DEPARTMENT OF EDUCATION

LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATION (LSSCE)

SCIENCE

Monday

06th October 2014

Time allowed: 3 hours
8:30 am – 11:30 am

Candidates are advised to fully use the time allocated

SC

INSTRUCTIONS TO CANDIDATES:

(To be read out by the external invigilator before the start of the examination)

There are **46** questions in this paper worth **50** marks. Attempt **ALL** questions even if you are not so sure of some of the answers.

The Examination is divided into three parts:

PART A:	**Multiple Choice**	**(Questions 1 to 25)**
PART B:	**Short Answer**	**(Questions 26 to 45)**
PART C:	**Extended Response**	**(Question 46)**

The Answer Sheet is part of the Examination Booklet. Take out the middle pages and remove the Answer Sheet by tearing along the perforation. You may use the blank sheet for rough work.

Write your candidate number, name and school name in the space given on the **ANSWER SHEET**.

For each question in **PART A**, choose the correct answer by writing the letter A, B, C or D in the space provided on the **ANSWER SHEET**.

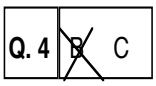
For each question in **PART B** and **PART C**, work out the answer and write the answer in the space provided on the **ANSWER SHEET**.

If you find a question very difficult, do not spend too much time thinking about it. Skip the question and go on with the rest of the paper. If you have time in the end, return to the difficult questions and think about them more carefully.

Write your answers in BLUE or BLACK ink (pen or biro).

If you decide to change an answer, make your correction as shown below so that it is clear to the markers what your final answer is. Do NOT use correction fluid on your answer sheet.

Example



Hand in BOTH the Answer Sheet and the papers used for rough work at the end of the examination.

Extra time will NOT be allowed to complete the examination under any circumstances.

Penalty for cheating or assisting to cheat in national examinations is non-certification.

DO NOT TURN OVER THIS PAGE AND DO NOT WRITE UNTIL YOU ARE TOLD TO START.

PART A: MULTIPLE CHOICE QUESTIONS (QUESTIONS 1 to 25) 25 MARKS

For each question, choose the correct answer and write A or B or C or D in the space provided on the ANSWER SHEET.

QUESTION 1

Smoking is a common traditional method of preserving meat.

The most appropriate reason for smoking the meat is to

A. remove blood and unwanted fats from the meat.

B. allow heat to make size of the meat become smaller and lighter to carry.

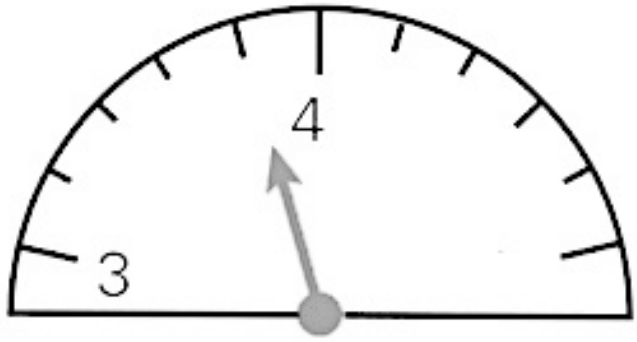
C. remove moisture from the meat.

D. increase the flavour of the meat.

QUESTION 2

Study the scale below.

What is the reading on this scale?



A. 3.3

B. 3.4

C. 3.6

D. 3.8

QUESTION 3

The group of scientists who are mainly interested in the health of animals such as pets, working animals and livestock are called

A. Veterinarians. B. Farmers. C. Ecologists. D. Biologists.

QUESTION 4

An organism that feeds on both plant and animal matter is called a/an

A. Carnivore. B. Herbivore. C. Omnivore. D. Predator.

For questions 5 and 6, refer to the information below.

The table shows the results of a survey done to record the cigarette smoking habits of students.

Cigarette smoking habits of students

	Male	**Female**
Number of students	42	38
Number of students who never smoked a cigarette	27	19
Number of students who sometimes smoked cigarettes	5	4
Number of students who often smoked cigarettes	10	15

QUESTION 5

From the table, 19 female students never smoked a cigarette.

What ***percentage*** of the total female population surveyed does this represent?

A. 19% B. 23.75% C. 38% D. 50%

QUESTION 6

According to the information in the table, which of the following statements is **TRUE**?

A. Most of the students who sometimes smoked cigarettes are Female.

B. Most of the students who never smoked a cigarette are Male.

C. More Male students often smoked cigarettes than Female students.

D. More Female students took part in the survey than Male students.

QUESTION 7

Frank and Anita measured and recorded their pulse rates as 70 beats per minute and 74 beats per minute respectively. They were then told to do two laps around the basketball court.

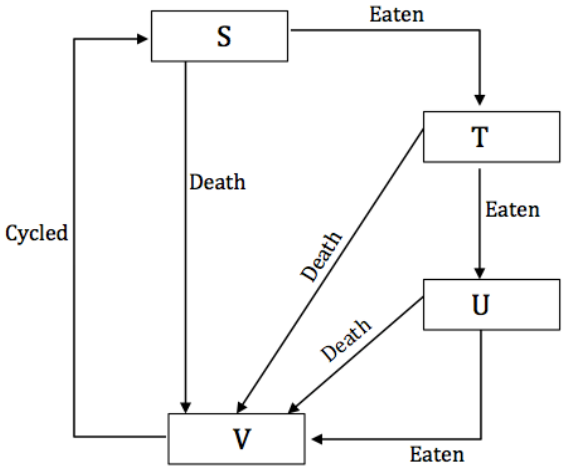
On average, what would be their pulse rates respectively after their run?

A. 65 beats per minute and 69 beats per minute.

B. 69 beats per minute and 65 beats per minute.

C. 98 beats per minute and 102 beats per minute.

D. 102 beats per minute and 98 beats per minute.



QUESTION 8

The diagram on the left shows the nutrient cycle.

What group of organisms is represented by the letter **V**?

A. Carnivores

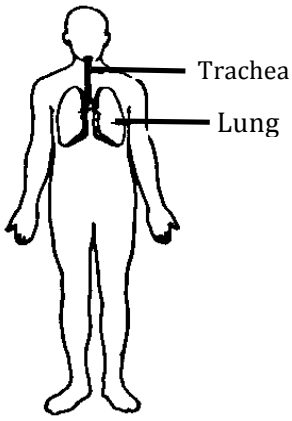
B. Decomposers

C. Herbivores

D. Producers

QUESTION 9

The system of the body that is illustrated in the diagram on the right is the _____ system.



A. Excretory

B. Circulatory

C. Reproductive

D. Respiratory

QUESTION 10

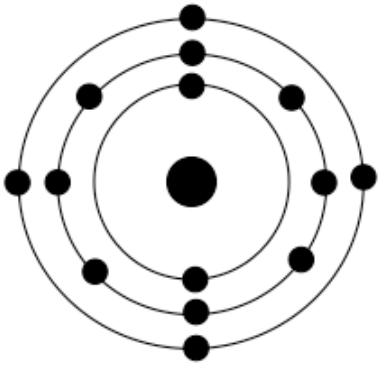
Which of the following sub-atomic particles are found in the nucleus (central core) of an atom?

A. Protons and neutrons

B. Electrons and neutrons

C. Protons and electrons

D. Electrons only



QUESTION 11

The diagram on the left shows the structure of an atom.

The atom shown belongs to an element on the Periodic Table that is in

A. Group 3 and Period 4

B. Group 3 and Period 3

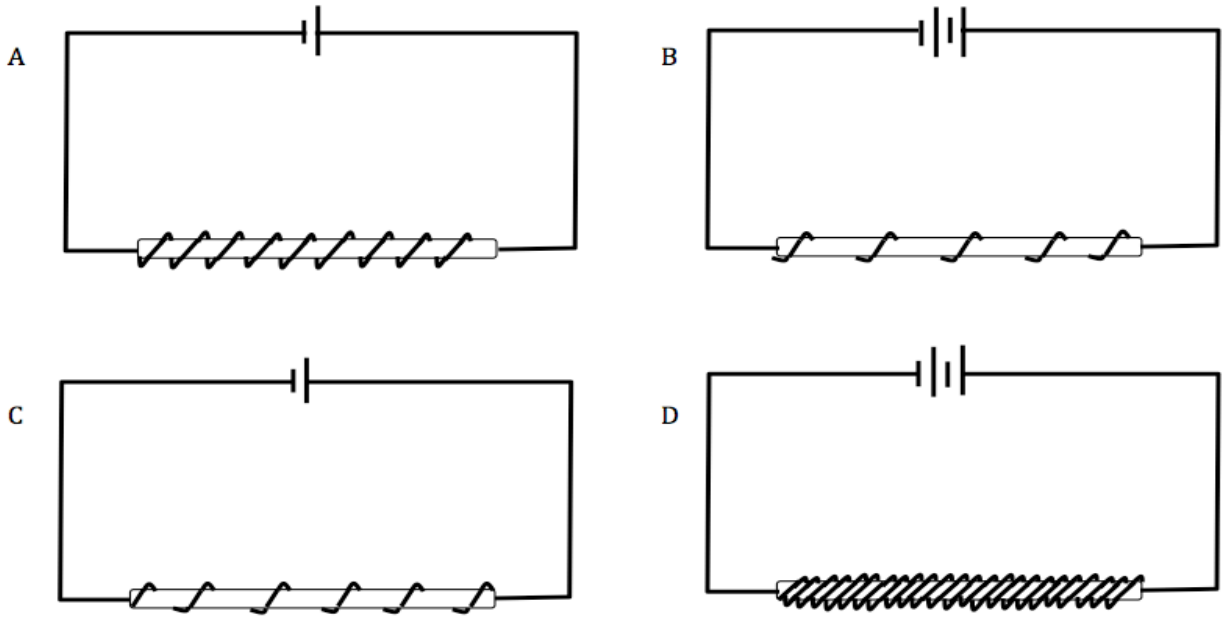
C. Group 4 and Period 3

D. Group 4 and Period 4

QUESTION 12

The diagrams below show four (4) different electromagnets A, B, C and D.

Which of the electromagnets would be the strongest?



QUESTION 13

The unit for measuring the amount of electrical energy used is the kilowatt-hour (kwh). For example; an electrical motor that is rated as 2 kilowatt will use up 2 kilowatt-hours of energy after 1 hour of operation. This is calculated using the formula:

Energy = Power x Time

Where Energy is measured in kilowatt-hours, Power is measured in kilowatts and time is measured in hours.

An electrical stove is rated as 1000W. If the stove is used for 4 hours per day, how much electrical energy would be used in 5 days? (1 kilowatt = 1000 watts)

A. 4 kwh B. 5 kwh C. 20 kwh D. 5000 kwh

QUESTION 14

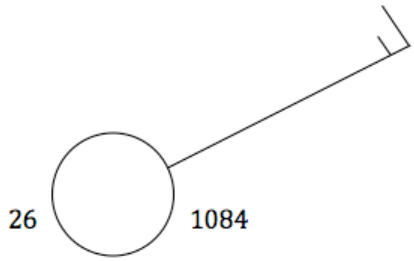
The Earth's atmosphere is largely composed of two main chemical elements in the form of gases. These two elements are

A. Oxygen and Nitrogen

B. Nitrogen and Helium

C. Oxygen and Hydrogen

D. Hydrogen and Helium



QUESTION 15

Weather symbols are used on weather maps to represent the type of weather experienced at a particular place at a particular time.

On the left is the weather symbol for Rabaul taken from a weather map.

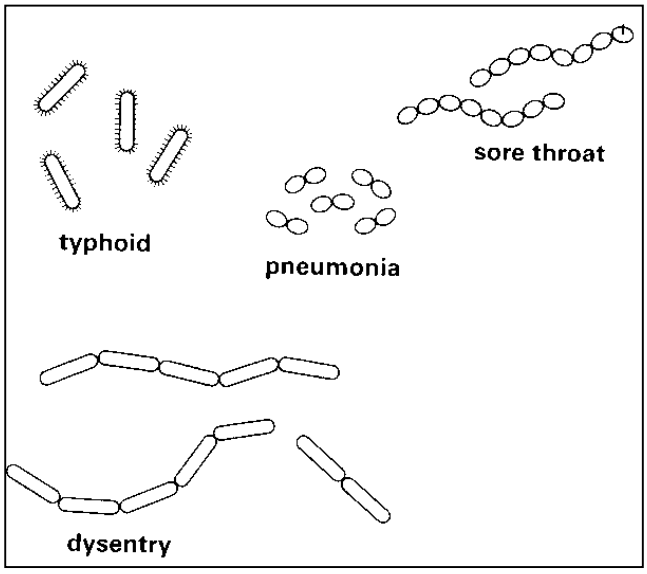
Which of the following statements correctly represents the weather for Rabaul as shown by the weather symbol?

A. Wind speed 30 kph, from North-west, temperature 1084 °C, air pressure 26 millibars, clear sky.

B. Wind speed, 30 kph from North-east, temperature 26°C, air pressure 1084 millibars, clear sky.

C. Wind speed 15 kph from North-east, temperature 26°C, air pressure 1084 millibars, clear sky.

D. Wind speed 15 kph from North-west, temperature 1084°C, air pressure 26 millibars, clear sky.



QUESTION 16

The diagram on the left shows four (4) different kinds of a type of microbe and the diseases each of them cause.

What group of micro-organisms do the microbes shown belong to?

A. Bacteria

B. Fungi

C. Protozoa

D. Viruses

QUESTION 17

On the right is a diagram of a microscope.

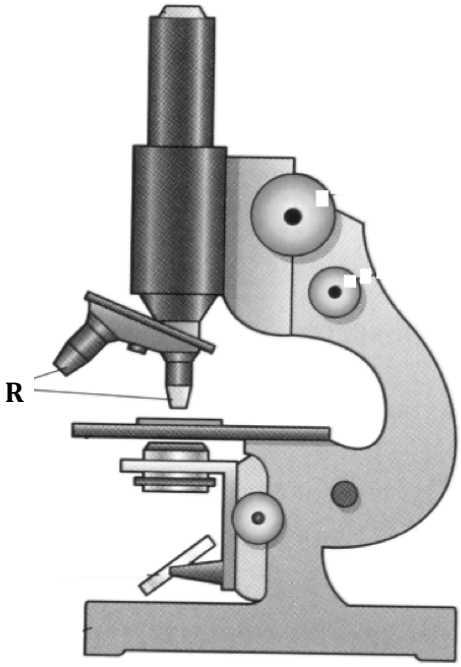
What is the correct name of the parts labeled **R**?

A. Eye piece lenses

B. Objective lenses

C. Course focus knobs

D. Fine focus knobs



QUESTION 18

The decomposition of calcium carbonate into calcium oxide and carbon dioxide requires

A. acid. B. heat. C. light. D. water.

QUESTION 19

A piece of blue litmus paper is put into a solution of substance **P**. The colour of the litmus paper changes from blue colour to red colour.

Substance **P** is most likely to be

A. HCl. B. NaOH. C. H_2O. D. $CaCO_3$.

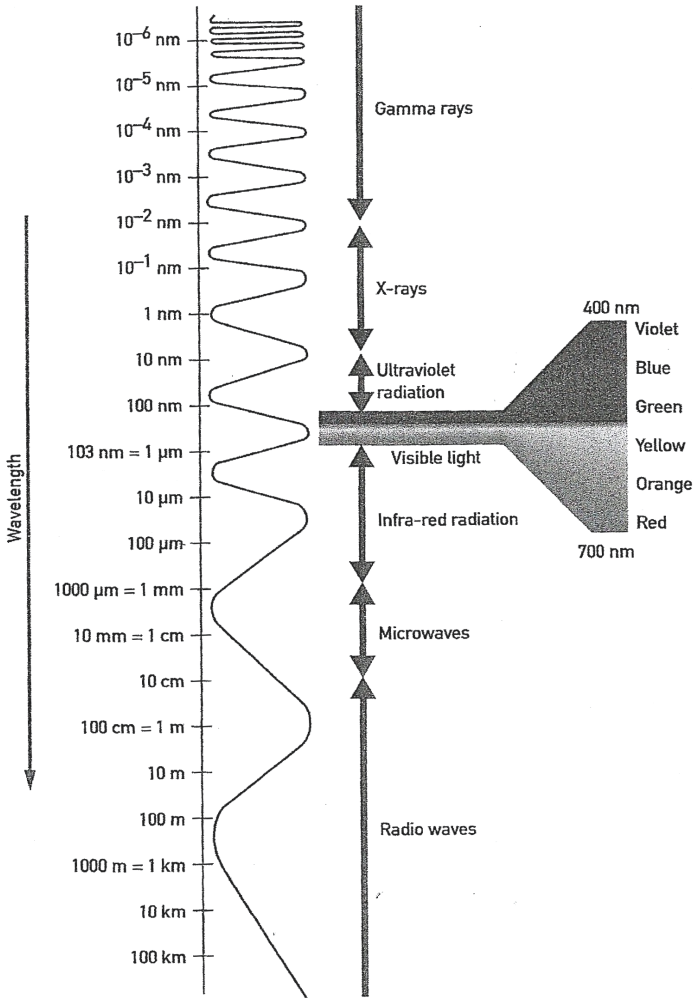
QUESTION 20

When a colourless gas was tested with a lighted splint, a small explosion sound was heard.

The gas that was most likely to be present in the test tube was

A. carbon dioxide. B. hydrogen.

C. nitrogen. D. oxygen.



QUESTION 21

The diagram on the left shows the electromagnetic spectrum.

What would be the most accurate wavelength of **red** light?

A. 400 nanometres

B. 500 nanometres

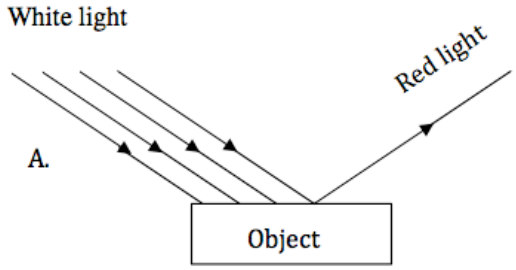
C. 600 nanometres

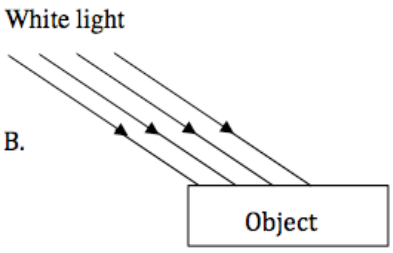
D. 700 nanometres

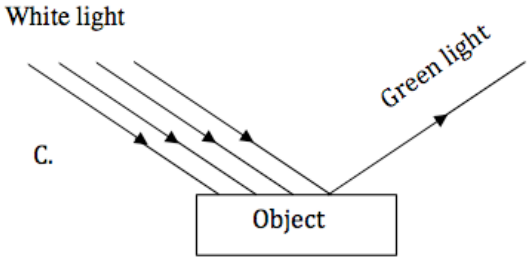
QUESTION 22

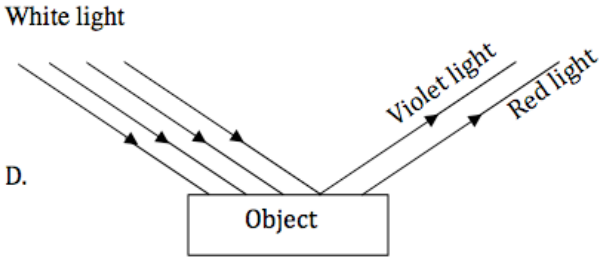
The diagrams below show four (4) objects A, B, C and D. White light is shining on all four objects.

Which of the following represents a black object?



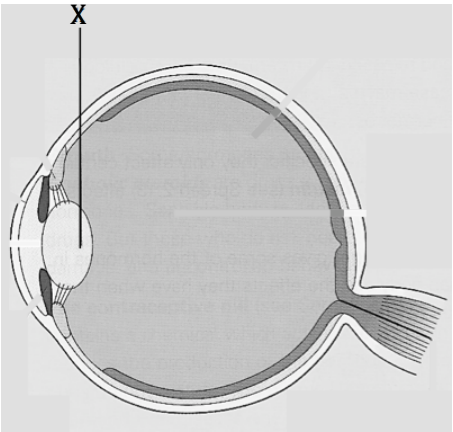






QUESTION 23

A diagram of the structure of the human eye is shown on the right.



The part labeled **X** on the diagram is called the

A. Cornea.

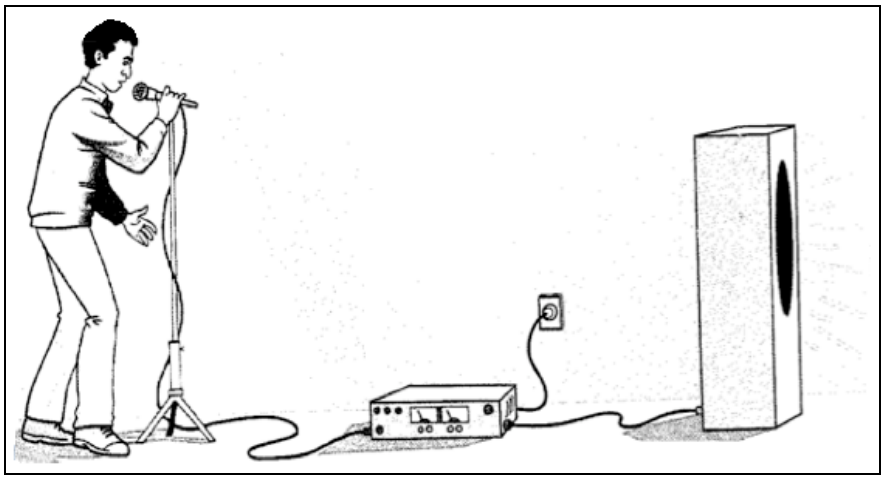
B. Iris.

C. Lens.

D. Retina.

QUESTION 24

Refer to the diagram below.



What is the energy change that takes place in the microphone when the man speaks?

A. Sound to Chemical.

B. Sound to Electrical.

C. Sound to Heat.

D. Sound to Light.

QUESTION 25

Radio messages can be used to communicate over long distances without wires.

Radio messages can be transmitted by using a/an

A. microphone. B. loudspeaker. C. amplifier. D. aerial.

PART B: SHORT ANSWER QUESTIONS (QUESTIONS 26 to 45) 20 MARKS

For each question, work out the answer and write the answer in the space provided on the ANSWER SHEET.

QUESTION 26

Traditionally, rubbing two sticks or a vine and a stick together made fire.

A common force acts whenever surfaces are in contact or whenever an object slides or rolls over something.

What is this force called? *(Correct spelling)*

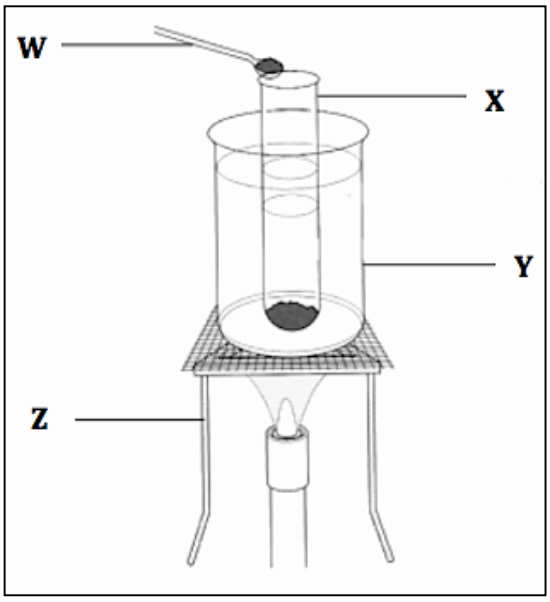
QUESTION 27

How many electrons are there in the outer shell of an atom of Sodium?

QUESTION 28

Which group in the periodic table contains the most reactive non-metal elements? *(Answer in Roman Numerals)*

For Question 29 and 30, refer to the diagram below to answer the questions.



QUESTION 29

Give the scientific name for the apparatus labeled **W**.

QUESTION 30

Give the scientific name for the apparatus labeled **X**.

Key for the classification of animals with backbones					
1	a	Feathers present	→	Birds	
	b	No feathers	→	Go to 2	→
2	a	Hair or fur present	→	Mammals	
	b	No hair or fur present	→	Go to 3	→
3	a	Fins present	→	Fish	
	b	No fins	→	Go to 4	→
4	a	Dry skin	→	Reptiles	
	b	Moist skin	→	Amphibians	

QUESTION 31

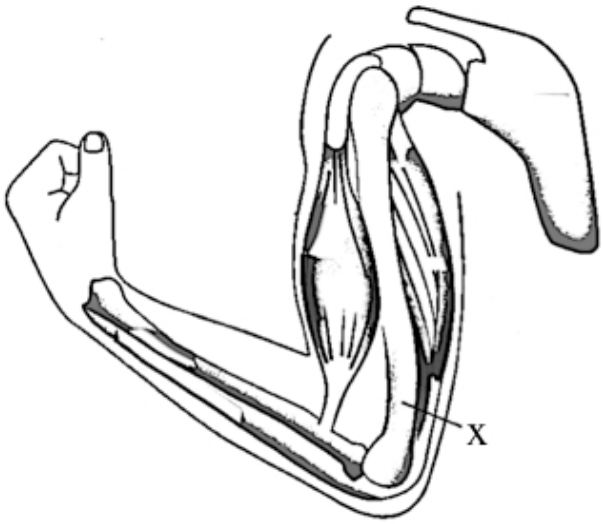
Shown on the left is a classification key that is used to identify animals based on their characteristics. An illustration of an animal is also shown below.

Using the classification key, which group of animals with backbones does the animal illustrated above belong to?

QUESTION 32

The diagram on the right shows the human arm.

What is the name of the bone that is labeled X?



QUESTION 33

An ***anemometer*** is one of many weather instruments found in weather stations.

What aspect of the weather does an anemometer measure?

QUESTION 34

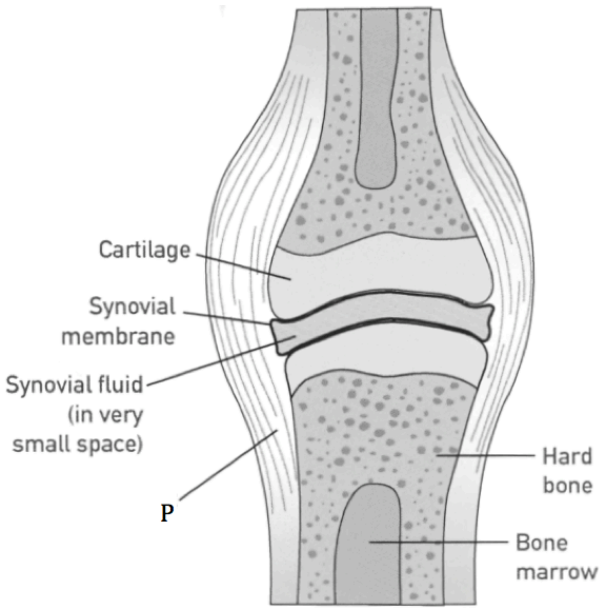
Excessive logging results in an increase in carbon dioxide, which is a Greenhouse gas.

Which of the three layers of the atmosphere is directly affected due to excessive logging?

QUESTION 35

On the right is a diagram of a typical joint.

What is the name of the structure labeled P?



QUESTION 36

Ohm's Law relates Electric Current, Voltage and Resistance. Its formula is given below.

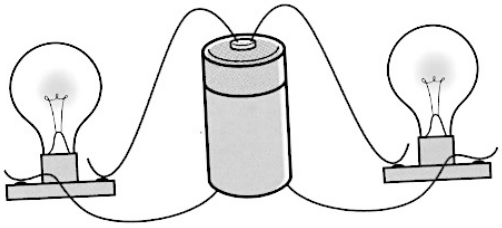
$$\textit{Formula:}\quad I = \frac{V}{R}$$

Where R = resistance (ohms), V = voltage (volts), I = current (Amps)

Using the given formula, calculate the voltage of a circuit where 2.5 Amps of current flows through a wire with a resistance of 5 ohms.

QUESTION 37

There are two different ways of connecting the parts of an electric circuit.



The electrical circuit shown above is a _____ circuit.

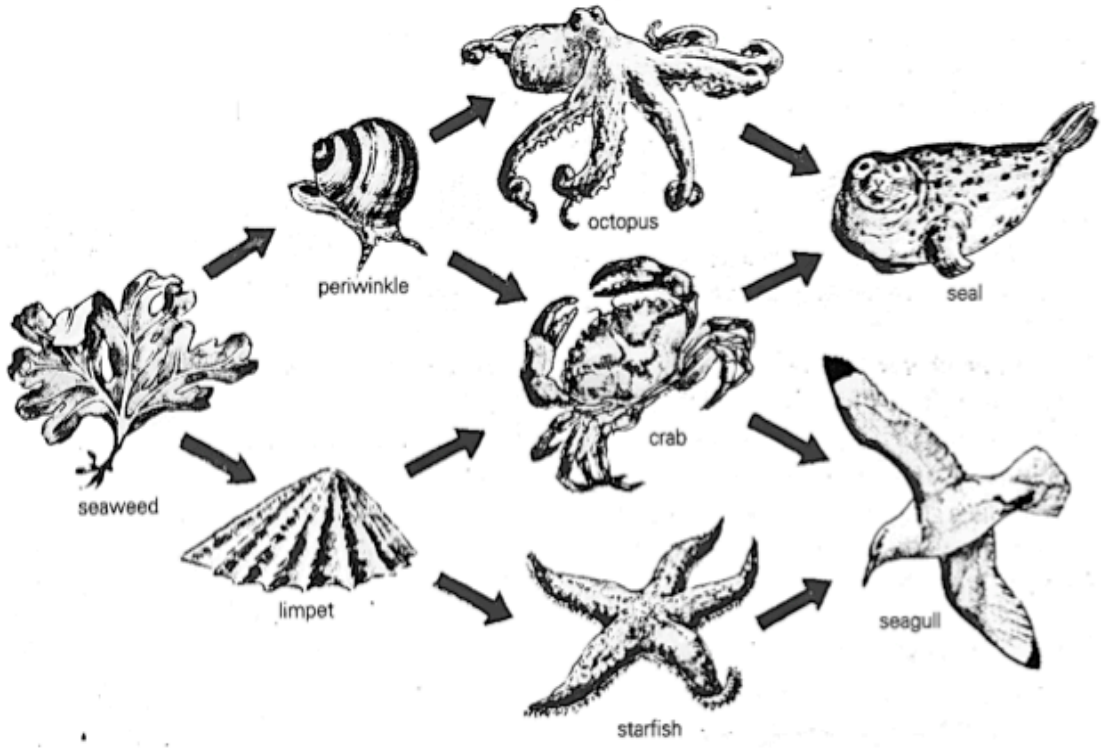
QUESTION 38

Refer to the Chemical Equation below.

$$X + 2NaOH \longrightarrow Na_2SO_4 + 2H_2O$$

Write the correct formula for substance **X**.

For Question 39 and 40, refer to the food web below.



QUESTION 39

Biomass is the total mass of each group of organisms in a food chain.

Name the organism in the food web that has the greatest biomass.

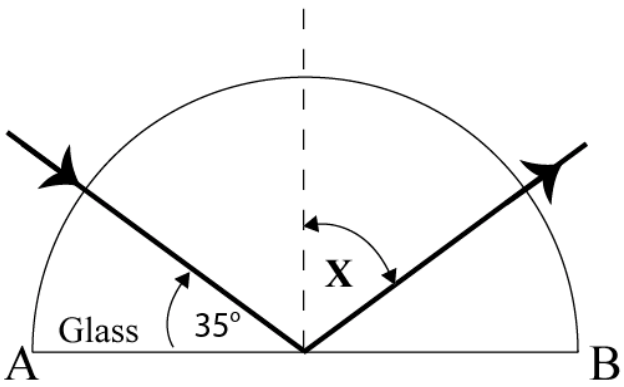
QUESTION 40

How many food chains are there in the food web?

QUESTION 41

The diagram below shows the path that a ray of light follows through a semi-circular glass block.

What is the size of angle **X**?



For Question 42, 43 and 44, refer to the following information.

The five main types of micro-organisms are:

I. Bacteria,

II. Fungi,

III. Protozoa,

IV. Algae,

V. Virus

QUESTION 42

Plasmodium vivax is a parasitic microbe that lives in the liver and bloodstream of a person and causes Malaria.

From the list above, what type of micro-organism is *Plasmodium vivax*?

QUESTION 43

Yeast is a useful micro-organism that is used in baking and in the process of fermentation to produce wine and beer.

From the list above, what type of micro-organism is *Yeast*?

QUESTION 44

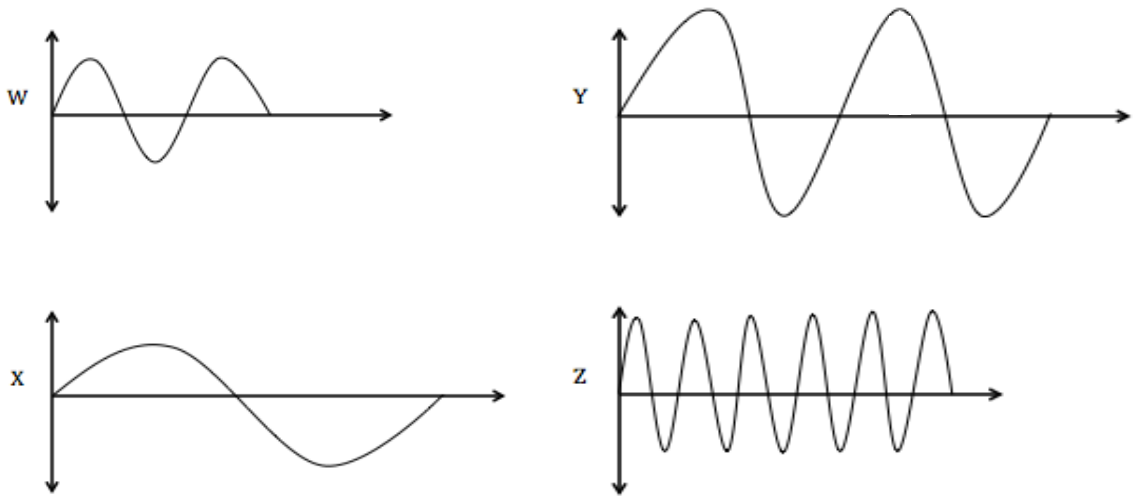
Syphilis is a sexually transmitted disease. It is caused by a spiral-shaped microbe.

From the list above, what type of micro-organism is it?

QUESTION 45

Below are diagrams for four (4) different waves W, X, Y and Z.

Which of these wave diagrams best illustrates a high frequency wave?

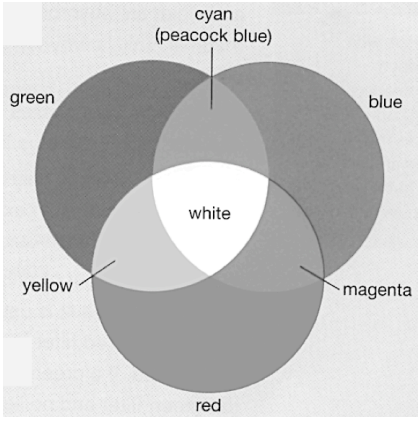


PART C: EXTENDED RESPONSE QUESTION (QUESTION 46) 5 MARKS

Write your answer in the space provided on the ANSWER SHEET.

QUESTION 46

Study the diagram below that shows colours obtained by mixing coloured light and then complete the following statements.



(i) Red, blue and green are called _____ colours.

(ii) The colour that is produced when red and green lights are mixed is called _____.

(iii) White light is produced by mixing blue, green and _____ lights.

(iv) When cyan light is added to red light, the colour that is produced is called _____.

(v) Magenta, cyan and yellow are called _____ colours.

END OF EXAMINATION

LOWER SECONDARY

SCHOOL CERTIFICATE EXAMINATION – 2014

SCIENCE – ANSWER SHEET

MARKER 1

YEAR		PROV.		SCHOOL			CAND No.		
1	4								

NAME	
SCHOOL	

PART A: **(QUESTION 1 TO 25)**

Write the letter of your answer next to each question number below.

1		**6**		**11**		**16**		**21**	
2		**7**		**12**		**17**		**22**	
3		**8**		**13**		**18**		**23**	
4		**9**		**14**		**19**		**24**	
5		**10**		**15**		**20**		**25**	

PART B **(QUESTION 26 TO 45)**

Write your answer next to each question number below.

26		**31**		**36**	Volts	**41**	°
27		**32**		**37**		**42**	
28		**33**		**38**		**43**	
29		**34**		**39**		**44**	
30		**35**		**40**		**45**	

PART C **(QUESTION 46)**

46.

(i)	
(ii)	
(iii)	
(iv)	
(v)	

MARKER 2

DO NOT WRITE ON THIS PAGE

YOU MAY DO YOUR ROUGH WORK ON THIS PAGE

CAREFULLY TEAR ALONG THIS PERFORATION

YOU MAY DO YOUR ROUGH WORK ON THIS PAGE