and IV.



In which parts of the flower are male and female sex cells produced?

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

3. A pap smear is a method of checking whether

(A) cow's milk contains tuberculosis bacteria
(B) a woman has developed cancer of the cervix
(C) a particular type of porridge is nutritious
(D) a woman's ovary contains eggs

4. Which of the following is the correct order, from front to back, of teeth in the mouth of the human being?

I. Canines
II. Incisors
III. Molars
IV. Premolars

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

5. Which of the following are storage organs?

I. Onions
II. Potatoes
III. Carrots
IV. Rice

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

6. A few drops of sodium hydroxide and copper sulphate solutions were added to crushed peanuts mixed with water. The resulting deep purple colour indicated the presence of

(A) fat
(B) protein
(C) sugar
(D) starch

7. The list below shows the energy value of four food substances in kJ/g.

I. 420.0
II. 46.6
III. 42.0
IV. 4.2

Which TWO foods are LIKELY to be similar in type?

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

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8. Which of the following is a function of the white blood cells?

(A) Transporting of oxygen
(B) Transporting of carbon dioxide
(C) Production of antibodies
(D) Formation of clots

9. Which of the following is responsible for fatigue in the muscle cells?

(A) Citric acid
(B) Fat
(C) Glucose
(D) Lactic acid

10. Which of the following blood groups has no antigen and, as a result, can be used in transfusion to any person?

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

11. The gas which is produced by fish and used by aquatic plants is

(A) carbon dioxide
(B) hydrogen
(C) nitrogen dioxide
(D) oxygen

12. Which of the following processes is associated with the removal of undigested food from the body?

(A) Egestion
(B) Absorption
(C) Excretion
(D) Ingestion

13. Many thermostats rely on the principle that, on heating,

(A) all metals conduct heat equally
(B) some metals curve more than others
(C) all metals expand equally
(D) some metals expand more than others

14. Which of the following common animals are homoiothermic?

I. Fish
II. Lizard
III. Dog
IV. Bird

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

15. Which of the following serves as a protection for the heart?

(A) Pelvic girdle
(B) Myelin sheath
(C) Rib cage
(D) Synovial fluid

16. Alcohol is placed in the capillary tube in minimum thermometers because it

(A) is easily seen
(B) has a low freezing point
(C) has a low boiling point
(D) contracts very easy

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17. Which of the following result from poor ventilation?

I. Lack of oxygen
II. Cool surroundings
III. Rapid growth of bacteria
IV. Unpleasant odours

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

18. Which of the following is NOT true about recycling?

(A) Decreases waste in the environment
(B) Saves on raw materials that have to be used
(C) Requires collection and sorting of waste
(D) Can be done only with non-biodegradable materials

19. Which of the following would NOT contribute to the 'wear and tear' of a machine?

(A) Heat production
(B) Moving parts
(C) Corrosion
(D) Oiling

20. In which of the following situations could a pulley be used?

I. Opening a wooden crate
II. Removing an engine from an automobile
III. Driving a tractor into a trailer truck
IV. Unloading cargo on the docks

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

21. Which of the following is NOT necessary to start a fire?

(A) Fuel
(B) Nitrogen
(C) Oxygen
(D) Heat

22. Which of the following is the MINIMUM recommended time lapse between the eating of a full meal and the undertaking of vigorous activity?

(A) 15 minutes
(B) 30 minutes
(C) 1 to 2 hours
(D) 3 to 4 hours

23. Blood boosting increases the number of red cells in the blood. An athlete whose blood has been boosted can perform better in a race because he

(A) can absorb more oxygen
(B) can breath faster
(C) is more immune to disease
(D) is stronger

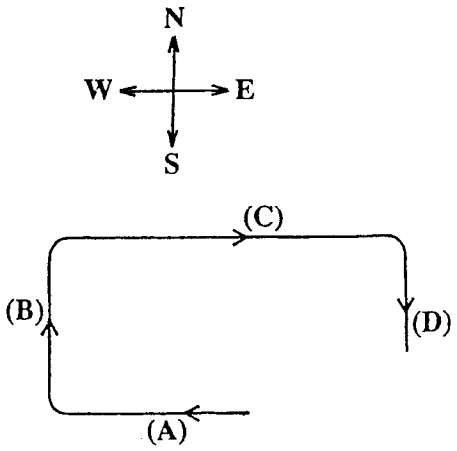
24. Which of the following is NOT a water safety device?

(A) Life jacket
(B) Inflatable tube
(C) Life raft
(D) Inflatable balloon

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25. The diagram below shows an athletic track with parts labelled (A), (B), (C) and (D).



A race was held along the track above. The wind was blowing in the direction of E. Along which part of the track will the athletes move MOST slowly?

26. The San Francisco earthquake of 1991 measured 7.2 on the Richter scale. This figure is a measure of the

(A) total energy release
(B) amount of damage done
(C) severity of shaking
(D) length of time it lasted

27. Which energy conversion sequence BEST summarises how electrical energy is generated by a diesel-powered generator?

(A) Heat → chemical → mechanical → electrical
(B) Chemical → heat → mechanical → electrical
(C) Chemical → mechanical → heat → electrical
(D) Heat → mechanical → chemical → electrical

28. The centre of gravity of an object is the

(A) point at which gravity acts on the object
(B) centre of the object
(C) point at which the object can be balanced
(D) point at which the mass of the object is heaviest

29. The following conditions exist in space.

I. Reduced gravity
II. No atmosphere
III. Radiation
IV. Extremes of temperature

Which of these conditions are overcome by an astronaut's spacesuit?

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

30. The force of gravity experienced by astronauts in a space ship in circular orbit around the Earth

(A) is greater than on the Earth
(B) is less than on the Earth
(C) is the same as on the Earth
(D) fluctuates

31. In which of the following are sense receptors NOT found?

(A) Eye
(B) Ear
(C) Hair
(D) Skin

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32. A very high blood sugar level may result from

(A) malfunctioning of the pancreas
(B) eating a meal containing a large amount of sugar
(C) defect of the gonads
(D) too much protein in the diet

33. If a tin or sardines has been left open for several hours on a table, it is BEST to

(A) heat the sardines before use
(B) add vinegar to the sardines before use
(C) cool the sardines in a refrigerator before use
(D) discard the tin of sardines

34. By which process does water pass from the ocean to the atmosphere?

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

35. Which of the following injuries would require the use of cold water and light bandages?

(A) Cuts
(B) Broken bones
(C) Bites and stings
(D) Burns and sprains

36. Which of the following substances is the BEST conductor of electricity?

(A) Copper
(B) Graphite
(C) Iron
(D) Aluminium

37. The gas from a chemical fire extinguisher is effective in putting out a fire MAINLY by

(A) combining with oxygen
(B) excluding oxygen from the fire
(C) reducing the temperature of the fire
(D) removing the combustible material

38. In the Caribbean, the energy used in the production of electricity is derived mainly from

(A) fossil fuels
(B) solar panels
(C) waterfall
(D) wind turbines

39. Energy is released when green plants use glucose during respiration.
The combustion of petroleum also releases energy.
Where does the energy from these two processes originate?

(A) Atmosphere
(B) Earth's crust
(C) Moon
(D) Sun

40. Which of the following processes can transfer heat in a vacuum?

(A) Conduction
(B) Convection
(C) Evaporation
(D) Radiation

41. Which of the following is different from the others in its reaction to cold water?

(A) Ajax powder
(B) Calcium hydroxide
(C) Epsom salts
(D) Starch powder

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42. The FULL range of sound frequencies (in kHz) that can be picked up by the human ear is approximately

(A) 10 – 60
(B) 20 – 20 000
(C) 100 – 13 000
(D) 15 000 – 56 000

43. Which example of domestic waste does NOT easily undergo weathering or break-down by bacteria?

(A) Cotton rags
(B) Paper bags
(C) Plastic bags
(D) Tin cans

44. Which of the following household chemicals can be used to clear clogged kitchen sinks?

(A) Sodium chloride
(B) Caustic soda
(C) Milk of magnesia
(D) Washing soda

45. Which chemical is BEST for removing nail polish?

(A) Acetone
(B) Methylated spirit
(C) Borax
(D) Washing soda

46. What is the pH of gastric juice produced in the stomach?

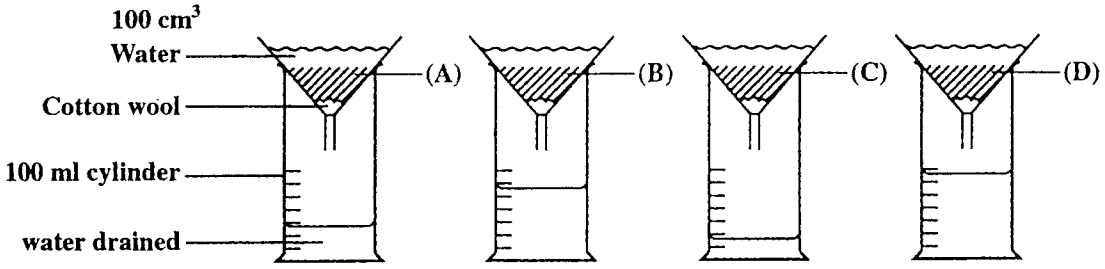
(A) 1
(B) 5
(C) 7
(D) 11

47. The jawbone is one example of a type of lever found in the human skeleton. This type of lever, when used together with the incisors in cutting, is an example of a

(A) first class lever
(B) second class lever
(C) third class lever
(D) combination of first, second and third class levers

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48. In order to determine which type of soil, (A), (B), (C), or (D), retained the most water, Kim carried out an experiment using apparatus shown below.



Which of the soils retained the MOST water?

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49. There is a leak in the roof above an operating electric machine. Which of the following are valid reasons for fixing the leak?

I. Water in the electrical conduit can cause a fire.
II. Water in the operating machine can cause a fire.
III. A person touching a wet operating machine can be shocked.

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

50. The majority of fish propel themselves forward through water by

(A) forcing water through their gills
(B) moving their side fins
(C) regulating their swim-bladders
(D) using their tails

51. Which of the following types of pests is/are MOST likely to damage oranges?

I. Carnivores
II. Decomposers
III. Scavengers

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

52. The handle of a cricket bat is usually elastic. This is property

(A) enables the batsman to apply large forces
(B) makes the bat sturdy
(C) absorbs more shock if the batsman gets hit on his fingers
(D) reduces the shock to the batsman's hands

53. Parallel rays of light emerge as parallel rays after hitting a

(A) concave lens
(B) plano-convex lens
(C) concave mirror
(D) plane mirror

54. Which of the following helps our sense of balance?

(A) Cochlea
(B) Eardrum
(C) Ossicles
(D) Semi-circular canals

55. Which of the following types of tides occurs when the high tide is highest.

(A) High tide
(B) Neap tide
(C) Spring tide
(D) Tidal bulge

56. Which of the following is NOT characteristic of a cold front?

(A) Slow fall in pressure
(B) Deep dense clouds
(C) Heavy thunderstorms
(D) Decrease in temperature

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57. Which of the following formulae is used to calculate the mechanical advantage of a machine?

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

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

(C) Mechanical Advantage = Effort – Load

(D) Mechanical Advantage = Effort x Load

58. During an earthquake, the sea withdrew for several kilometres along the coast and returned as immense waves. What kind of waves are these?

(A) Ground
(B) Long
(C) Seismic
(D) Tidal

59. A raw material used to produce electrical energy in a nuclear reactor is

(A) petroleum
(B) uranium
(C) biogas
(D) coal

60. In which of the following are curved reflectors NOT used?

(A) Periscopes
(B) Solar cookers
(C) Headlamps
(D) Dish aerials

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

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