බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2017
Year End Evaluation

ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
10	Science	I	01 h

Important :

(i) Answer all the questions

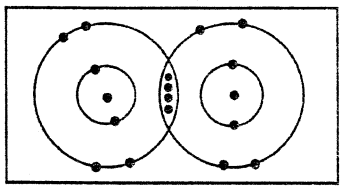
(ii) **In each of the questions 01 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider correct, or most appropriate.**

(iii) Mark a cross (×) on the number corresponding to your choice in the answer sheet provided.

(01) Select the dissacharide from given answers.

(1) Galactose
(2) Lactose
(3) Fructose
(4) Cellulose

(02) What is this molecule and bonding type of it.



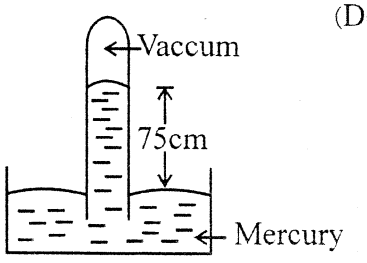
(1) Nitrogen molecule / Covalent bond
(2) Water molecule / Covalent bond
(3) Oxygen molecule / Ionic bond
(4) Oxygen molecule / Covalent bond

(03) Out of the following which is **not** a genetically transfered characteristic of human?

(1) Nature of ear
(2) Skin colour
(3) Patches in the skin
(4) Colour of hair

(04) What is the atmospheric pressure in this mercury barometer?

(Density of Hg = 13600kgm^{-3} , g = 10ms^{-2})

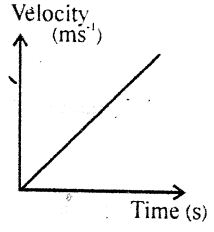


(1) 75 Pa
(2) $\frac{75}{100}$ × 13600 × 10Pa
(3) 75 × 13600 × 10 Pa
(4) 13600 Pa

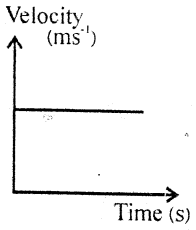
(05) Which factor out of the following **does not** have an effect on friction between the tyres of a motor car and the surface.

(1) Nature of the surface
(2) Nature of the tyre surface
(3) Width of the tyres
(4) Weight of the motor car

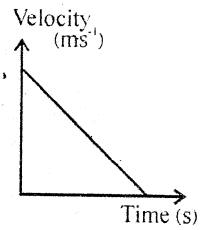
(06) Select the correct velocity - time graph which shows the movement of a coconut falling from the tree,



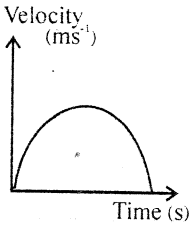
(1)



(2)



(3)



(4)

(07) What is the acceleration if 10N force is applied to a bicycle of 25kg mass which is moving with a constant velocity?

(1) $0.4ms^{-2}$ (2) $2.5ms^{-2}$ (3) $10ms^{-2}$ (4) $250ms^{-2}$

(08) Select the correct statement,

(1) A unicellular organism has an oraganelle level body organization
(2) A group of cells adapted for a special task is called a tissue
(3) Man is an autotrophic organism
(4) Plants breathe only at night

(09) What is the element out of the following?

(1) Brass (2) Steel (3) Water (4) Helium

(10) Which phylum has animals with out a heart, a brain, no eyes, tubefeets for movement & respiration, and shows evolutionary relationships to chordates,

(1) Annelida (2) Echinodermata (3) Arthropoda (4) Coelenterata

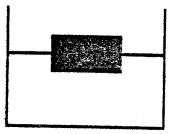
(11) a - Produce large numbers of pollens
b - Colorful
c - Has a branched stigma
d - Has sticky pollens
Of the above given characteristics, Which is /are the most suitable for a wind pollinated flower?

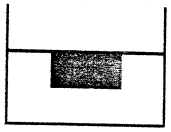
(1) a & b (2) b & c (3) a & c (4) a & d

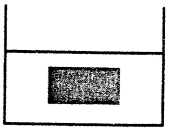
(12) The fertilization of a human ovum takes place in,

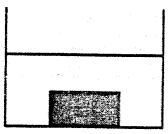
(1) The ovary (2) Fallopian tube (3) The uterus (4) in the vagina

(13) The following diagrams show how a same object presents in different solutions. Select the diagram with the lowest upthrust acting on the object.


(1)


(2)


(3)


(4)

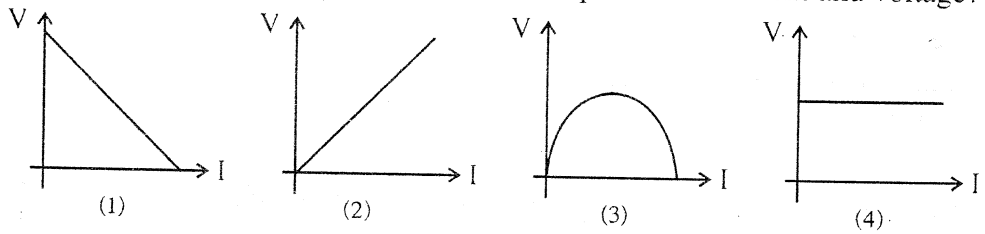
(14) What is a single displacement reaction?

(1) $2Mg + O_2 \rightarrow 2MgO$
(2) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$
(3) $CaCl_2 + Na_2CO_3 \rightarrow CaCO_3 + 2NaCl$
(4) $2KMnO_4 \rightarrow K_2MnO_4 + MnO_2 + O_2$

(15) What is the gas that can be collected using both downward displacement of water and upward displacement of air?

(1) Carbon dioxide
(2) Oxygen
(3) Hydrogen
(4) Hydrogen & Oxygen

(16) What is the correct graph that shows the relationship between current and voltage?



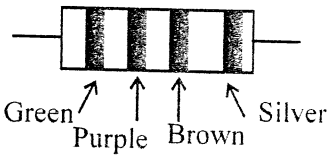
(17) What is the number of water moles present in 90g of water? (H = 1, O = 16)

(1) 2 mol (2) 5 mol (3) 8 mol (4) 6.022 mol

(18) How much work is done by a machine with a power of 60W in 20 seconds?

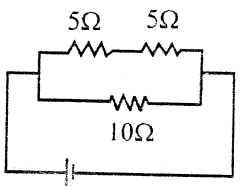
(1) 3 J (2) 20 J (3) 60 J (4) 1200 J

(19) The resistor with a colour code of a resistor is given in the following diagram. Calculate the resistance of it? (Brown -1, Purple - 7, Green - 5, Silver - 10%)



(1) 57 Ω (2) 570 Ω
(3) 750 Ω (4) 5750 Ω

(20)



What is the total resistance of this circuit?

(1) 5 Ω (2) 10 Ω
(3) 20 Ω (4) 55 Ω

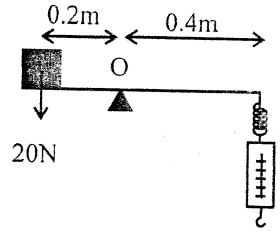
(21) Which of the following metal can be extracted using physical methods?

(1) Iron (2) Copper (3) Sodium (4) Gold

(22) Select the combination of fruits /seeds with a similar method of dispersal?

(1) Mango, Domba, Kottamba, Gammalu
(2) Dipterocarpus, Thotila, Wara, Cotton
(3) Nagadarana, Woodapple, Kudalu, Rubber
(4) Domba, Diyakaduru, Coconut, Apple

(23)



A light weighted stick is balanced at the point O as in the following diagram. What would be the reading of the Newton balance?

(1) 2N (2) 10N
(3) 20N (4) 40N

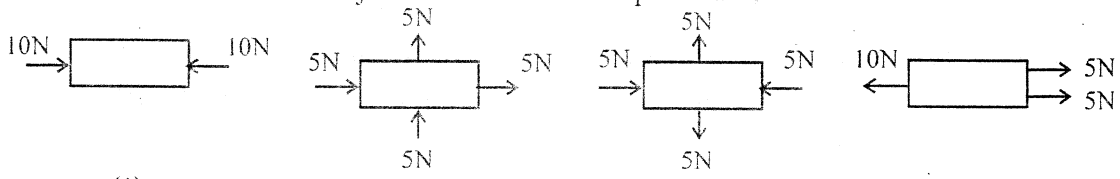
(24) Select the correct answer that shows a gradual change in the properties of elements from left to right of the periodic table.

(1) Increase the metallic properties of elements
(2) Increase the first ionization energy
(3) Decrease the non metallic properties of elements
(4) Decrease the electronegativity of elements

(25) If the chemical formula of Magnesium chloride is $MgCl_2$, what is the chemical formula of Magnesium nitride?

(1) MgN (2) MgN_2 (3) Mg_3N_2 (4) Mg_3N

(26) Which answer shows the object which is **not** in equlibrium.



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

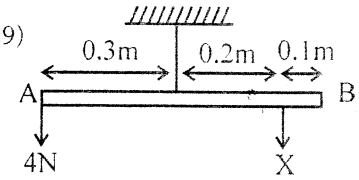
(27) What are the standard international units of work, energy & efficiency respectively?

(1) J, J, W (2) Js^{-1}, J, W (3) W, J, J (4) W, W, J

(28) Which cell organelle involves in Protein synthesis.

(1) Chloroplast (2) Golgi bodies (3) Mitochondria (4) Rhibosome

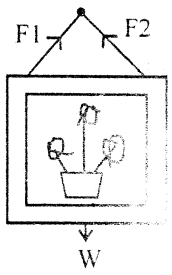
(29)



What is the force that should be applied for "X", to balance the light weighted stick, AB?

(1) 2N (2) 4N
(3) 6N (4) 12N

(30)



This is a diagram of a framed photograph hanging on the wall. Which type of equilibrium does it has?

(1) Equilibrium under three coplanar non parallel forces.
(2) Equilibrium under three coplanar parallel forces.
(3) Equilibrium under three non - coplanar parallel forces.
(4) Equilibrium under three non - coplanar forces acting in opposite directions

(31) Which metal has a lower density than water and can be sliced using a knife as it is soft.

(1) Magnesium (2) Sodium (3) Aluminium (4) Mercury

(32) What are the three components of a nucleotide?

(1) Nitrogenous base, Phosphate group, Pentose sugar group
(2) Nitrogenous base, Phosphate group, Hexose sugar group
(3) Nucleic acid, Phosphate group, Pentose sugar group
(4) Nucleic acid, Phosphate group, Nitrogenous base.

(33) Friction of a moving object is called,

(1) Static frictional force
(2) Limiting frictional force
(3) Dynamic frictional force
(4) Maximum frictional force

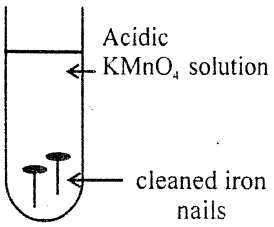
(34) Meiosis occurs during,

(1) the generation of new cells in recovering a wound
(2) the production of blood cells
(3) the multiplication of cancer cells
(4) the production of ova in ovaries

(35) Which of the following pairs has similar number of atoms?
(H = 1, N = 14, O = 16, Mg = 24)

(1) 2g of Hydrogen & 8g of Oxygen
(2) 7g of Nitrogen & 12g of Magnesium
(3) 7g of Nitrogen & 7g of Hydrogen
(4) 28g of Nitrogen & 16g of Oxygen

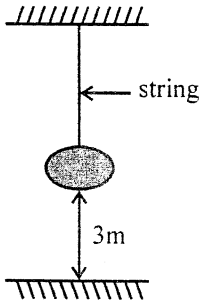
(36)



The purple colour of acidic $KMnO_4$ disappeared quickly, when,

(1) Heated the test tube
(2) Cooled the test tube
(3) Added more $KMnO_4$ to the solution
(4) Decreased the number of iron nails

(37)



An iron ball with 500g of mass is hunged from 3m height from the earth as in the diagram. What is the potential energy of it? ($g = 10ms^{-2}$)

(1) $500 \times 10 \times 3$ J
(2) $\frac{500}{1000} \times 10 \times 3$ J
(3) $\frac{1}{2} \times 500 \times 10^2$ J
(4) 500×10 J

(38) Which Scientist introduced the binomial nomenclature? ,

(1) Gregory Mendal
(2) Carolus Linnaeus
(3) Charls Darwin
(4) Robert Whitekar

(39) The ability to respond to internal and external stimuli is named as,

(1) Co-ordination
(2) Development
(3) Homeostasis
(4) Irritability

(40) Select the correct statement regarding the micro-organasisms.

(1) All micro-organasisms belong to the domain Archaea
(2) Some of the bacterial species are important for the process of atmospheric Nitrogen fixation.
(3) Protozoans have chitinous cell walls.
(4) Yeast is a multicellular fungi.

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ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
10	Science	II	03 h

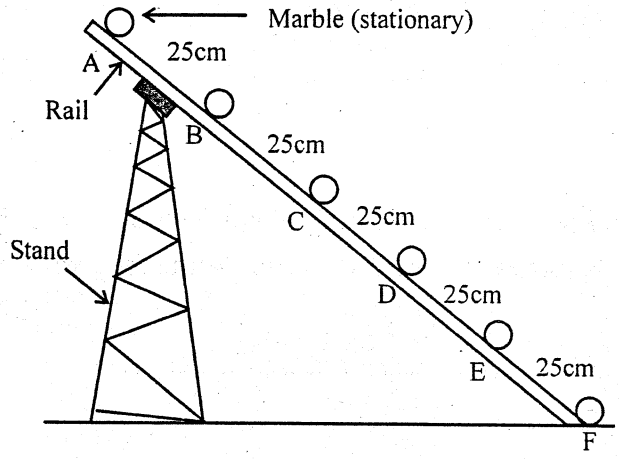
Name :- ..... Index No :- .....

Important :

- Answer **all** questions in part **"A"** in the given space. Answer **three** questions from part **"B"**

Part A - Structured Essay

(01) (A) A marble is moved along an inclined plane as in the following diagram and the data obtained relevant to that movement is given in the table.



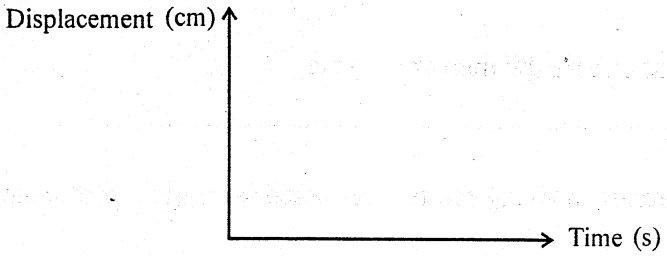
Distance/ Displacement (cm)	Time (s)
0	0
25	5
50	9
75	12
100	14

(i) Calculate the velocity of glass ball within the first 25 cm?

.....

..... (2 M)

(ii) Draw the displacement time graph for the above data



(2 M)

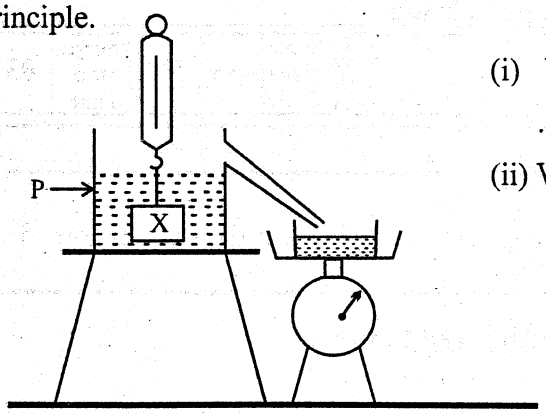
(iii) What is the type of Energy that the ball has at place A ?

..... (1 M)

(iv) If the angle of the inclined plane is increased how will the time taken by the ball to move a constant distance be changed?

..... (1 M)

(B) Given below is an experimental setup arranged in the laboratory to prove Archemedes principle.



(i) What is the instrument P ?

..... (1 M)

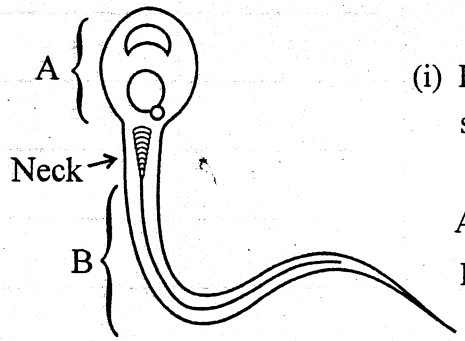
(ii) When dipping the object X further in water without touching the bottom of the vessel, what will happen to the reading of the spring balance?

..... (1 M)

(iii) Write down the relationship between the reading of the spring balance and the reading of the compress balance?

..... (2 M)

(C)



(i) Following is a diagram of an electron microscopic structure of a human sperm. Name the parts A & B (2 M)

A .....

B .....

(ii) Menstrual cycle plays an important role in human reproduction. The whole process of menstrual cycle takes place in two locations. Name those two locations.

(a) ..... (b) ..... (2 M)

(iii) Name a hormone that affects the mensural cycle.

..... (1 M)

(02) (A) Basic organic compounds in living matter are called biological molecules.

(i) (a) Which biological molecule is made up of the polymerization of amino acids?

..... (1 M)

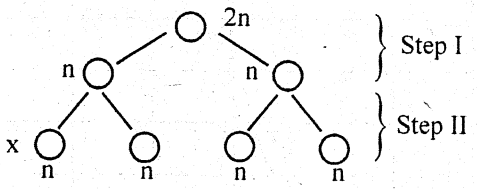
(b) Name the main elements present in the above mentioned biological molecule.

..... (2 M)

(ii) To which biological process do the new characters formed by the mutations / changes occur in the DNA molecule contribute?

..... (1 M)

(iii) This diagram represents a type of cell division.



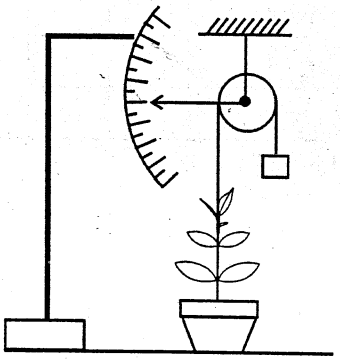
(a) What are the two types of cell divisions in,

Step I - ..... Step II - ..... (2 M)

(b) If X is a human cell how many chromosomes does it contain?

..... (1 M)

(iv) This is an experiment to observe a characteristic feature of living beings.



(a) What is the characteristic feature observed here?

..... (1 M)

(b) What is the name of this set up?

..... (1 M)

(c) What is the type of cell division occurs during this biological process?

..... (1 M)

(d) Which organelle is important in cell division?

..... (1 M)

(B) A Group of students observed the following animals in a beach.

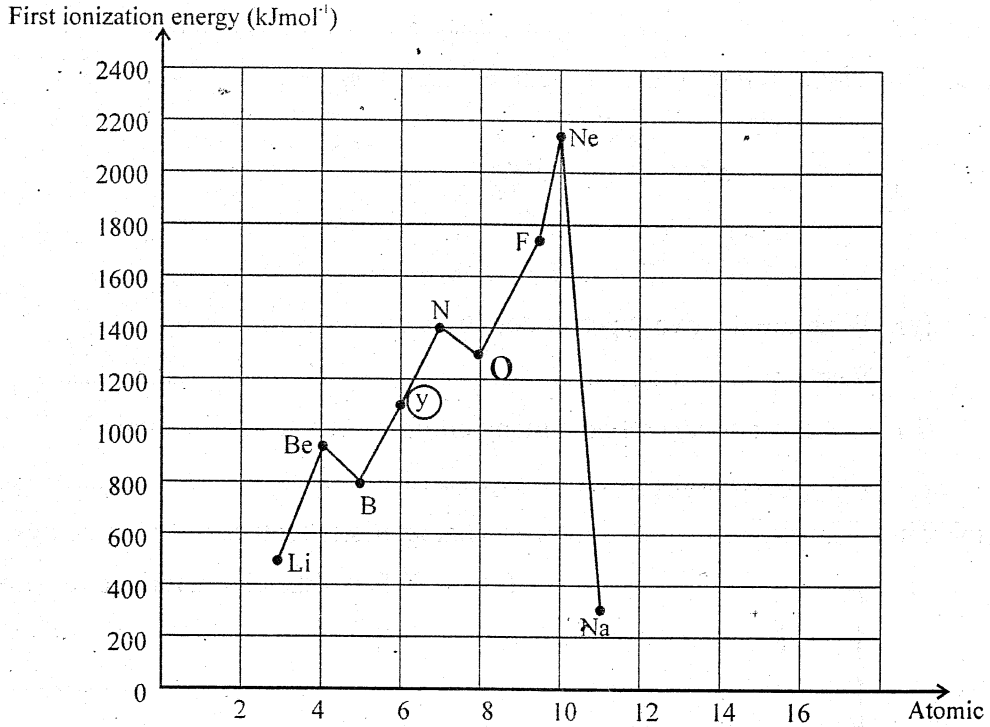
A B C D

(i) Complete the following table using the animals given above.

Animal	Phylum	Special character
A		Posses a sharp spiny body covering
B	Coelenterata	
C		Body is divided into similar segments
D	Arthropoda	

(4 M)

(03) Following graph shows the variation of first ionization energy of some elements in the periodic table.



(i) Define the 1st ionization energy of an element?

.....

..... (2 M)

(ii) (a) What is the element which has the highest 1st ionization energy, according to the above graph? ..... (1 M)

(b) Write the electronic configuration of the above element.

..... (1 M)

(iii) (a) What is the bonding nature of the compound formed by reacting the element "y" with Hydrogen ..... (1 M)

(b) Draw the dot - cross diagram of it

(2 M)

(c) Write one instance where the element "y" can be found naturally in crystal form?

..... (1M)

(iv) Calculate the number of moles present in 16 g of sulphur? (S = 32)

.....

..... (1M)

(B) A student burned a well cleaned Magnesium strip in air.

(i) (a) Write one observation when it is burned?

..... (1 M)

(b) Write the balanced chemical equation for the above reaction.

..... (1 M)

(c) What type of a reaction is it?

..... (1 M)

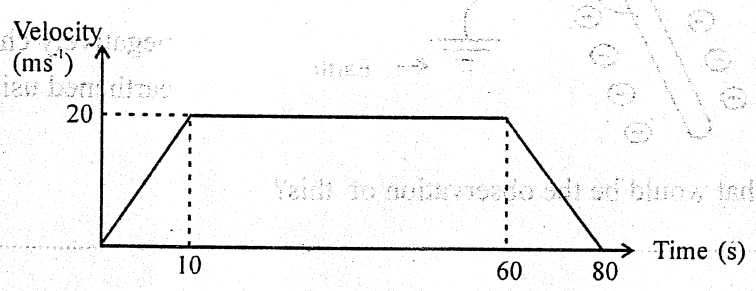
(ii) (a) What is meant by a catalyst?

..... (2 M)

(b) Which catalyst is used in the process of producing margarine using plant oil?

..... (1 M)

(04) (A) Velocity time graph of an object moving along a simple linear path is given below.



(i) Define "velocity"

..... (2 M)

(ii) Describe the motion of the above object.

.....

.....

..... (2 M)

(iii) Calculate the total displacement of the object.

.....

..... (2 M)

(iv) Calculate the acceleration of the object within the first 10 seconds.

.....

..... (2 M)

(v) Write down the relationship between the force applied on the object and the frictional force acting on it during the time period of 10s - 60s

..... (2 M)

(B) (i) The weight of an object which is hung on a spring balance is 16N. What is the mass of it? (gravitational acceleration = $10ms^{-2}$)

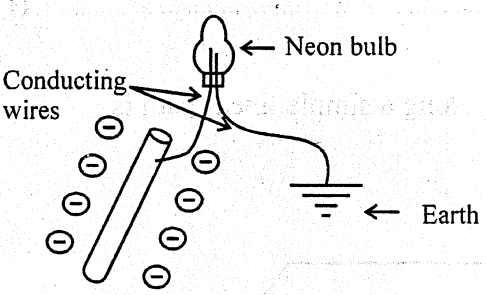
..... (1 M)

(ii) Two men applied 250N and 200N forces to push a stopped motor car. What is the resultant force acting on the car?

.....

..... (1 M)

(C)



Above diagram shows an instance where a Neon bulb connected to a negatively charged PVC tube is earthened using conducting wires.

(i) What would be the observation of this?

..... (1 M)

(ii) Explain the process that involved in above observation.

.....

.....

..... (2 M)

Part II - Essay 5816

*** Answer three questions only.**

(05) (A) Water has various properties that are essential for the existance of life.

(i) Give one example where solubility of water is important for living beings. (1 M)

(ii) (a) What is the reason to categorize autotrophs into two groups as photoautotrophs & chemoautotrophs (2 M)

(b) Name the group of living beings which belongs to chemoautotrophs (1 M)

(iii) Write a disorder due to iodine deficiency in human (1M)

(B) Animals as well as plants do reproduction.

(i) What is the reason for using meristematic tissues of plants for tissue culture? (1 M)

(ii) Write down 2 advantages of tissue culture than the other methods of vegetative propagation. (2M)

Results of Mendal's experiment with relevant to a characteristic of a pea plant is given in the following table.

Character	hybrid	F_1	F_2	
Colour of seeds	yellow/ green	yellow 100%	yellow 602	green 200

(iii) According to these results, draw the pattern of inheritance of the colour of the pea seeds upto the F_2 generation using symbols. (4 M)

(iv) Write down the genotype ratio according to the above inheritance. (1 M)

(v) Write down 2 genetic disorders due to sex linked inheritance. (2M)

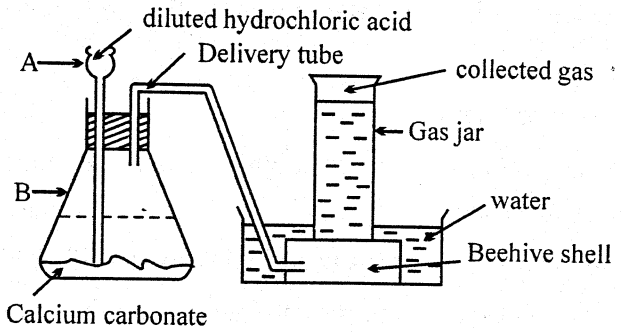
(vi) What is the most common bacteria used in genetic engineering? (1 M)

(vii) How does the genotype of an organism can be altered using genetic engineering? (1M)

(viii) Write down the 3 main steps of the development and differentiation of a multicellular organisms (3M)

(20 Marks)

(06)



This diagram shows a laboratory set up arranged to test the effect of concentration of reactants on the rate of reaction.

(i) Name the equipment A and B? (2 M)

(ii) Write the balanced chemical equation of reaction between calcium carbonate and diluted hydrochloric acid (2 M)

(iii) What type of a reaction is it? (1 M)

(iv) Within 5 minutes 50ml of gas is collected from the above reaction.

(a) Based on the above data build an equation to calculate the rate of reaction (2M)

(b) Calculate the reaction rate using the above equation. (2 M)

(v) State how can the same set up be used to find the effect of HCl concentration on the rate of the above reaction. (2 M)

(vi) Design a suitable table to record the data of the above experiment. (2 M)

(vii) Write 2 other factors that affect on reaction rate other than the concentration of reactants. (2 M)

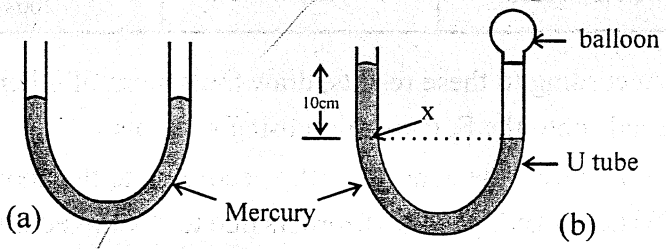
(viii) What is the gas collected in this experiment? (1 M)

(ix) Write 2 physical properties of the above gas. (2 M)

(x) According to the rate of reaction of Mg, Cu & Al with dil HCl, arrange the elements in the descending order of their reactivity. (2 M)

(20 Marks)

(07) (A) The following diagrams shows a U tube filled with mercury. One arm of the U tube is connected to an air filled balloon. (density of Hg = 13600kgm^{-3}, g = 10ms^{-2})



(i) What is the reason to have equal levels of mercury in both arms of the U tube shown in the diagram "a" (1 M)

(ii) Calculate the pressure at point "x" in diagram "b" (2 M)

(iii) What is the air pressure inside the balloon? (1 M)

(iv) (a) State one problem that can arise if coloured water is used to fill the U tube instead of mercury (1 M)

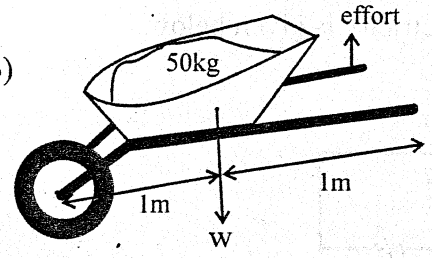
(b) What is the reason for the above problem? (1 M)

(v) If the mercury barometer shows a mercury column of height 76cm at the sea level, calculate the atmospheric pressure in Pascal. (2 M)

(vi) Write 2 instances where the atmospheric pressure is used in day to day life (2 M)

(vii) Write a precaution that have taken to decrease the pressure, acting on the road by a heavy vehicle. (1 M)

(B)



Following diagram shows how a 50kg bag of cement is lift using a wheelbarrow.

(i) What is moment of force acted on the wheel barrow by the bag of cement? ($g=10ms^{-2}$) (2M)

(ii) Calculate the effort that should be applied to lift the bag of cement slightly. (2 M)

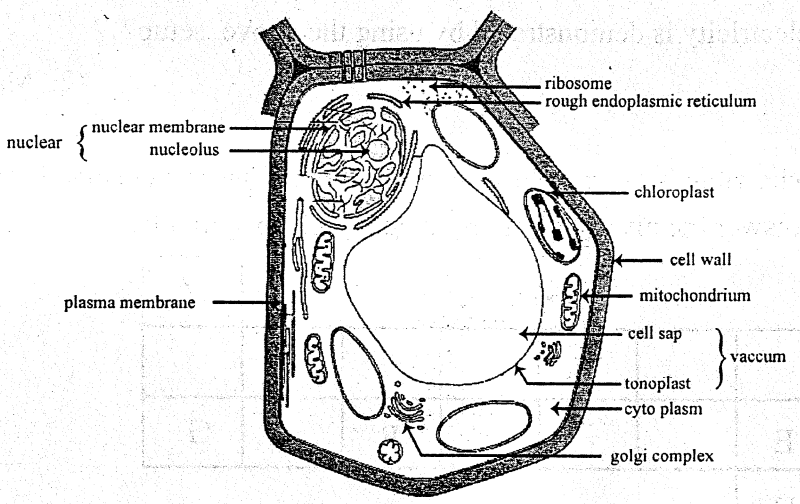
(iii) As which type of a simple machine does the wheel barrow act, when lifting the bag of cement? (1 M)

(iv) The man puts a force of 200N to push this wheel barrow. Calculate the amount of work done, when this wheel barrow is pushed 100m (2 M)

(v) If 10 minutes is spent on doing this task, find the power of him. (2 M)

(20 Marks)

(08)



A diagrammatic representation of an electron microscopic structure of a cell is given above.

(i) (a) Identify whether this is an animal cell or a plant cell? (1 M)

(b) Write 2 characterstics of the above cell that can be used to prove your answer (2 M)

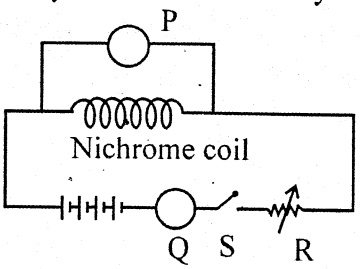
(ii) Draw a diagram of the cell organelle that involves in cellular respiration. (2 M)

(iii) Name 04 organelles that can be observed under the high power of a light microscope. (2 M)

(iv) Write two things presented by cell theory. (2 M)

(v) Explain, what is meant by cell differentiation. (1 M)

(B) A circuit that is used to test a theory related to electricity is given below.



(i) Name the instruments P and Q. (2 M)

(ii) Write the name of R and the use of it. (2 M)

(iii) What is the maximum voltage that can be obtained by using 4 torch batteries ? (1M)

(iv) When the switch is on 0.2 A current flows through the Nichrome coil and the voltage is 4.2V.

(a) Using the readings calculate the resistance of the Nichrome coil? (2 M)

(b) What is the method that could be used to find the resistance of the Nichrome coil more accurately ? (2 M)

(v) What law of electricity is demonstrated by using the above setup? (1 M)

(20 Marks)

(09) (A) Part of a periodic table is given below. Symbols are not the real chemical symbols of elements. Answer the given questions using the given symbols.

							A
			B			C	
D	E				F		G
	H						

(i) Write the electronic configuration of H. (2 M)

(ii) (a) Which symbol represents the element with the highest electronegativity value. (1 M)

(b) What is the physical state of "F" found in nature? (1 M)

(iii) Write the chemical formula of the compound formed by the reaction between D & F (2 M)

(iv) Draw the dot cross diagram of the compound formed when two C elements are bound covalently. (2 M)

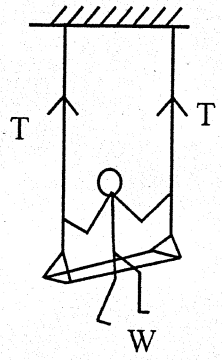
(v) D atom contains 12 neutrons in its nucleus. Write its atomic number and mass number according to the standard way. (2 M)

(B) (i) The following is a table which is related to the way how the frictional force acts in the opposite direction of the motion, when a force is applied on a wooden block placed on the table. Complete it.

	Instance	Type of the frictional force
1.	A force is applied but no relative movement of objects	a. .....
2.	When force is applied on the object the movement just starts.	b. .....
3.	When force is applied the object shows a relative movement	c. .....

(3 M)

(ii) This is a diagram of a child swinging in the school play ground.



(a) What is the type of equilibrium use to keep the swing at balance? (1M)

(b) Represent the equilibrium state using the given symbols. (2M)

(c) Calculate the kinetic energy if the student is swinging at a velocity of $5ms^{-1}$ and the mass of the student with the swing is 30kg (2M)

(d) Where does the child have the maximum potential energy? (1M)

(e) If one string of swing is broken state the new equilibrium state (1M)

(20 Marks)