# Southern Provincial Department of Education

## Year End Test - 2018

**Grade 10**

**Science - I**

Name / Index No. ..... **Time** - 01 hour

**(i) Answer all the questions.**

**(ii) Select the most correct or most appropriate answer from the given answers (i), (ii), (iii), (iv) from question no. 01 to 40. Put (✕) mark on the relevant answer in front of the question number in the answer sheet provided.**

**(iii) 40 marks are allocated for this paper.**

(01) Which of the following is the most common Carbohydrate present in plants?
(1) glycogen (2) lactose (3) cellulose (4) moltose

(02) Which of the following is a vector quantity?
(1) mass (2) speed (3) energy (4) momentum

(03) Which of the following element is responsible for clotting blood?
(1) iron (2) calcium (3) iodine (4) phosporous

(04) Select the metalloid from these.
(1) B (2) C (3) Li (4) Al

(05) Which of the following seed is dispersed by explosive mechanism?
(1) "wara" (2) balsam (3) cashew (4) bitter gourd

(06) The catalyst used in the production of sulphuric acid in the contact method is,
(1) copper (2) nickel
(3) Vanadium pentoxide (4) iron

(07) In Monocotyledonae plants,
(1) there are leaves with reticulate venation (2) secondary growth can be seen
(3) there is no cambium tissue (4) tap root system can be seen

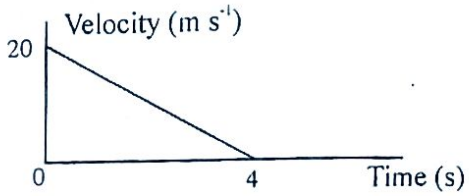
(08) The weight of an object with the mass 100g is,
(1) 0.1 N (2) 1.0 N (3) 10 N (4) 20 N

(09) The number of lone pairs present in the molecule $CCl_4$ is,
(1) 3 (2) 6 (3) 9 (4) 12

(10) In which part of the female reproductive systems does fertilization take place?
(1) fallopean tube (2) ovary (3) uterus (4) vagina

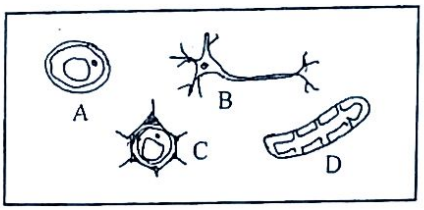
(11) The displacement done by the object, according to this velocity - time graph is,

(1) 80 m
(2) 60 m
(3) 40 m
(4) 20 m




(12) Which of the following instance does not use the friction?
(1) walking (2) playing carom (3) climbing trees (4) swimming

(13) A, B, C and D are four cells.
What is the animal cell out of them?
(1) A (2) B
(3) C (4) D




(14) Which of the following is under the equilibrium of forces?
(1) A ball which is floating in still water
(2) A cube which is sliding down along an inclined plane
(3) An object which is falling down
(4) A glass ball which is rolling on a horizontal floor.

(15) Coordination and irritability,
(1) can be seen only in plants
(2) can be seen only in animals
(3) can be seen only in non-living things
(4) can be seen in any organism

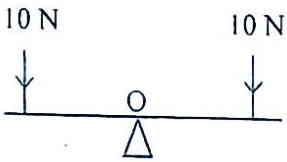
(16) Organisms belong to the domain archea,
(1) live in extreme environments well
(2) are prokaryotes
(3) resistant to antibiotics
(4) show all the above features

(17) The density of mercury is 13600 kgm$^{-3}$ and acceleration due to gravity 10ms$^{-2}$. If so, what will be the atmospheric pressure in pascal in a place where the height of the mercury column in the mercury barometer is 50cm ?
(1) $6.8 \times 10^2$ (2) $6.8 \times 10^4$ (3) $6.8 \times 10^6$ (4) $6.8 \times 10^8$

(18) Which of the following statement is correct?
(H=1, C=12, O=16, S=32)
(1) The element carbon shows allotropy
(2) All atoms have neutrons
(3) Chlorine atoms become positive ions easily
(4) There are 2 energy levels in a sodium atom

(19) Which of the following molecule has a mass similar to the mass of an oxygen molecule?
(H=1, C=12, O=16, S=32)
(1) $H_2O_2$ (2) $H_2O$ (3) $SO_2$ (4) $CH_3OH$

(20) This diagram shows how forces act on a light rod which is pivoted on the point O. Which of the following statement is correct?
(1) The rod is balanced horizontally
(2) The rod is rotating clockwise
(3) The rod is rotating anti-clockwise
(4) The rod is swinging either sides around the point O.




(21) A car in which the engine is inactive was not moved when it was pushed by one person. But it could be moved when it was pushed by several people. This is an instane of,
(1) using the equilibrium of forces
(2) using resultant forces
(3) using the moment of force
(4) using the rotating effect of force

(22) The molecular mass of $CaCO_3$ is 100. How many moles are there in 500 g of $CaCO_3$ ?

(1) 5 (2) 4 (3) 3 (4) 2

(23) Select the inherited character.

(1) having scars on the skin
(2) having free earlobes
(3) having grown muscles
(4) having cavities in teeth

(24) 24 Ω resistor is connected to a voltage of 12V. The current flowing through the resistor is,

(1) 0.5A (2) 2A (3) 12A (4) 24A

(25) Which of the following relationship shown in the table is correct?

| | organelle | function |
|---|---|---|
| (1) | Chloroplast | respiration |
| (2) | Mitochondria | photosynthesis |
| (3) | Golgi bodies | transporting secreting substances |
| (4) | Vacuole | maintaining the water balance |

(26) Which of the following reaction belongs to double displacement reactions?

(1) heating limestones highly
(2) reacting zinc with sulphuric acid
(3) reacting the sodium chloride solution with the solution of silver nitrate
(4) reacting calcium carbonate with sulphuric acid

(27) Which of the following statement is correct?

(1) Covalent bonds are more stronger than ionic bonds
(2) Ionic bonds are more stronger than covalent bonds
(3) Hydrogen bonds are more stronger than ionic bonds
(4) Hydrogen bonds are more stronger than covalent bonds

(28) Two statements are shown as A and B.

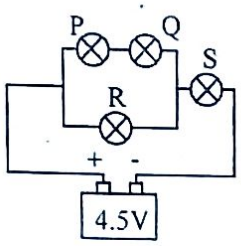
A - The first ionization energy is increasing down a group in the periodic table.
B - The electro negativity is increasing along a period towards the right in a periodic table

What is the correct statement regarding A and B statements.

(1) A and B are both correct
(2) A and B are both incorrect
(3) Statement A is correct and B is incorrect
(4) Statement B is correct and A is incorrect

(29) P, Q, R and S are four identical bulbs. Which bulb should be blown off to light the other three bulbs with equal brightness?

(1) P (2) Q
(3) R (4) S




(30) The kinetic energy of an object moving with a velocity of V is E. What would be the kinetic energy of this object when it is moving with a velocity of 3V?

(1) E (2) 3E (3) 6E (4) 9E

(31) What is the first organism adapted successfully to the terrestrial environment in the evolution of vertebrates?

(1) reptilia (2) Aves (3) amphibia (4) mammalia

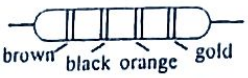
(32) It should be found out whether the genotype of a pea plant is homozygous or heterozygous. What is the most suitable method for it?

(1) Observing the results by crossing it with a homozygous dominant plant
(2) observing the results by crossing it with a homozygous recessive plant
(3) observing results by crossing it with a heterozygous plant
(4) observing results by allowing these plants for self pollination

(33) The formula of Ammonium Phosphate is $(NH_4)_3PO_4$. What is the formula of ammonium carbonate?

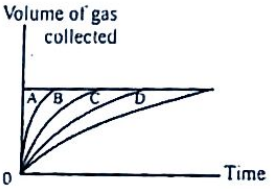
(1) $NH_4CO_3$ (2) $(NH_4)_3CO_3$ (3) $(NH_4)_2CO_3$ (4) $NH_4(CO_3)_2$

(34) What is the value of the resistor shown below?
(black =0, brown = 1, red = 2, orange = 3, yellow = 4, gold =5% )




(1) $1000 \pm 5\%$ (2) $1000 \pm 10\%$ (3) $10000 \pm 5\%$ (4) $10000 \pm 10\%$

(35) This graph shows how the volume of gas collected is plotted against time in 4 chemical reactions which emit a gaseous product. Which reaction out of A, B, C and D has the highest rate of reaction?




(1) A (2) B
(3) C (4) D

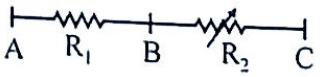
(36) Three statements are shown below.
A - Liquid medium is more suitable for transmission of pressure.
B - The pressure created by the liquid column is high when the depth of the liquid is high
C - The pressure of a certain point of a liquid acts in all directions.
Out of the above statement,

(1) only A and B are correct (2) only B and C are correct
(3) only A and C are correct (4) all A, B and C are correct

(37) Which of the following is not an application of a chemical reaction?

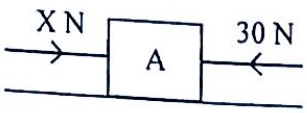
(1) obtaining lime by burning lime stones (2) rusting of iron
(3) bursting a cracker (4) ripening banana

(38) A part of a circuit is shown below. Which statement is correct?




(1) When $R_1$ and $R_2$ resistance are equal the potential difference between AB and BC is equal
(2) When the resistance of $R_2$ is increasing the potential deference between AB is decreasing
(3) When the resistance between $R_2$ is decreasing the potential difference between AB is increasing
(4) All the above statements are correct

(39) Consider the object A placed on a horizontal smooth surface as shown in the diagram. Two horizontal forces 30N and X N act on A. Calculate the value of X, if the object is moving towards the direction of X with 20N resultant force.




(1) 20N (2) 30N (3) 50N (4) 65N

(40) What is the number of C atoms present in 22g of $CO_2$? (C=12, O=16)

(1) $6.022 \times 10^{23} \times 12$ (2) $6.022 \times 10^{23} \times 2$ (3) $6.022 \times 10^{23}$ (4) $6.022 \times 10^{23} \times \frac{1}{2}$

# Southern Provincial Department of Education

## Year End Test - 2018

### Grade 10

### Science - II

Name / Index No. ..... **Time** - 03 hours

**Instructions -**

- **Answer in clear hand writing.**
- **This paper consists of 2 parts A and B. Answer all the questions in part A in the space provided in this paper.**
- **Answer only 03 questions in part B.**
- **After answering, tie part A and B together and submit.**

## Part A - Structured essay.

(01) (A) A description about organelles present in living cells and their structures are shown below.

| Organelle | Description |
|---|---|
| A | Controls all cellular activities |
| B | A dead tissue which is totally permeable |
| C | Energy needed for the biological activities is generated. |
| D | It is made up of disc like structures that are on top of each other |

(i) Identify A, B, C, D and name them.

A - ..... B - .....

C - ..... D - .....

(ii) What is the function of D?

.....

(iii) Name a strcture / organelle present only in plant cells but not shown in the table.

.....

(iv) Name another function done by organelle A.

.....

(B) X and Y liquids are in 2 vessels separately. This graph shows how liquid pressure changes, when going down from the surface.

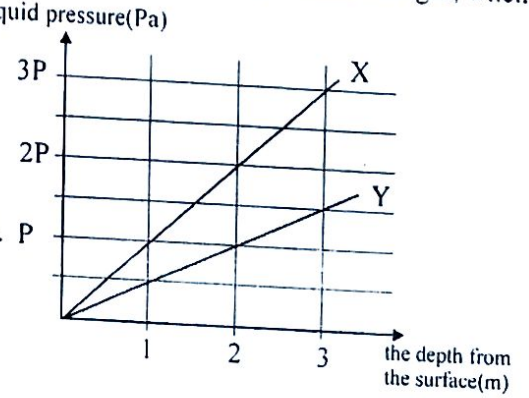
(i) Show the pressure at 2m deep in the liquid Y using the graph.

.....

(ii) What are the other 2 factors that affect the liquid pressure but not explained by the graph.

.....

.....



(iii) The mass of 1 $m^3$ of the liquid X is 1000 kg and the acceleration of an object that falls down freely is 10 m $s^{-2}$.

(a) If so, calculate the value of X.

.....

.....

(b) Calculate the density of Y.

.....

.....

(iv) If the same hydrometer floats vertically in X and Y liquids, in which liquid does it sink more? .....

(02) (A) The characteristics of several groups of animals are shown as P, Q, R and S.

| |
|---|
| P - has a muscular foot. |
| Q - multicellular body made up of 2 cell layers. |
| R - lives only in marine environments. |
| S - has a chitin cuticle |

(i) Select the appropriate characteristic for the groups of animals shown below and write its letter in front of the group.

(a) - Coelenterata / Cnidaria .....

(b) - Echinodermata .....

(c) - Mollusca .....

(d) - Arthropoda .....

(ii) Name the kingdom and domain that the animal groups shown in part (i) above.

(a) Kingdom .....

(b) Domain .....

(B) The reproduction is the biological process that ensures the continuity of life

(i) Name 2 other common characteristics for organisms other than reproduction.

..... .....

(ii) Name the 2 methods of reproduction take place in higher plants.

..... .....

(iii) The steps of an activity that helps to breed a new plant artificially are shown below.

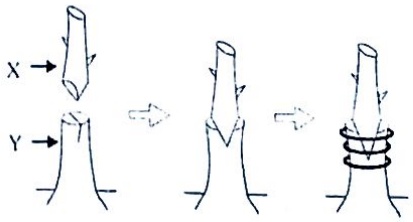
(a) What do you call this breeding method?

.....

(b) In this method, what are the names used to identify X and Y ?

.....

.....




(c) What properties out of X and Y are obtained by the daughter plant?

.....

(d) Write a special characteristic that should be present in Y.

.....

(03) (A) The elements in the first group and seventh group of the periodic table are shown below.

| |
|---|
| **I$^{st}$ group - Li, K, Na, H** |
| **VII$^{th}$ group - F, Cl** |

(i) The elements in the I$^{st}$ group are not written in order. write them in order arranging the way they are located when going down in the group.

.....

(ii) Explain why Na is classified as an element in the I$^{st}$ group.

.....

.....

(iii) What is the most electro negative element out of F and Cl?

.....

(iv) Which element out of elements in the I$^{st}$ group has the highest first ionization energy?

.....

(v) Write the formula of the compound made by reacting H and Cl elements.

.....

(vi) Out of the above mentioned elements, write 2 elements belonging to the 3$^{rd}$ period.

.....

(vii) Show in an equation how an atom of sodium becomes an ion.

.....

(B) Chemical formulae of several compounds are shown below. Answer the questions below using them.

| |
|---|
| $H_2O$, NaCl, $CH_4$, KCl |

(i) Name an ionic compound out of the above compounds.

.....

(ii) Name one compound each that shows the features below.

(a) Conducting electricity when it is present as an aquous solution .....

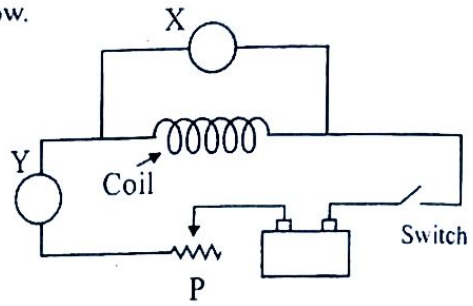
(b) Existing as solid crystals .....

(iii) (a) Draw the Lewis structure of a covalent compound mentioned above.

(b) Write the number of lone pairs present in it.

.....

(04) (A) The current flowing through a wire is changed when the potential difference at the two ends of the wire is changed. The circuit prepared to test it is shown below.




(i) Name the apparatus X and Y.

.....

.....

(ii) What is the function done by 'P'.

.....

(iii) Pair of readings are obtained by closing the switch.

(a) What is the reading obtained from X?

.....

(b) What is the reading obtained from Y?

.....

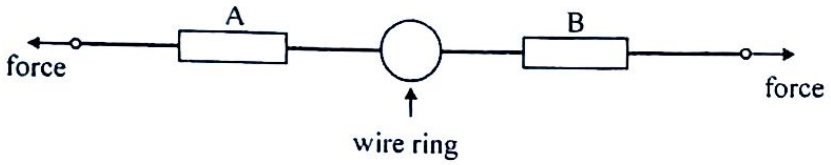
(c) After taking one pair of readings, the switch should be kept opening for a bout 01 minute before taking the other pair of readings. Why is it?

.....

(iv) The readings of X and Y were obtained for 4 instances and examined the relationship of them. What type of relationship between X and Y can be obtained?

.....

(B) An activity related to the equilibrium of forces is shown below.




(i) (a) Are the readings of A and B sprung balances, when the wire is at rest equal or different? .....

(b) How do the lines of action of the two forces applied in the above instance exist?

.....

(ii) (a) If the readings of A and B are 5N and 7N respectively, to what direction will the ring move?

.....

(b) What is the magnitude of the resultant force applied then?

.....

(iii) (a) A student says that the wire ring will be at rest when the forces as shown below act on it. Do you agree with it?

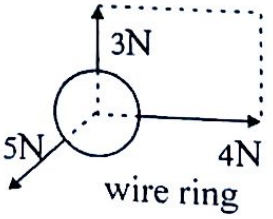
.....

(b) explain the reason for your answer.

.....

.....

.....



## Part B - Essay type

(05) (A) The building units of several bio molecules are shown below. Answer these questions using them.

- Amino acids
- Monosaccharides
- De oxy rhybo nucleotide

(i) Select the building units that contain the nitrogen element.

(a) Protein (b) DNA (c) Carbohydrate

(ii) Name the two building units that contain the Nitrogen element.

(iii) What is the bio molecule form the bio molecules mentioned in part (i) that contributes for the growth of the body?

(iv) An aqueous extraction of a carbohydrate is divided in to two parts. These two parts are subjected to the activities shown below.

| | |
|---|---|
| Step 1 - | Adding few drops of iodine solution to one part. |
| Step 2 - | Keeping the other part at the temperature of 37° for 20 minutes after adding excess amount of amylase solution. Later adding few drops of iodine solution to one part. |

(a) In the step 1, purple colour could be observed. If so, what is the type of carbohydrate present in the aqueous extraction of carbohydrate.?

(b) What is the observation obtained in the step 2.

(c) According to it, explain the action of amylase.

(B) The question below are based on the inheritance.

(i) How many homologous chromosomes are there in a human cell.

(ii) Explain what is meant by a pair of homologous chromosomes.

(iii) (a) Write the pair of sex chromosomes present in a sometic cell of a woman and a man respectively.

(b) Based on the above answer, show in a diagram how sex is determined in human body.

(iv) (a) What is the sex linked genetic disorder common only for males?

(b) What is the genetic reason that causes this disease?

(06) (A) The table below shows physical properties of four compounds P, Q, R and S.

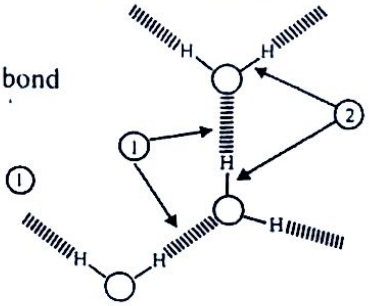
| Compound | Melting point (°C) | Boiling point °C | Physical state at room temperature |
|---|---|---|---|
| P | 0 | 100 | liquid |
| Q | -78 | -33 | (a) |
| R | 801 | 1413 | (b) |
| S | -73 | -10 | (c) |

(i) Name the physical states shown as (a), (b) and (c)

(ii) Name the bond type present in S.

(iii) What can be the compound P according to the physical properties explained in the table.

(B) Diagram below shows bonds present in a water molecule and among water molecule




(i) Name the two bond types shown as ① and ②

(ii) Write 2 specific properties obtained by water due to the bond type shown as ①

(iii) Explain the reason for creating the bond type shown as ①

(C) How two chemical reaction are represented is shown below.

Reaction I $Mg + 2[A] \rightarrow MgCl_2 + [B]$

Reaction I $[C] + 2[A] \rightarrow CaCl_2 + H_2O + [D]$

(i) Name the elements or compounds separately shown as [A] [B] [C] and [D]

(ii) To what type of reaction does the first reaction belong?

(iii) The relative atomic masses of Mg and Cl respectively are 24 and 35.5

(a) Find the formula mass of $MgCl_2$.

(b) What is the mass of 2 moles of $MgCl_2$?

(07) (A) P and Q below show two applications of friction.

P - Roughening the contact surfaces

Q - Applying grease in between contact surfaces.

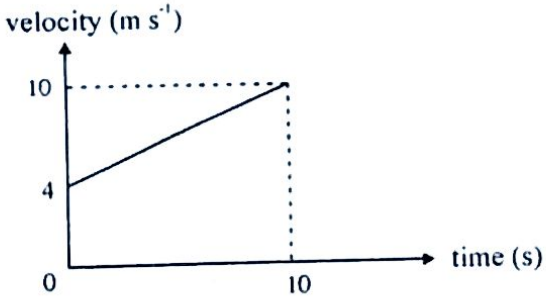
(i) What is the method out of P and Q, used to decrease the friction in between two surfaces which are in contact.

(ii) The change shown above as P is done by cutting grooves in tires of motor vehicles. Explain how it is useful for the motion of a motor vehicle on a rainy day?

(B) In an object moving with a uniform acceleration, the initial velocity is 'U' , the final velocity is V and the time taken for making this difference is t.

(i) Write the equation which gives the mean velocity.

(ii) Using it, write the equation which gives the displacement (d) done by the object within the time t.



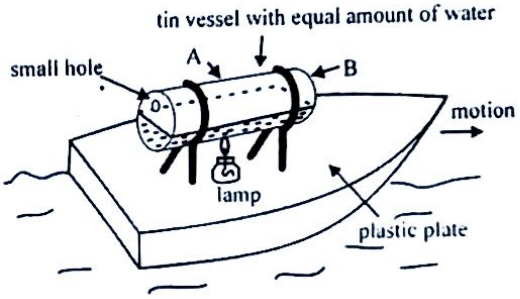

(iii) Find the displacement of the object explained by this velocity-time graph using the above equation you wrote or using another method.

(C) The diagram below shows a steam boat.

(i) Write the name of the Newton's law related to the motion of the steam boat.

(ii) On which wall out of A and B does the reaction relevant for the motion of the steam boat act?

(iii) Explain how the shape of the plastic plate contributes for the motion of the steam boat.




(iv) Mention one way that the motion of the steam boat can be increased.

(v) Explain why the steam boat is kept balanced on the water surface.

(08) (A) Nutrition, excretion and movements are 3 characteristics of organisms.

(i) (a) What is meant by nutrition.

(b) Name the two groups of organisms that are categorized under photo autotrophic and chemoautotrophic.

(ii) (a) What is the excretory product excreted by kidneys?

(b) What is the main nitrogenous excretory product present in it?

(iii) Name the locomotive organs of the animals shown below.

(a) amoeba (b) chlamydomonas (c) man

(iv) Write an example for a plant movement.

(B) The diagram below shows the instruments used in an activity and their readings.

(i) What is the mass of the metalic cylinder?

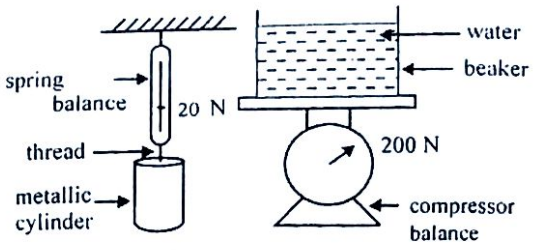
(ii) The metalic cylinder is immersed in water being hanging in the spring balance. Then the spring balance reading was 15N.

(a) By how much did the spring balance reading decreased?

(b) What is the reason for it?

(c) What is the reading of the compressor balance?

(d) Write the law which helps to obtain the answer in (C)




(iii) The density of water is 1000 $kgm^{-3}$ and acceleration due to gravity is 10 $m^{-2}$

(a) find the volume of the metallic cylinder.

(b) Name the scientist who expressed the law that helps the calculation above.

(09) (A) A list of chemicals is shown below.

| | |
|---|---|
| • iron | • copper sulphate |
| • lead monoxide | • sodium |

(i) Name an element and a compound from the above chemicals.

(ii) (a) From the above chemicals, an aquosus solution of one substance can be reacted with another material to demonstrate a single displacement reaction. Name this pair of substances.

(b) Write the balanced chemical equation to show the reaction taken place here.

(c) Write 2 observations that can be seen when this reaction taken place.

(iii) Write 2 protective methods that should be followed when the reaction of sodium and water is demonstrated.

(B) Two incidents are shown below. (use g= 10 $m\,s^{-2}$)

- Allowing an object P with the mass of 2kg to move along a straight line with the velocity of 2 $m\,s^{-1}$
- Hanging an object Q with the mass of 8kg, 5m above the earth.

(i) What is the weight of Q ?

(ii) What is the momentum of P?

(iii) Write respectively the two types of energy stored in P and Q objects.

(iv) (a) Calculate the energy stored in the object Q.

(b) At what velocity does the object P move to possess this amount of energy?