ශාන්ත පීතර විදුහල - කොළඹ 04
புனித பேதுரு கல்லூரி, கொழும்பு 4
St. Peter's College - Colombo 04

E II

10 ශ්‍රේණිය – විශේෂ ඇගයීම (දෙවන වාරය) - 2022
தரம் 10 - விசேட மீளாய்வு (முதலாம் தவணை) - 2022
Grade 10 – Special Evaluation (Second Term) - 2022

විද්‍යාව - II
Science - II

පැය 02
Two Hours

Instructions:

- **Write with clear hand writing.**
- **Answer four questions in part A using provided spaces.**
- **Write only selected three questions in part B.**

Section - A

(01) (A) (i) Invertibrates can be divided in to five groups according to their common features. Fill in the table given below relavent to their features. (02m.)

Invertebrates	Example	Living environment
Cnidaria	Hydro	aquatic
Annelida	(a)	aquatic
(b)	Snail	aquatic / terrestrial
Arthropoda	(c)	aquatic / terrestrial
(d)	Star Fish	aquatic

(ii) Water is an essential medium for the maintenance of living organisms write two specific features of water. (01m.)

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(iii) Write two main features of Phylum arthropods. (01m.)

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(iv) Write the type of body symmetry of following organismal

1. Snail .....

2. Star fish ..... (01m.)

(B) (i) Sea water is a mixture of ionic compounds. It Cantains such as water, sodium chloride, and Potassium Chloride. Classify above compounds as Ionic compounds and covalent compounds.

1. Water .....

2. Sodium Chloride ..... (02m.)

(ii) Briefly explain how to arrange Na^+ and Cl^- ions in Sodium lattis. (02m.)

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(iii) Write a special Chemical property that can be gained by Sodium Chloride due to its lattice Structure. (01m.)

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(C) You have to plain an activity to demonstrate that the Frictional force depends on the nature of the surface in contact. You have provided a spring balance, table and strings for the activity.

(i) Write another two requirements except given above. (01m.)

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(ii) State two instances that are taken to record your observations. (02m.)

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(iii) Write an assumption that you made in above activity. (01m.)

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(iv) Write a factor that should be remain constant during the activity. (01m.)

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(02) (A) A group of students visited a filed trip to investigate vegetaive propagation and sexual reproduction of plants. Given below are some plants which they observed.

Curry leaves, Akkapana, Shoe flower, Orchid, Cashew, Coconut, Sesbana, Madatiya (Read bead), Ladies fingers, Ginger, Habarala

(i) Select the plants which reproduce by underground stem. From above state the type of underground stem to which it belong? (01)

Name of the plant	Type of underground stem
.....	.....
.....	.....

(ii) Write two advantages of undeground stems instead of vegetative propagation. (01 m.)

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(iii) The sexual structure of a plant is flower. What is the most suitable plant from above to examine the sexual structure of it. (01 m.)

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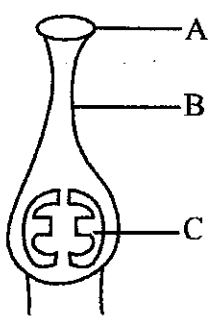
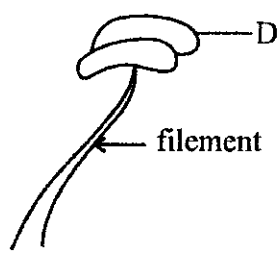
(iv) Diagram given below shows a gynoecium and Andriecium of a flower.





(a) Name A, B, C and D of above diagram.

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

C - ..... D - ..... (02 m.)

(b) Define the word pollination using letters given in the diagram. (01 m.)

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(c) Write two steps can be occured in a flower from pollination to fertilization. (Use given letters) (02 m.)

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(d) Hercogamy is a adaptation which avoid self Pollination of flowers. Name a plant which shows hercogamy. (01 m.)

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(e) What is known as monoecium plant. State a plant which belongs to that types from above list. (01m.)

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(v) Given below are some vegetative parts of a plant. Write corresponding plants from above list of the given parts. (01m.)

Vegetative part	Name of the plant
Root	.....
Stem cutting	.....

(B) Given below are some fruits and seeds which collected to inrestigate about method of dispersal of fruits and seeds.

Olicastor, Gammalu, Milk weed (wara), Olinda, Lotus, Red bead (Madatiya)

(i) State a seed which adapt to dispears by means of both explosive mechanism and animals? (01m.)

.....

(ii) Write a seed which dispersed by means of wind and state two adaptation of it ti dispers by wind. (01m.)

(a) Name of the seed .....

(b) Adaptation .....

(iii) Spreding away of the fruits and seeds from the mother plant during the dispersal. Write two requirements which fullfil the plant from above process. (02m.)

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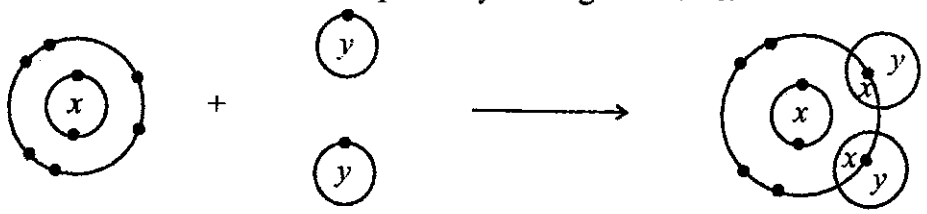
(03) (A) Given below is a formation of a compound by binding two atoms.



(i) Mention X and Y. (02m.)

x - ..... y- .....

(ii) Write Valencies of the X and Y. (02m.)

x- ..... y- .....

(iii) State the type of bond which formed above. (01m.)

.....

(iv) Draw a Lewis structure of above compound. (02m.)

(v) Write a formula of a compound with covelant double bands. (01m.)

.....

(B) It is cumbersome to use common measuring unit of quanttifiation of atoms of elements.

(i) What is the name of that unit. (01m.)

.....

(ii) Name the element that should be used as above measuring unit. (01m.)

.....

(iii) Define the mass of magmisium relative to above unit. (02m.)

.....

.....

(iv) Calculate the relative moleculer mass of H_2SO_4 (H = 1, S = 32, O = 16) (02m.)

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(v) State an elemant with lawest mass in H_2SO_4 molecule (01m.)

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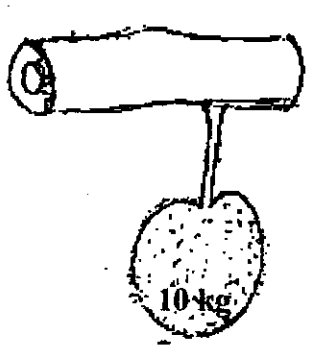
(04) Diagram below shows the Jak fruit with 10kg of mass which hanging on a branch. At the momant it detaches from the stak takes 2 seconds to fall down on the earth. ($g = 10\ ms^{-2}$)



(i) Explain the reason for Jak fruit does not fallan down relative to equilibrum of forces. (01m.)

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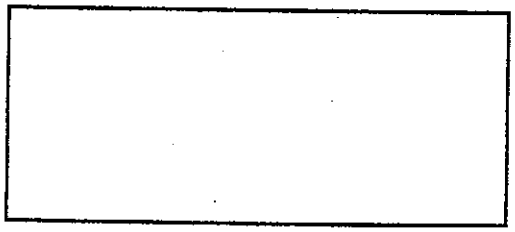
(ii) Draw a rough diagram of Jak fruit and mark the forces which applied on it. (02m.)



(iii) According to the mass of Jak fruit.

(a) What is the name of the force which exarted downword on fruit. (01m.)

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(b) Find the Valùe of that force. (01m.)

.....

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(iv) Find the resultant force of Jak fruit before it fallon down on earth. (01m.)

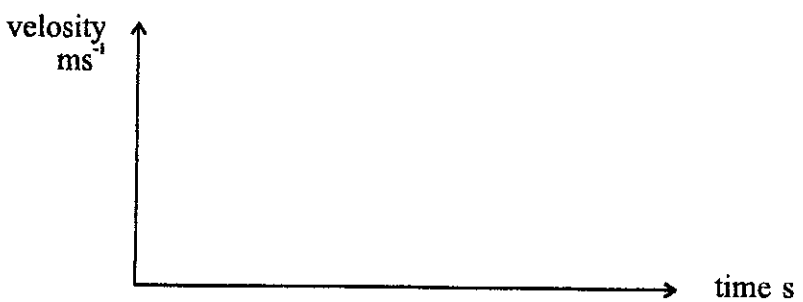
.....

(v) Write two requirements should be fallfil to remains in equilibrium of Jak fruit. (02m.)

1. .....

2. .....

(vi)(a) Draw a velocity time graph to illustrate the motion of Jak fruit which falling on to the ground. (02m.)



(b) What is the conclusion you can arised with in the shape of the graph? (01m.)

(vii) The Jak fruit takes two seconds to fall to the ground.

(a) Calculate the height to the Jak fruit few the ground. (02m.)

.....

.....

.....

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(b) Find the velocity of Jak fruit when it reaches the grand. (02m.)

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(05) (A) Given below is a Classification of vertebrates

Pisces	Amphibian	Reptilia	Aves	Mammalia

(i) What feature of organisms can be used to introduce it as Vertebrates. (01m.)

(ii) Classify given organisms in to two groups as worm blooded (Homiothermic) and Cold blooded (Pokilothermic) (02m.)

(iii) Write corrosponding animal group of vertebrates given bellow. (Frog / Bat / Tilapia / Lizard) (02m.)

(iv) Main Locomotive method of aves is flying. Write two adaptations which they shows to fly. (02m.)

(v) According to the binomial nomenclature name of the man is Homosapeians. Write two convections used in binomial nomenclature. (02m.)

(vi) Write a differance between natural classification and a artificial classification. (01m.)

(B) The most prominent organisms with a celluler organization belong to domain Eukarya. They have the ability to live in different environments.

(i) (a) Name the Kingdom which algae belongs. (01m.)

(b) Write another organism which belongs to kingdom given above instead of algae. (01m.)

(ii) (a) What is the compound that contributes to build up cell walls of fungi. (01m.)

(b) Explain briefly, The effect of fungi to the equilibrium of environment. (01m.)

(c) What is the name of fungi which used in bakery products. (01m.)

(iii) (a) Name the kingdom which belongs to domain Eukarya consist of multicellur organisms have the ability to photosynthesise. (01m.)

(b) Given below are non flowering plants belongs to the above kingdom.

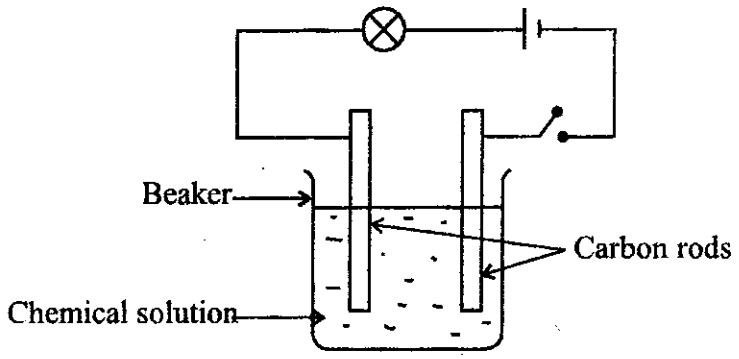
Poganetum	Pinus	Sellagenlla	Cycas

Classify above plants in to categories as Non flowering seed plants and non flowering seedless plants. (02m.)

(c) Write two features of non flowering seedless plant. (01m.)

(d) Write a difference between monocotyledon plants and dicotyledon plants. (01m.)

(06) (A) Given below is a experimantal set-up used in laboratory.



(i) What can be conclude by the setup. (01m.)

(ii) A - Salt solution B - Glucose solution

Solution A an B added separately in to a beakers.(02m.) In which instance lighted up the bulb. (02m.)

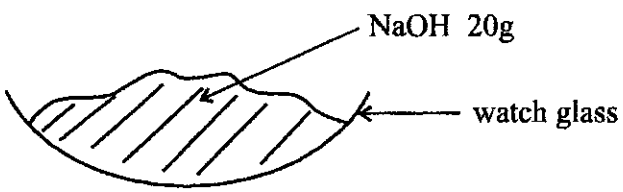
(iii) What is the reason for your answer? (02m.)

(iv) A student said, reason for the above observation is nature of Chemical bond of solution. Write type of chemical bond include in A on B separatcly. (02m.)

(v) Write another two features of type of bonds include in salt solution. (02m.)

(vi) Draw a dot cross diagram to show formation of NaCl. (02m.)

(B)



It is required to calculate the number of moles of NaOH in watch glass.

(i) Write two value required to calculate the number of moles? (02m.)

(ii) Calculate the number of moles in 20g of NaOH. (02m.)

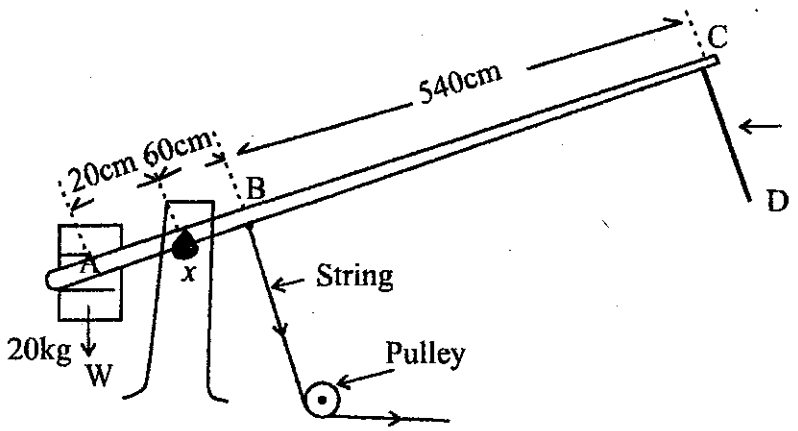
(iii) How many atoms are there in 1 mole of a elemant. (01m.)

(iv) How many atoms are there in 20g of NaOH. (01m.)

(v) Write the unit of moler mass. (01m.)

(vi) Write two instruments can be used to measure the mass of a substance in laboratory. (02m.)

(07) (A) Diagram shows a rail gate used in railway crossing. It is operated by a light weighted rod which fixed a string to it 60cm away from X. The load of 20kg is hang on A and length from X to A is 120cm. The length from B to C is 540cm.



(i) What is the letter denoted by axis of rotation of above ABC rod. (01m.)

(ii) If the length of A to X is decreases. The load hang at B also .....

(a) Do you agree with the statement given above. (01m.)

(b) Write the reason for your answer. (01m.)

(iii) Sugges another method to decrease the force applied on B. (02m.)

(iv) Calculated the force required to close the gate by pulling the string at B. (02m.)

(v) The rod become equilibrum in horizentaly by pulling the string. Calculate the reaction force exerted on X by the suporter. (02m.)

(B) If the sting has been broken there will be used another CD string to close the gate.

(i) What is the minimum force should be applied on CD string. (02m.)

(ii) Mention the principal of physics that can be used to find the answer above. (01m.)

(iii) Write an expression for that. (01m.)

(iv) What is the condition must be satisfied for a rod to remain in equilibrium. (02m.)

(v) (a) Write two places where energy wastage can be occured. (02m.)

(b) Write energy transformation can be found in the instance. (01m.)

(iv) Write two strategies can be sued to prevent the energy wastage of it. (02m.)

(08) (A) The table given below shows some observations gain by the students. Who take part in an activity ti investigate about characteristics of organisms.

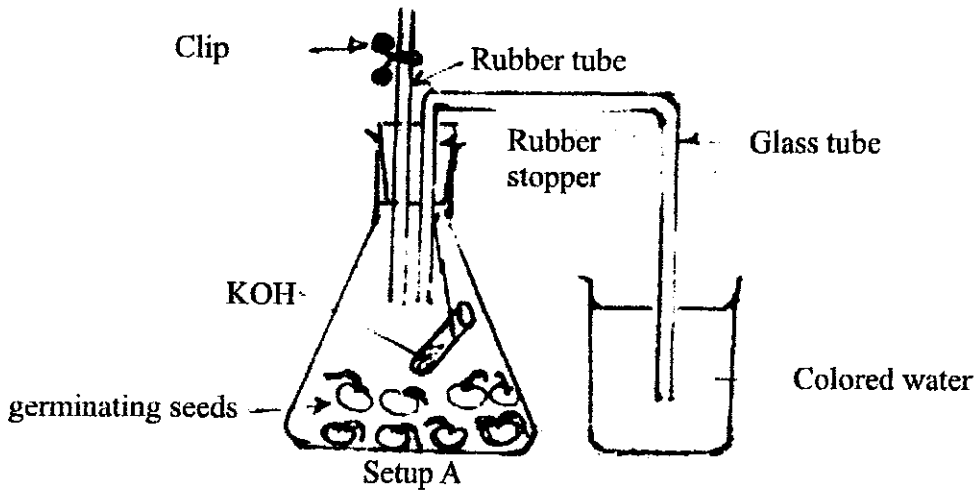
Activity	Observation
a Touch the leaves of mimosa plant at day time.	Show the sleep movement.
b Keep the potted plant at a window	The plant apex grows to the direction of the sunlight.

(i) Mention the characteristic demonstrated by the activity. (01m.)

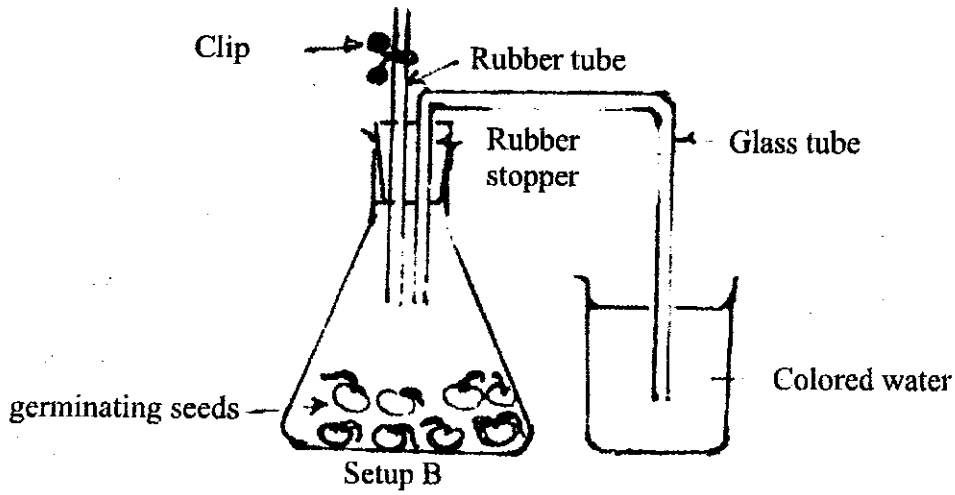
(ii) Write stimuli and respond seperatly in above activity. (02m.)

(iii) After a week it can be seen the plant grow out from the window. Define what is growth. (02m.)

(iv) Respiration is a charactaristic of organism. Given below is a set up used to show absorption of Oxygen in respiration.



Setup A



Setup B

Question No. 08

(a) Write a name of a seed can be used here on. (01m.)

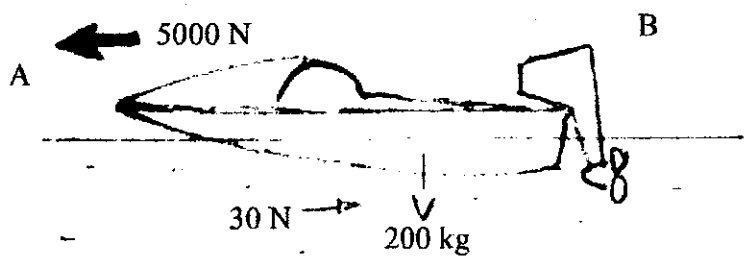
(b) Write observations in A and B respectively. (01m.)

(c) Explain your observation due to the function of KOH in set up A. (01m.)

(d) In which organelle take place the cellular respiration. (01m.)

(e) During the respiration it absorb Oxygen and relized Carbon dioxide. What is the laborotoy regent can be used to identify carbon dioxide. (01m.)

(B) The diagram shows a boat remain on water at rest. The weight of it is 200N. The resulted force applied on boat is 5000N while it is moving with uniform velocity towards A. The force of 30N applied on boat as reactent force againest the motion of it.



(i) (a) State the direction of force applied by the engine to move it toward the A using letters A and B. (01m.)

(b) Write the reason for your answer. (02m.)

(ii) Write the action and reaction of the boat during the motion. (02m.)

(iii) What is the force produce by the engine while it more forward. (02m.)

(iv) Calculate the acceleration of boat. (02m.)

(v) What change can be occurred in accleration of boat two passengers get on the boat. (01m.)

(09) (A) Verious element are used in many instances according to its different propertics.

(i) Write two chemical properties can be identified in metallic elements. (02)

(ii) Write can element stored in parfin wax. (01m.)

(iii) Write the observation can be obtained by cutting above lement in to pieces and exposed it in to air. (01m.)

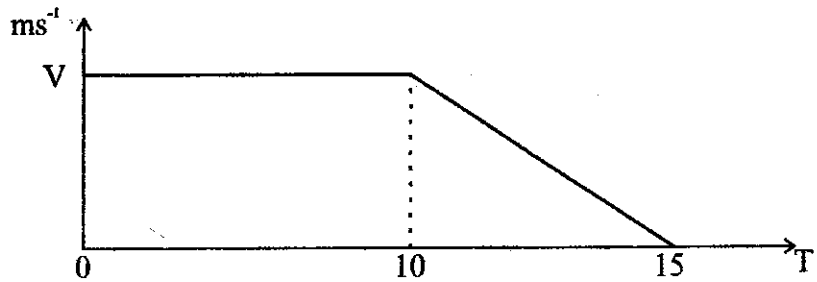
(iv) Write two physical properties of magnesium. (02m.)

(v) Write two observation can be obtained by burning in air. (02m.)

(vi) Write the element which used to volcanizing rubber. (01m.)

(vii) Mention the colour of above element. (01m.)

(B) A driver and a passenger traveling in a vehicle which moves with uniform velocity. The total mass of the vehicle with the two persons is 1000kg. Saddnly it applying brake and stop the vehicle. The velocity time graph for its motion is given below. ($g = 10\ ms^{-1}$)



(i) Write an instance where couple of force is used by the driver. (01m.)

(ii) The distance travers by the vehicle is 600m before the applying brake on it. Calculate the velocity (V) of the vehicle. (02m.)

(iii) Calculate the reaction force which exarted on ane wheel of the vehicle by road. (01m.)

(iv) What physical property of tyres contributes to stop that vehicle properly. (01m.)

(v) Find the decelaration of the vehicle using the graph given above. (02m.)

(vi) Find momentum at the instance when it travelled with uniform velocity. (02m.)

(vii) What can be happent to the passenger due to moment of force while applying brakes. (01m.)