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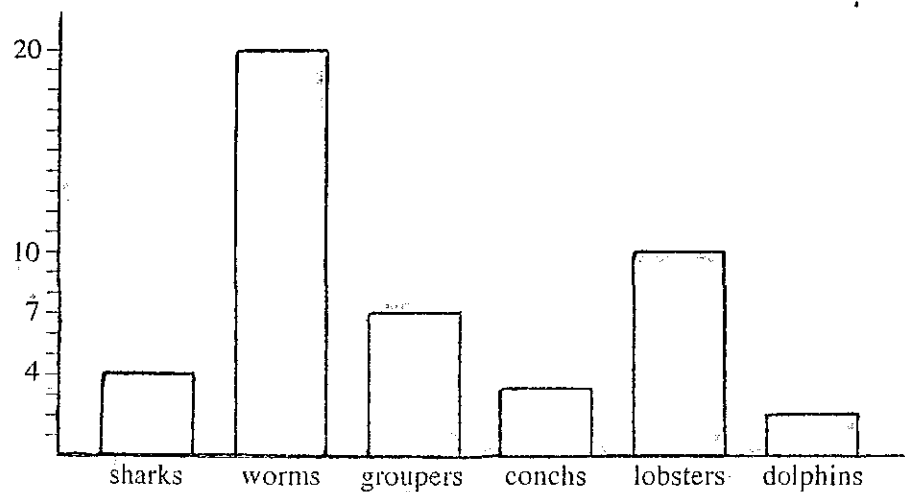
Year 2008

Papers 1, 2, & 3

1. What is the correct way to write the scientific name for modern man?
 - A *homo sapiens*
 - B *homo Sapiens*
 - C *Homo Sapiens*
 - ☒ D *Homo sapiens*

2. A group of organisms which can produce fertile offspring with each other is called a
 - A class.
 - B family.
 - C genus.
 - ☒ D species.

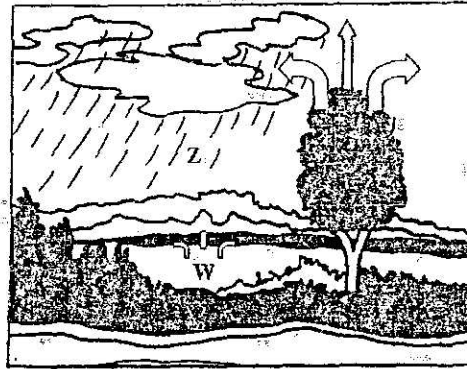
3. The bar graph shows the number of different types of organisms on a small coral reef.



How many vertebrates are on the reef?

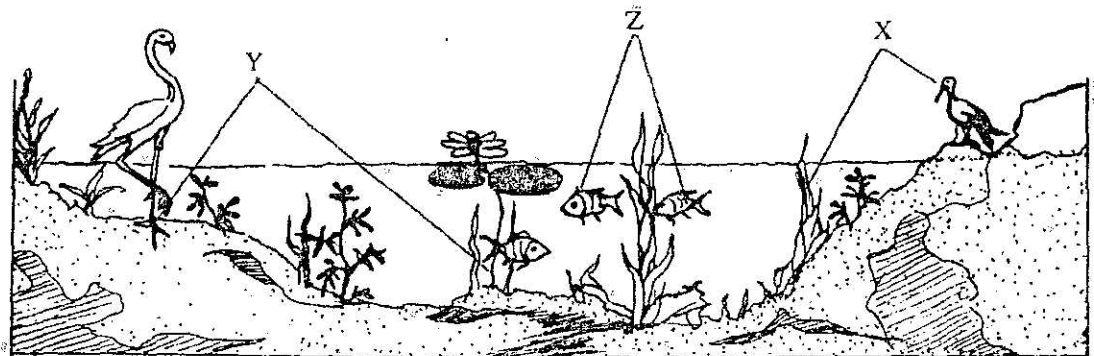
- A 4
- ☒ B 7
- C 13
- D 20

4. The diagram shows the water cycle.



Which TWO processes are involved at W and Z in the diagram?

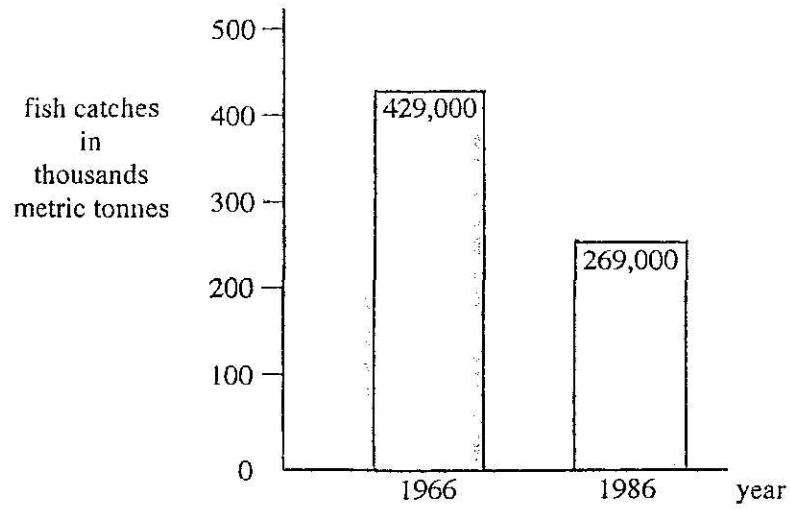
- A evaporation and absorption
 - ☒ B evaporation and precipitation
 - C evaporation and transpiration
 - D transpiration and precipitation
5. The diagram shows an aquatic ecosystem.



Which of the labelled organisms form a population?

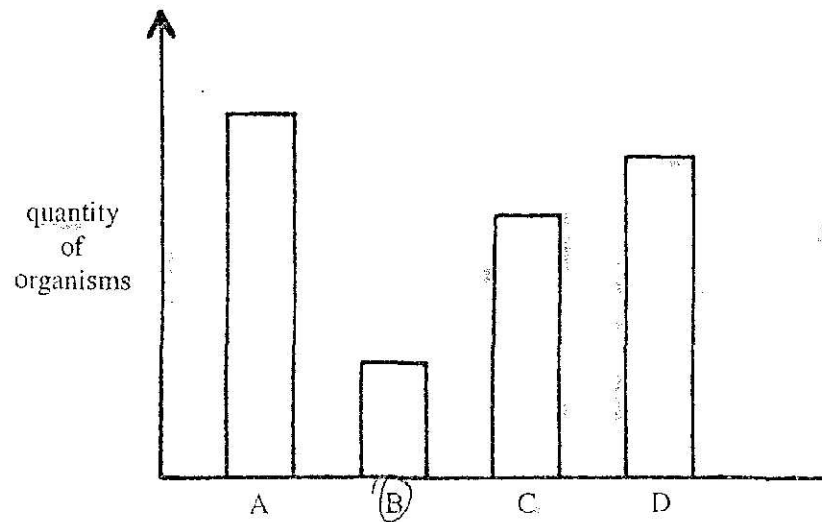
- A X
- B Y
- C Z
- ☒ D X, Y and Z

6. The bar graph compares coral reef fish catches from 1966 and 1986.

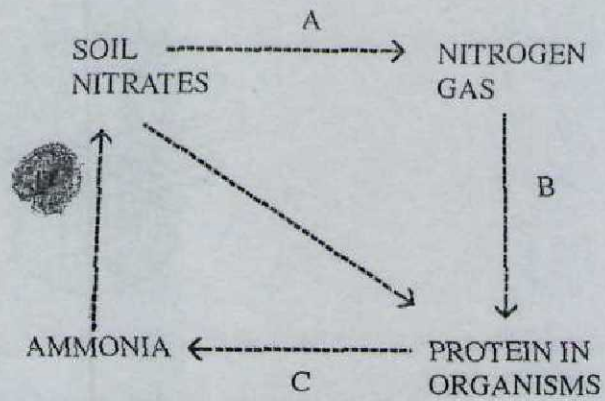


What is the percentage decrease in reef fish catches between 1966 and 1986?

- A 50%
 - B 43%
 - C 37%
 - D 23%
7. The bar graph shows the relative quantity of organisms in a food chain. Which letter represents the herbivores?



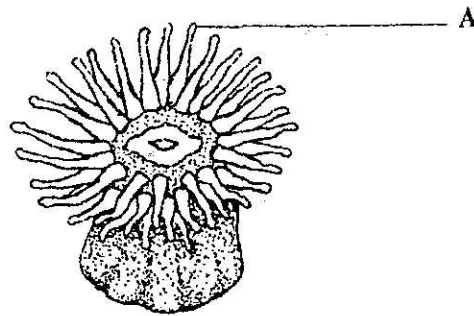
8. The diagram shows some of the ways in which nitrogen is recycled in nature. Which stage involves decomposers or putrefying bacteria?



9. Which of the following would be a useful adaptation for the survival of mangroves in their environment?

- A large leaves
- B long narrow stems
- ☒ C salt tolerant tissues
- D short roots

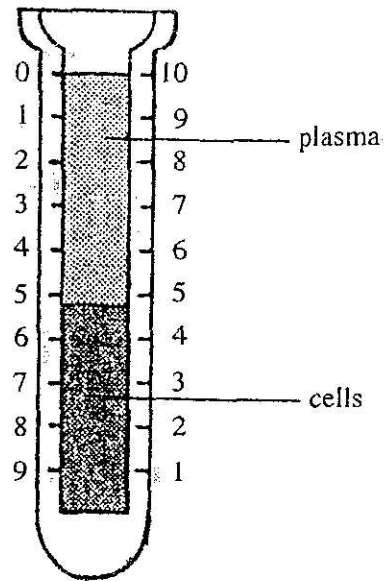
10. The diagram shows a coral polyp.



What is the structure labelled A used for?

- ☒ A catching prey
 - ☐ B detecting sound waves
 - ☐ C detecting temperature change
 - ☐ D swimming
11. Which cells in the leaf contain the most chloroplasts?
- ☐ A lower epidermal cells
 - ☐ B palisade mesophyll cells
 - ☐ C spongy mesophyll cells
 - ☐ D upper epidermal cells
12. Which part of a cell controls all activities?
- ☐ A cytoplasm
 - ☐ B membrane
 - ☐ C nucleus
 - ☐ D vacuole

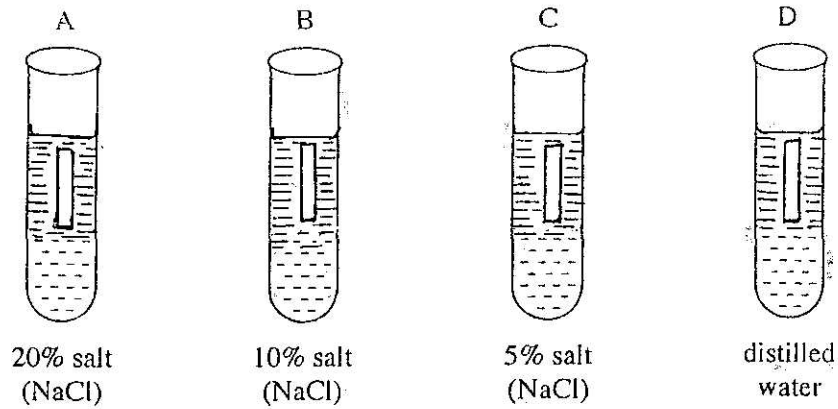
13. The diagram of a Wintrobe tube shows blood separated into cells and plasma.



What percentage of the blood is shown as cells?

- A 10%
- B 47%
- C 53%
- D 80%

14. The apparatus shows four potato cylinders of equal lengths in solutions of different salt concentrations.



Which potato cylinder increased in length?

15. The table shows **THREE** food testing chemicals and the results of tests performed on coconut jelly.

food testing chemicals	biuret solution	ethanol	Benedict's solution
appearance	blue	cloudy	orange

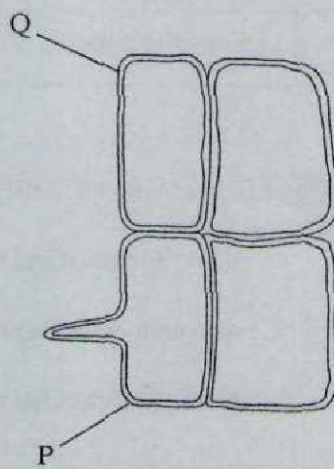
Which nutrients are present in the jelly?

- A fat, protein
- B fats, sugar
- C proteins, sugar
- D protein, sugar, fat

24. Which **ONE** of these is an essential substance needed by plants?

- A amino acids
- B DNA
- C nitrogen
- D vitamins

25. The diagram shows the outline of some root cells.



Which feature of cell **P** makes it more efficient in absorbing water than cell **Q**?

- A the amount of its surface area
- B the concentration of its cell sap
- C the size of its vacuole
- D the thickness of its membrane

26. The table shows the conditions which affect the transpiration rate in plants. Which correctly shows the effect of changes in external conditions on the rate of transpiration?

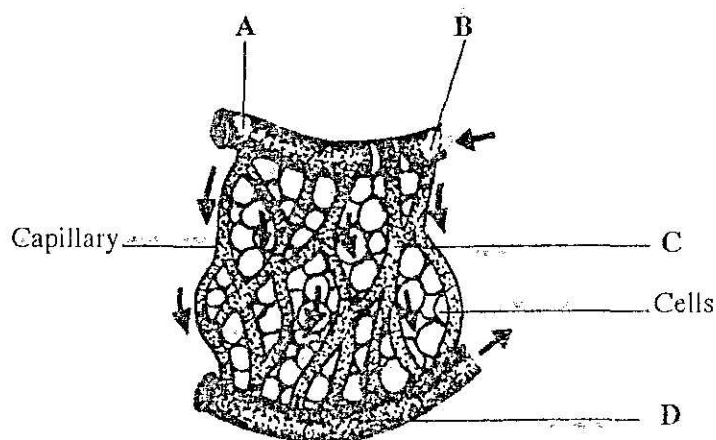
External conditions			Transpiration rate
A	higher light intensity	lower humidity	decreases
B	higher temperature	lower humidity	decreases
C	lower light intensity	lower temperature	increases
D	higher temperature	higher light intensity	increases

27. Why do leaves wilt when they lose a lot of water?

- A guard cells are flaccid
- B mesophyll cells are no longer turgid
- C phloem transport has stopped
- D stomata are closed

28. The diagram shows a network of blood vessels associated with some body cells.

Where would the blood pressure be greatest?



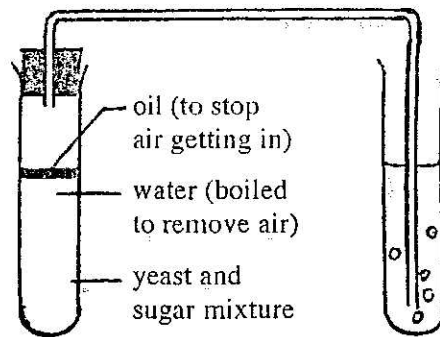
29. What would be the expected effect on the heartbeat rate and breathing rate of a person running a kilometre?

	rate of heartbeat	rate of breathing
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

30. Which correctly matches the structure with its function?

	structure	function
A	chloroplast	transports water vapour
B	mesophyll cell	reflects light
C	stoma	absorbs light
D	vascular bundle	transports water

31. The diagram shows the apparatus used to investigate respiration in yeast.



What type of respiration is being carried out and what gas is being given off?

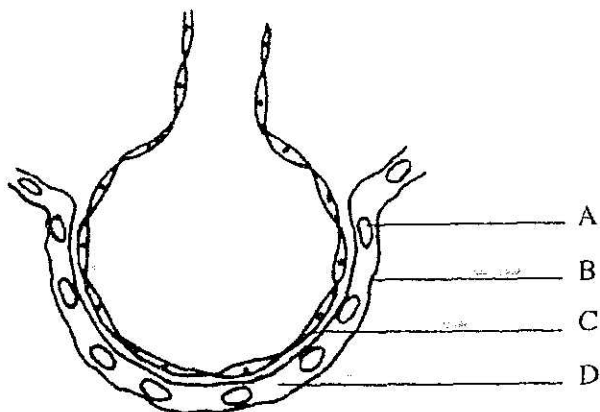
- A aerobic respiration, carbon dioxide
 - B aerobic respiration, oxygen
 - C anaerobic respiration, carbon dioxide
 - D anaerobic respiration, oxygen
32. The table shows the gaseous composition of air.

Gas	Inspired air	Expired air
oxygen	20%	16%
carbon dioxide	0.03%	4.0%
nitrogen	78%	78%

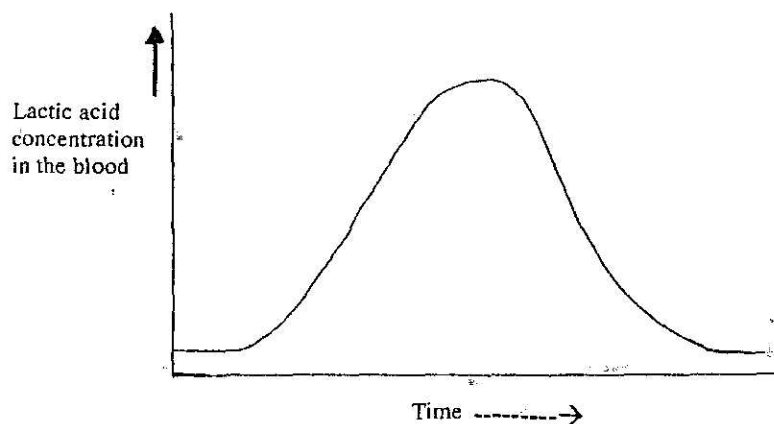
What percentage of the inspired oxygen is being used in tissue respiration?

- A 10%
- B 20%
- C 25%
- D 50%

33. The diagram shows the structure of an alveolus and its capillaries. Which label indicates the gas exchange surface of the alveolus?



34. The graph shows the changes in lactic acid concentration in the blood as a result of vigorous exercise.

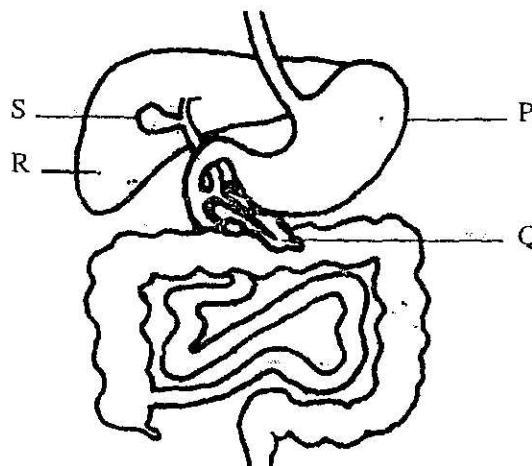


Which statement correctly describes the metabolic process that causes the increase in lactic acid?

- A aerobic respiration resulting in the complete breakdown of glucose in the skeletal muscles
- B aerobic respiration resulting in the incomplete breakdown of glucose in smooth muscles
- C anaerobic respiration resulting in the incomplete breakdown of glucose in skeletal muscles
- D anaerobic respiration resulting in the complete breakdown of glucose in smooth muscles

35. Why is haemoglobin so important in human respiration?
- A Haemoglobin binds tightly to both oxygen and carbon monoxide.
 - B Haemoglobin binds easily with glucose.
 - C Haemoglobin increases the oxygen – transporting capacity of the blood.
 - D Haemoglobin is mostly found in the liquid part of the blood.

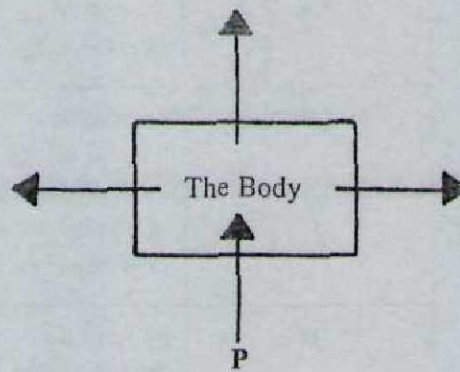
36. The diagram shows some of the organs of the digestive system.



Which organs are involved in the homeostasis of blood glucose?

- A R and P
- B R and Q
- C S and P
- D S and Q

37. The diagram represents the body and the arrows represent the movement of water into and out of it.



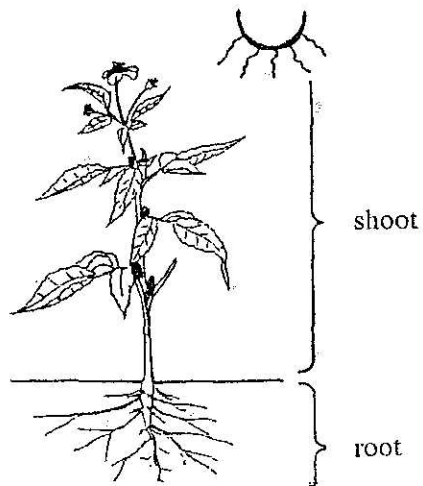
Which process is represented by P?

- A eating
 - B defaecation
 - C sweating
 - D urinating
38. Which of the following characteristics of living organisms enables them to detect and respond to stimuli?
- A excretion
 - B growth
 - C irritability
 - D movement

39. What are **THREE** effects of adrenaline on humans?

A	decreased heartbeat rate	decreased glucose in blood	small pupils
B	decreased heartbeat rate	increased glucose in blood	small pupils
C	increased heartbeat rate	decreased glucose in blood	wide pupils
D	increased heartbeat rate	increased glucose in blood	wide pupils

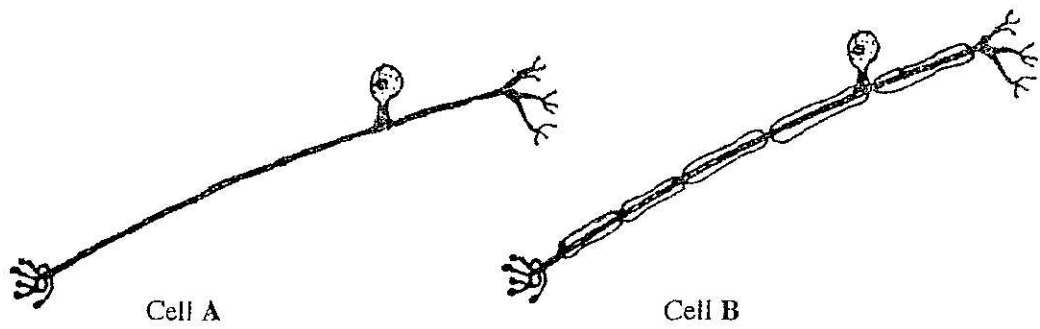
40. The diagram shows a plant.



What kind of positive response is being shown by the shoot system of the plant?

- A** chemotropism
- B** geotropism
- C** hydrotropism
- D** phototropism

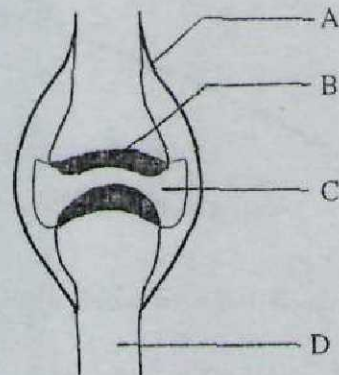
41. The diagrams show two nerve cells.



- Which statement is true about cell B only?
- A It is a motor neuron.
 - B It is a sensory neuron.
 - C It transmits impulses.
 - D It transmits impulses faster than cell A.
42. Which structure must sound vibrations pass through in order to reach the cochlea of the human ear?
- A eustachian tube
 - B oval window
 - C round window
 - D semi-circular canals
43. Which part of the eye contains the blood vessels which nourish the eye?
- A aqueous humour
 - B choroid layer
 - C cornea
 - D retina

44. The diagram represents a section through a joint.

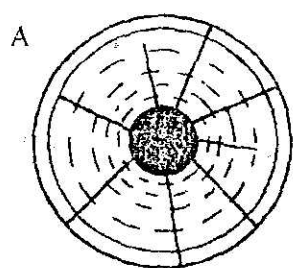
Which labelled structure represents cartilage?



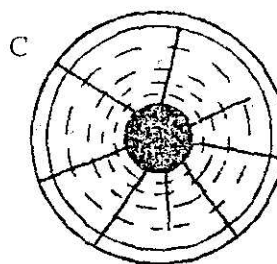
45. Which organ of the body changes the chemical composition of alcohol?

- A brain
- B kidney
- C liver
- D stomach

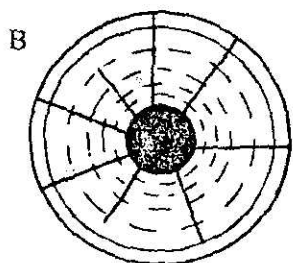
46. Which of the diagrams show the condition of the iris muscles when the eye is in bright light?



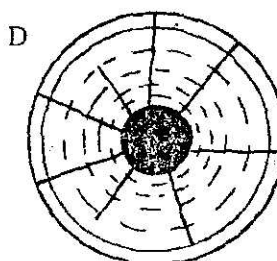
circular muscles
contracted
radial muscles
relaxed



circular muscles
relaxed
radial muscles
relaxed

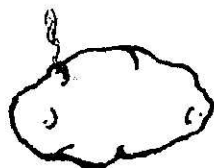


circular muscles
contracted
radial muscles
contracted



circular muscles
relaxed
radial muscles
contracted

47. The diagrams represent two vegetative organs.



Irish potato tuber



Germinating bean seed

Which statement correctly describes both organs?

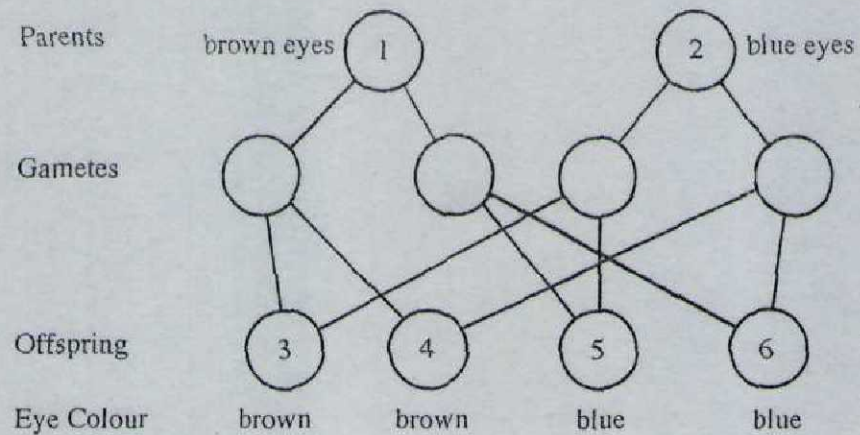
- A Only one new plant will develop from each.
- B They are both formed from the ovules of flowers.
- C They are both formed from underground stems.
- D They both store food for the new shoots.

48. Mitosis occurs in an animal cell but no cell membrane is formed to divide the cell in two.

What is the most likely result?

- A cell which contains half the amount of cytoplasm
 - B *cell which contains half the number of chromosomes*
 - C cell which contains one nucleus
 - D cell which contains two nuclei
49. Which statement describes the disease syphilis?
- A A sore appears on the genitals in the first stage.
 - B It is caused by a virus.
 - C It may cause sterility in men.
 - D The first sign is a burning sensation when urinating.

50. The diagram shows a cross between a heterozygous brown-eyed parent and a blue-eyed parent. The allele for brown eyes is dominant to the allele for blue eyes.



Which individuals are homozygous for eye colour?

- A 1, 2, 6
- B 1, 5, 6
- C 2, 3, 4
- D 2, 5, 6

School Number

Candidate Number

Surname and Initials

BIOLOGY

PAPER 2 3009/2

Tuesday **20 MAY 2008** 1.20 – 2.50 P.M.**MINISTRY OF EDUCATION
NATIONAL EXAMINATIONS**

BAHAMAS GENERAL CERTIFICATE OF SECONDARY EDUCATION

INSTRUCTIONS AND INFORMATION FOR CANDIDATES**Do not open this booklet until you are told to do so.**

Write your school number, candidate number, surname and initials in the spaces provided above.

Answer **ALL** questions on this paper.

Read each question carefully and make sure you know what you have been asked to do before starting your answer. Confine your answer to the lines following each question.

The mark for each part-question is given in brackets [].

For Examiner's Use	
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8	
TOTAL	

This question paper consists of 15 printed pages and 1 blank page.

1. The information below was obtained from a study of feeding habitats of organisms found in the moss growing on a brick wall.

Organism	Food eaten
spider	millipedes, woodlice
woodlice	fly larvae, worms
millipedes	moss
fly larvae	moss
worms	moss

- (a) Draw a food web for the organisms living on the moss.

[4]

- (b) Give **ONE** example of each of the following from the food web.

herbivore _____

carnivore _____

producer _____

consumer _____

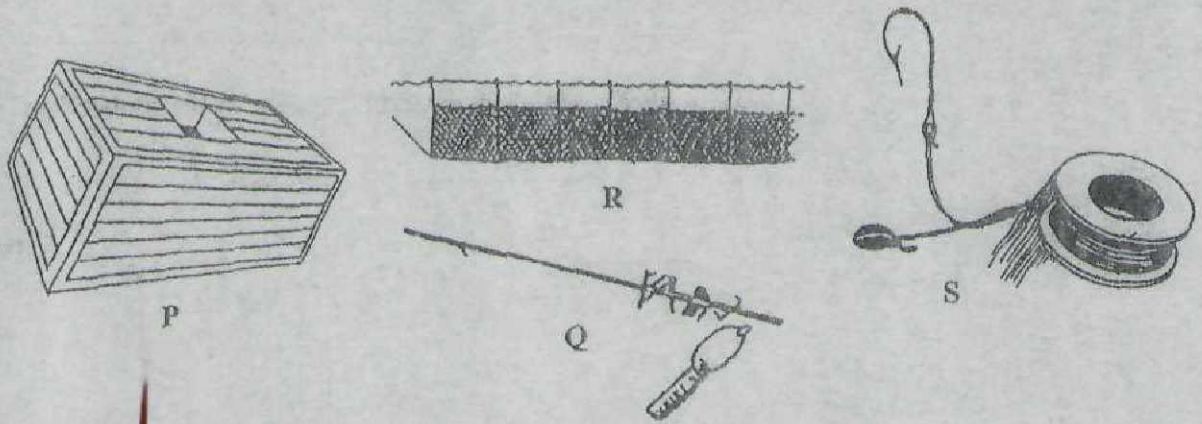
[4]

- (c) Explain what you would expect to happen if all the spiders died.

[2]

Total marks [10]

2. The diagram shows four types of fishing gears used in The Bahamas.



- (a) Identify the gears Q, R and S.

Q _____

R _____

S _____ [3]

- (b) (i) Which gear is used to capture lobsters commercially?

_____ [1]

- (ii) Name the type of material that is used to make this gear.

_____ [1]

- (c) State **ONE** advantage and **ONE** disadvantage when gears like R are used to harvest marine organisms.

advantage: _____

disadvantage: _____ [2]

- (d) Gear Q may be used to capture groupers.

State **ONE** regulation governing the size, sex or weight of the grouper to be harvested.

_____ [1]

- (e) (i) State **ONE** method of fishing which is illegal in The Bahamas.

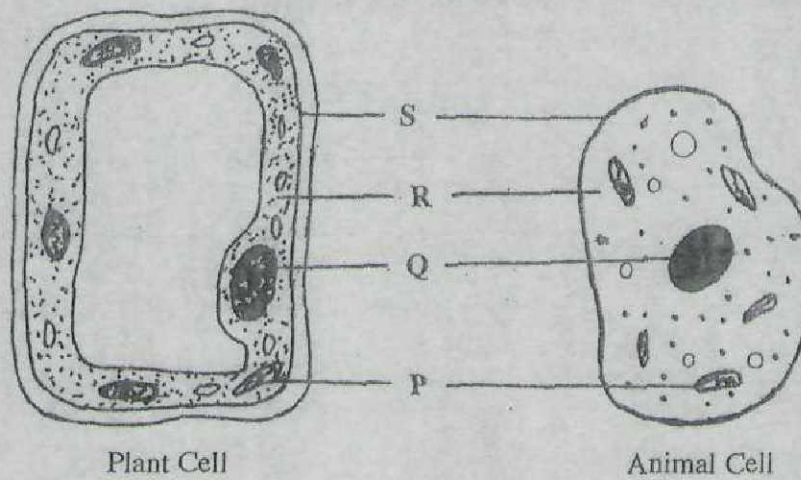
_____ [1]

- (ii) Explain how this method negatively affects the marine environment.

_____ [1]

Total marks [10]

3. The diagrams show an animal cell and a plant cell.



- (a) (i) Label the following structures.

Q _____
R _____ [2]

- (b) (i) State the function of the parts P and S.

P _____
S _____ [2]

- (ii) List **FOUR** differences between the two cells.

Animal Cell	Plant Cell

[4]

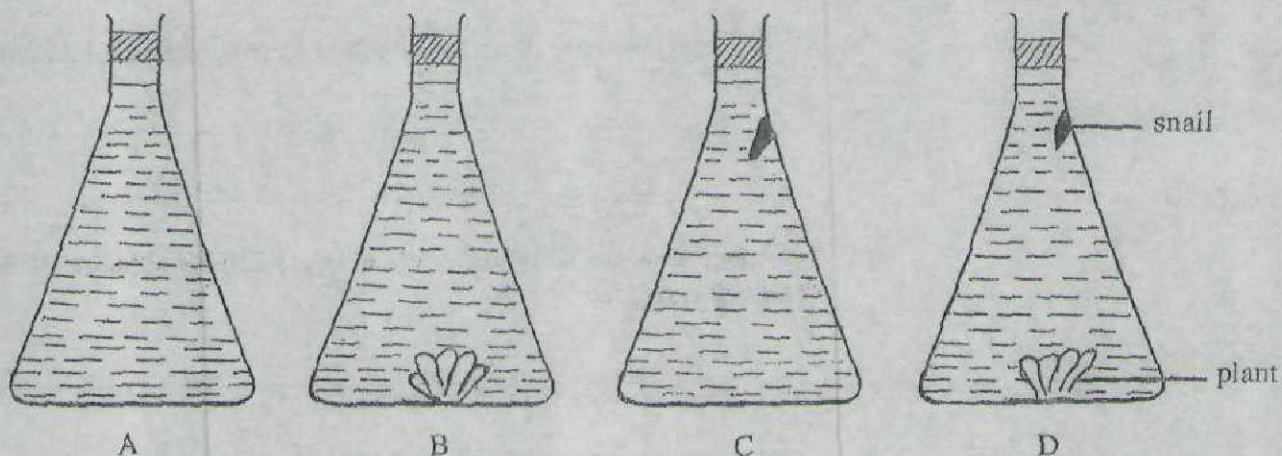
- (c) If the animal cell is placed in a concentrated salt solution the cell shrinks. Explain why this happens.

[2]

Total marks [10]

4.

The diagrams below show an experiment carried out to investigate gaseous exchange in two organisms living in a mangrove swamp.



The flasks contain hydrogen carbonate indicator which changes colour when carbon dioxide is present. The flasks were left in darkness for twenty-four hours and observed at the end of that period.

The indicator was red in all the flasks at the start of the experiment.

carbon dioxide	colour
absent	purple
small amount	red
large amount	yellow

- (a) (i) In which flask will there be no colour change?

_____ [1]

- (ii) Explain why this flask was used in the experiment.

 _____ [1]

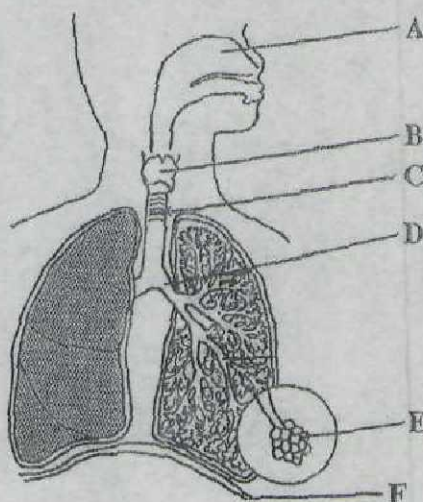
- (b) (i) In which flask would the indicator become yellow most rapidly?
_____ [1]
- (ii) Explain why this flask would show the greatest colour change.

_____ [2]
- (c) Explain how the activities in flask **D** are similar to those of the mangrove swamp ecosystem.

_____ [2]
- (d) Name a common mollusc associated with the mangrove swamp.
_____ [1]
- (e) (i) Which common indicator could be used instead of hydrogen carbonate to test for carbon dioxide?
_____ [1]
- (ii) What colour change would occur if carbon dioxide were present?
_____ [1]

Total marks [10]

5. The diagram below shows the human respiratory system.



- (a) Label the parts marked B and C.

B _____ C _____ [2]

- (b) (i) Give the function of the cilia found in the part labelled A.

_____ [1]

- (ii) Name **ONE** other labelled part which contains similar structures.

_____ [1]

- (iii) What is the effect of cigarette smoke on these structures?

_____ [1]

- (c) State the effect cancer of the throat area will have on the part labelled B.

_____ [1]

- (d) (i) Describe the feature shown in the part labelled C which allows air to flow freely.

_____ [1]

- (ii) How does adaptation of this feature also ensure that the passage of food in the oesophagus will not be obstructed?

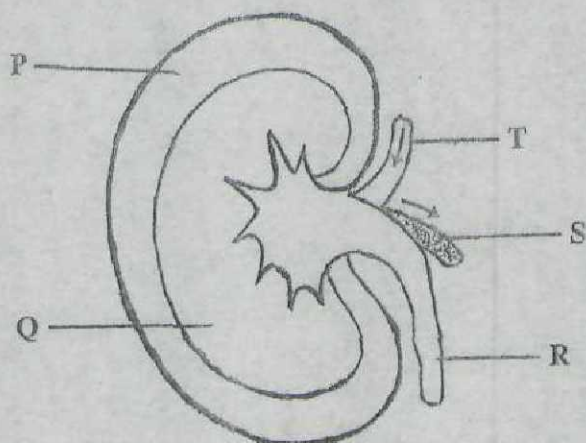
_____ [1]

- (e) Explain how excess fluid in the part labelled E would affect the efficiency of gaseous exchange.

[2]

Total marks [10]

6. The diagram shows the structure of a section of a human kidney.



- (a) (i) Name the parts marked P and Q.

P _____

Q _____

[2]

- (ii) Name the microscopic units found in the kidney.

_____ [1]

- (iii) In which labelled part is the glomerulus found?

_____ [1]

- (iv) Which structure transports urine to the bladder?

_____ [1]

- (b) Describe how urine is produced in the kidney tubule.

_____ [2]

- (c) Describe how pregnancy affects the function of the urinary bladder.

_____ [2]

- (d) Which blood vessel shown in the diagram transports a high concentration of urea?

_____ [1]

Total marks [10]

3009/3

BGCSE

(copy)

School Number	Candidate Number
Surname and Initials	

BIOLOGY

PAPER 3 3009/3

Friday **23 MAY 2008** 12.30 – 2.00 P.M.

Additional materials:
Answer Booklet

MINISTRY OF EDUCATION NATIONAL EXAMINATIONS
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BAHAMAS GENERAL CERTIFICATE OF SECONDARY EDUCATION

INSTRUCTIONS AND INFORMATION FOR CANDIDATES

Write your school number, candidate number, surname and initials in the spaces provided above and on the answer booklet.

Answer **ALL** questions in Section A(1 - 4) in the space provided.

Answer two (2) out of three (3) questions in Section B on the sheets provided, which must be attached to the back of the question paper.

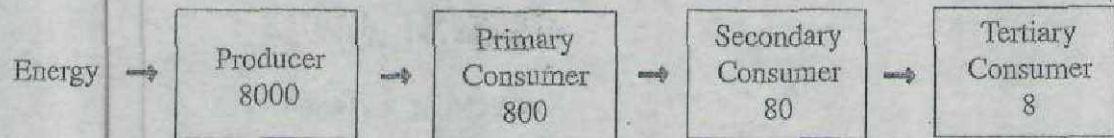
Candidates are advised to spend no more than 35 minutes on Section A.

The mark for each part-question is given in brackets [].

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TOTAL	

This question paper consists of 10 printed pages and 2 blank pages.

1. The diagram below shows the flow of energy in kilojoules through a food chain.



- (a) (i) Name the source of energy entering the food chain.
_____ [1]
- (ii) In what form does this energy enter the producers?
_____ [1]
- (iii) Name the pigment which first absorbs this energy.
_____ [1]
- (b) Explain the reason for the changes in energy in the four trophic levels shown on the diagram above.

_____ [4]
- (c) Decomposers are an important group of organisms in an ecosystem. Explain why they are important.

_____ [3]

Total marks [10]

2. The diagram shows the leaves, flower and fruit of *Tecoma stans* (Yellow Elder).



- (a) (i) Name the process which makes food for this organism.
_____ [1]
- (ii) On the diagram, draw a line to identify the fruit and label it P. [1]
- (iii) Name the structure that produces branches from the main stem.
_____ [1]
- (b) Using the diagram classify the Yellow Elder plant.
Explain your answer.

_____ [3]

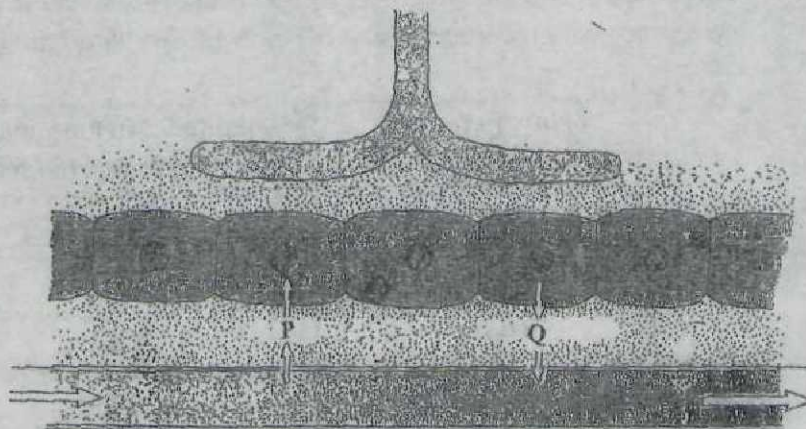
- (c) Yellow Elder is a plant that was introduced to The Bahamas but now grows in the wild.

State **THREE** factors that may have contributed to its continued presence.

[3]

Total marks [9]

3. The diagram shows the blood cells and tissue cells close to a lymph vessel.



- (a) Arrows **P** and **Q** show substances moving in and out of the capillary.

Name the substances indicated by the letters **P** and **Q**.

P _____
Q _____ [2]

- (b) (i) Explain how lymph is formed.

 _____ [2]

- (ii) Label the lymph vessel and draw arrows to show the direction of lymph flow. [2]

- (iii) State **TWO** ways that tissue fluid is different in composition from lymph.

 _____ [2]

- (c) Explain how lymph nodes defend the body against foreign materials and invading bacteria.

 _____ [2]

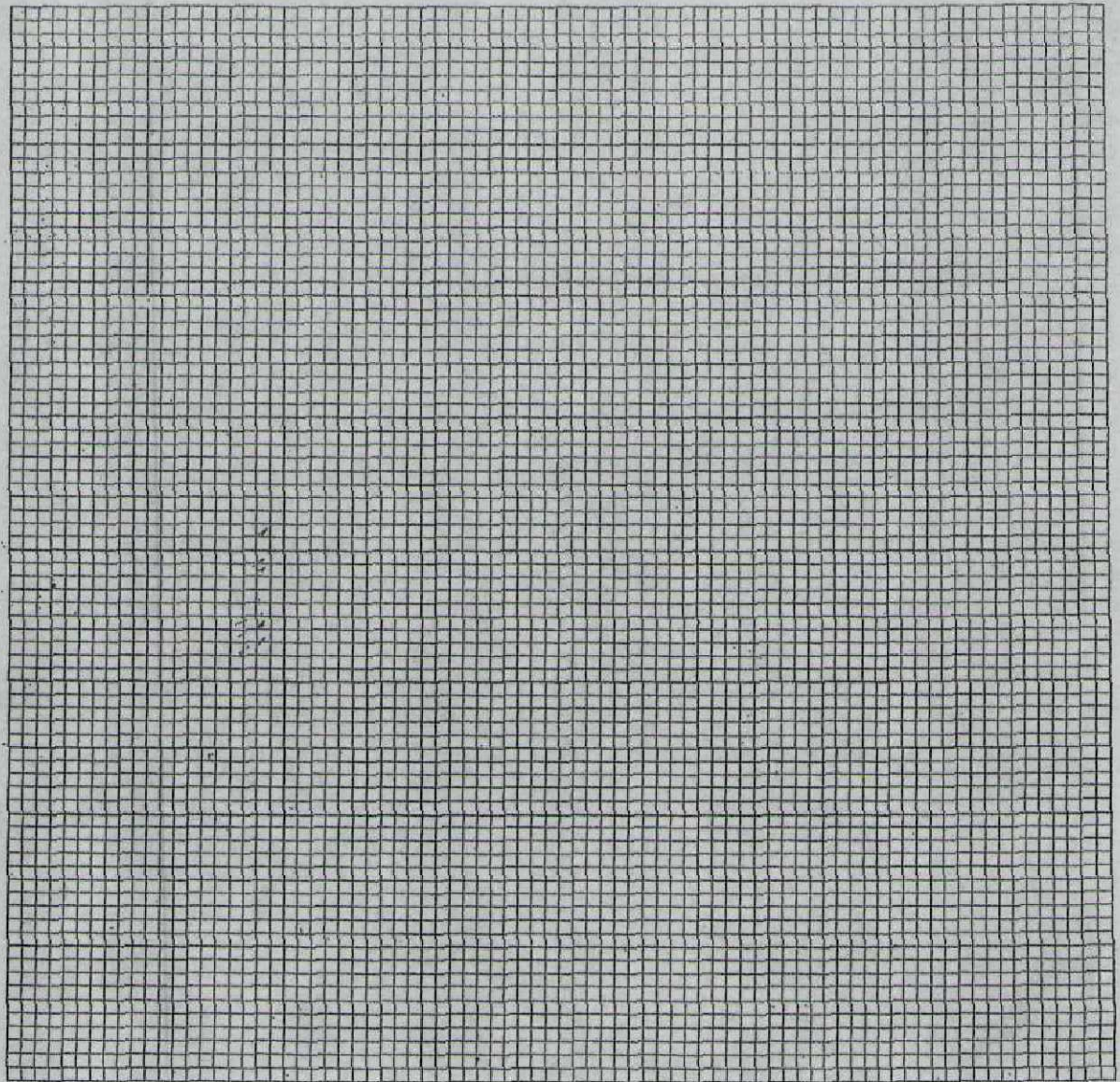
Total marks [10]

4. Following a period of exercise, a man drank one litre of water and urine was collected at thirty-minute intervals immediately after exercising. Before drinking the water the man produced 60 ml(cm^3) of urine every thirty minutes.

Time in minutes (after drinking water)	Volume of urine collected per 30 minutes in ml(cm^3)
0	60
30	342
60	443
90	215
120	60
150	110
180	58
210	43

(a) Draw a line graph to show the results in the table.

[4]



(b) Using the graph, determine the **total** amount of urine released after

(i) 30 minutes _____

(ii) 80 minutes _____

(iii) 100 minutes _____

[3]

SECTION B

Answer any **TWO** questions

5. (a) State **THREE** structural differences between xylem and phloem vessels. [3]
- (b) Explain how the flow of materials in xylem is different from the flow of materials in phloem. [2]
- (c) (i) State why it is impossible for xylem cells to rely on active transport. [2]
- (ii) Explain the mechanism for water uptake. [5]
- (d) Explain how each of the following affects the rate of transpiration of a plant like the Red Mangrove.
- (i) thick leathery leaves [3]
- (ii) thickened cuticle [2]
- (iii) leaves drop during dry season [3]

Total marks [20]

6. (a) Explain **THREE** differences between aerobic and anaerobic respiration. [6]
- (b) Describe an experiment which could be performed to show that yeast cells produce carbon dioxide. [6]
- (c) Explain how yeast is used in **TWO** different named local industries. [6]
- (d) Suggest **TWO** reasons why an athlete makes use of anaerobic respiration to complete a race. [2]

Total marks [20]

7. Describe in detail the sequence of events which leads to each of the following responses:

- (a) the withdrawal of the hand away from a hot object. [10]
- (b) the changes in the iris when a person enters a dimly-lit room from a well-lit area. [5]
- (c) the growth of the shoot of a flowering plant towards one directional light. [5]

Total marks [20]