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Department of Education, Southern Province
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පළමු වාර පරීක්ෂණය 2019 මාර්තු
First Term Test, March 2019

10 ශ්‍රේණිය
Grade 10

SCIENCE - I
විද්‍යාව - I

පැය එකයි
One hour

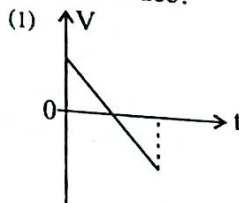
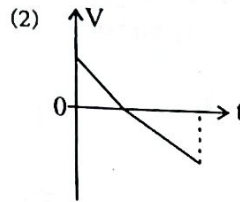
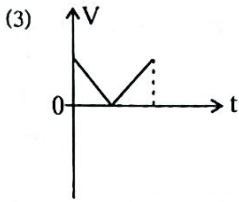
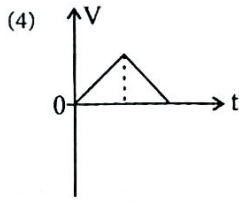
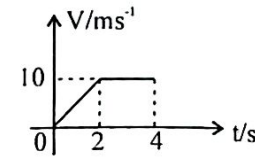
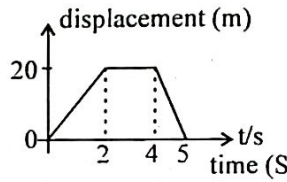
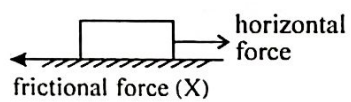
Name / Index No. :

- Answer all the questions.
- Select the most correct or most appropriate answer from the given answers (1), (2), (3), (4) from question No. 1 to 40.
- Put (x) mark on the relevant answer in front of the question number in the answer sheet provided.

01. Which of the following two minerals are present in the highest percentages in the human body?
(1) Na and I (2) Mg and Fe (3) Na and K (4) Ca and P
02. Which of the following is not a main biological molecule?
(1) Lipids (2) Carbohydrates (3) Ethyl alcohol (4) Nucleic acids
03. The products of hydrolyzing sucrose are,
(1) glucose (2) glucose and fructose
(3) glucose and galactose (4) galactose
04. The building unit of the plant cell wall is,
(1) glucose (2) cellulose (3) glycogen (4) lipids
05. Which of the following is/are made acting glucose as the building unit?
(1) Maltose (2) Starch (3) Glycogen (4) all of the above
06. A piece of fish was highly heated putting in a crucible. Then a substance that can draw black lines on a white paper was left. The conclusion that can be made by this is that bio molecules contain,
(1) the element N (2) the element C (3) the element O (4) the element H
07. Which of the following pairs of vitamins is fat soluble?
(1) A and D (2) B and C (3) C and D (4) B and E
08. What disease out of the following does not belong to the category of deficiency diseases?
(1) diabetes (2) bleeding of gum (3) anaemia (4) deforming of bones
09. Which of the following answer contains the vitamin and mineral that help for clotting blood?
(1) Vitamin D and Phosphorus (2) Vitamin C and Calcium
(3) Vitamin K and Calcium (4) Vitamin E and Phosphorus
10. Consider the statements regarding vitamins given below.
A - An organic substance.
B - Participates in bio chemical reactions in organisms and ensures proper existence.
C - Disease conditions occur when they are not in needed amounts

The true statements out of them are,

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

11. Using the fundamental units, the SI units of force is,
 (1) kg m s^{-1} (2) kg m s^{-2} (3) $\text{kg m}^2 \text{s}^{-2}$ (4) $\text{kg}^2 \text{m}^2 \text{s}^{-2}$
12. Which of the following V-t graphs show the motion of an object which is projected vertically upwards from the earth surface?
 (1)  (2)  (3)  (4) 
13. An object which was travelling with a uniform velocity of 10 m s^{-1} increased its velocity up to 14 m s^{-1} within 4s. What is the mean velocity of the object?
 (1) 1 m s^{-1} (2) 4 m s^{-1} (3) 6 m s^{-1} (4) 12 m s^{-1}
14. This graph shows how velocity of an object changed with time. Select the answer which shows the displacement made by the object correctly,
 (1) 10 m (2) 15 m (3) 20 m (4) 30 m
- 
15. An object travels 8m to the east from point A and comes to B. It travels 6m to the north from B and comes to C. What is the displacement of the object?
 (1) 2 m (2) 7 m (3) 10 m (4) 14 m
16. The displacement of an object which moves along a straight line is shown below. According to it, what is the distance travelled by it?
 (1) 0 m (2) 20 m (3) 40 m (4) 70 m
- 
17. This diagram shows how a horizontal force is applied on a block of wood placed on a rough surface. If the object is not moving along the surface, what is shown by X?
 (1) X = dynamic frictional force
 (2) X = static frictional force
 (3) X = limiting frictional force
 (4) X = none of the above
- 
18. In which of the following instance is the frictional force reduced?
 (1) applying lubricators between the surfaces which are in relative motion.
 (2) roughening the surfaces which are in relative motion.
 (3) making grooves in surfaces which are in relative motion.
 (4) changing the surface area of surfaces which are in relative motion.
19. An object starting from rest, travels along a straight line with a uniform acceleration of 7 m s^{-2} . Which of the following statement is incorrect regarding the object?
 (1) The velocity of the object at the end of the first second is 7 m s^{-1} .
 (2) The velocity is increased by 7 m s^{-1} in each second.
 (3) The velocity of the object at the end of 3s is 14 m s^{-1} .
 (4) The distance travelled by the object at the end of the first second is 3.5 m.

20. The velocity of an object with the mass of 20kg is 4 m s^{-1} . The momentum of this object in this instance is,

(1) $\frac{20 \text{ kg}}{4 \text{ s}}$

(2) $\frac{4 \text{ s}}{20 \text{ kg}}$

(3) $20 \text{ kg} \times 4 \text{ m s}^{-1}$

(4) $20 \text{ kg} - 4 \text{ m s}^{-1}$

21. A plastic ball and an iron ball were dropped onto a glass plate, being from the same height. The glass plate was broken into pieces when the iron ball struck on it. The reason for this phenomena is that,

(1) increasing the velocity of the iron ball.

(2) increasing the acceleration of the iron ball.

(3) increasing the temperature of the iron ball.

(4) increasing the momentum of the iron ball.

22. Which of the following is the electronic configuration of the element Mg?

(1) 2, 8, 1

(2) 2, 8, 2

(3) 2, 8, 3

(4) 2, 8, 4

23. Which of the following answer represents correctly the Sodium atom from which an electron is removed?

(1) ${}_{11}^{23}\text{Na}^{2+}$

(2) ${}_{11}^{23}\text{Na}^{+}$

(3) ${}_{11}^{23}\text{Na}^{2-}$

(4) ${}_{11}^{23}\text{Na}^{-}$

• The eight consecutive elements that belong to the third period of the periodic table are shown below.

Na, Mg, Al, Si, P, S, Cl, Ar

Answer question number 24, 25 and 26 using them.

24. What is the metallic element with the valency 2?

(1) Na

(2) Mg

(3) S

(4) Cl

25. A metalloid is,

(1) Mg

(2) Al

(3) Si

(4) P

26. The formula of the compound made by reacting Na and S is,

(1) NaS

(2) NaS_2

(3) Na_2S_2

(4) Na_2S

27. Four Oxides of elements in the third period are shown as A, B, C and D.

A = Na_2O

B = Al_2O_3

C = MgO

D = SiO_2

Which of the following answer shows correctly the descending order of the basicity of A, B, C and D?

(1) A, D, C, B

(2) A, B, C, D

(3) A, C, B, D

(4) A, D, B, C

28. The chemical formula of Sodium carbonate is Na_2CO_3 . The formula of Calcium chloride is CaCl_2 . If so, which of the following is the formula of Calcium carbonate?

(1) Ca_2CO_3

(2) $\text{Ca}(\text{CO}_3)_2$

(3) CaCO_3

(4) Ca_3CO_3

29. The allotropic form of the element carbon that conducts electricity is,

(1) fullerene

(2) diamond

(3) charcoal

(4) graphite

30. Which of the following instance is not relevant to the Newton's third law?

(1) The motion of the sky rocket.

(2) The motion of the canoe.

(3) The motion of the rocket.

(4) The motion of a fan.

31. The mass of a man is 60kg. The gravitational acceleration on the moon is $\frac{1}{6}$ th of that of the earth. What is the weight of the man on the moon?

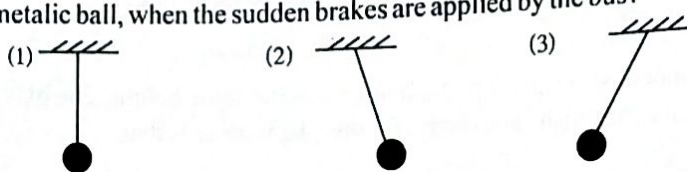
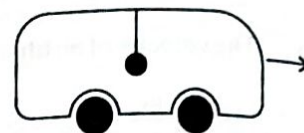
(1) 10 N

(2) 60 N

(3) 100 N

(4) 600 N

32. A metallic ball is hung on the roof of a bus using a light string. This diagram shows how the metallic ball exists, when the bus is moving with a uniform velocity. Which of the following diagrams shows correctly the location of the metallic ball, when the sudden brakes are applied by the bus?



33. A branch of a tree falls on the roof of a three wheeler which is travelling with a uniform velocity. If the velocity of the three wheeler is not changed, the momentum of the system is,
 (1) not changed (2) decreased (3) increased (4) decreased and increased later

34. The limiting frictional force between two contact surfaces,
 (1) is not changed according to the nature of the contact surface.
 (2) is changed according to the surface area of contact surface.
 (3) is changed according to the perpendicular reaction.
 (4) is not changed on the perpendicular reaction.

35. Rear wheels of the vehicle shown in the diagram are connected with the engine. The vehicle is moving forward. Which of the following answers show correctly how the frictional forces between the earth and the contact surfaces of wheels act?

front wheel	rear wheel
(1) forward	backward
(2) forward	forward
(3) backward	forward
(4) backward	backward



36. Uses of some metals are shown below.

A - Making alloys needed in air craft industry.

B - Acting as a sacrificed metal to prevent corrosion of iron.

C - Using as an electric conductor.

Out of the above uses, what are the uses relevant for the metal Mg?

- (1) only A and B (2) only A and C (3) only B and C (4) all A, B and C
37. Which of the following is the most common isotope of Hydrogen?
 (1) ^1_1H (2) ^2_1H (3) ^3_1H (4) ^4_1H
38. Which of the following element has 4 electrons in its valence shell ?
 (1) Na (2) Al (3) Si (4) Cl
39. The number of electrons and protons respectively in the ion shown by the symbol $^{16}_8\text{O}^{2-}$ are,
 (1) 10 and 8 (2) 8 and 10 (3) 3 and 16 (4) 10 and 16
40. Which of the following vertebrate group is adapted successfully to the terrestrial environment in the evolution of organisms?
 (1) pisces (2) amphibians (3) aves (4) reptilia

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පළමු වාර පරීක්ෂණය 2019 මාර්තු
First Term Test, March 2019

10 ශ්‍රේණිය
Grade 10

SCIENCE - II
විද්‍යාව - II

පැය තුනයි
Three hours

Name / Index No. :

- Instructions :-
- Write answers in neat handwriting.
 - Answer the four questions in Part A, in the space provided.
 - Of the five questions in Part B answer the questions only. After answering, tie Part A and the answer script of Part B together and hand over.

Part - A (Structured essay)

- (01) (A) During the day, sun's heat causes the earth's surface to be heated. This heat leaves the surface towards the sky at night. However, different gases and water vapour absorb this heat partially. Due to this, the earth's atmosphere is kept warm. The phenomenon helps to create an environment that is fit for life.
- (i) (a) What is the scientific term for the phenomenon described in the paragraph?
-
- (b) Mention the main gas and another gas that contribute for the above phenomenon respectively.
-
- (ii) The normal atmospheric temperature has been changed from 13.8°C to 15.6°C during the 100 years from 1915 to 2015.
- (a) Mention 2 human activities responsible for increasing the global warming.
-
- (b) Mention 2 environmental crises risen due to increasing global warming.
-
- (c) Mention 2 steps that can be taken to reduce increasing global warming further.
-
- (B) Speeding up of the consumption of natural resources is an unavoidable condition.
- (i) What is the main reason for speeding up of the consumption of natural resources?
-
- (ii) What are the natural substances used for the following products?
- (a) Cement -
- (b) Iron -
- (b) Clothes -

(iii) What is meant by sustainable use of natural resources?

(02) (A) A mind map relevant for several bio-molecules belonging to a group of main biological molecule is shown below.

The bio molecule represented by H is commonly found in dairy products. A, B and C has the molecular formula of $C_6H_{12}O_6$.

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

(ii) What is the bio molecule represented by G?

(iii) Will a bio molecule be formed by combining B and C?

(iv) Mention 2 examples for the bio molecule represented as I.

(v) 5 ml of aqueous solution of A, B or C is taken to a test tube and 5 ml of benedict solution is added. This mixture is heated in a water bath. Mention the order of observations obtained in this test.

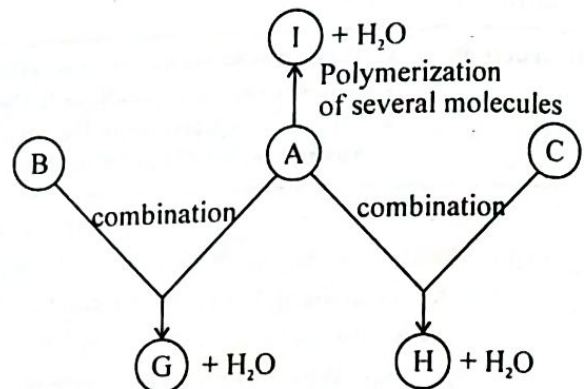
(B) A student had brought a meal with rice, dhal curry, gotukola sambol and dried fish fry for his lunch. A ripen banana was brought as the dessert.

(i) Mention the nutrient/nutrients present in the substances shown below.

(a) rice -

(b) dhal -

(ii) What is the advantage of eating gotukola sambol and banana by him other than their nutritional value?



- (iii) Mention the steps and the observations of the activity done to identify the main nutrient present in rice.

.....

.....

.....

.....

- (iv) Blackish blisters are seen on knees and elbows of the child. What vitamin deficiency is the reason for this condition?

.....

(03) The table below shows how the displacement of A and B children are changed with the time.

Time (s)	0	1	2	3	4	5	6	7	8
Displacement of A (m)	0	2	4	6	6	6	4	2	0
Displacement of B (m)	0	3	6	6	6	6	4	2	0

Answer the following questions using this table.

- (i) Answer these questions relative to the initial position during the period of motion.

- (a) The maximum displacement of A.

.....

- (b) The maximum displacement of B.

.....

- (ii) Which child out of A and B reached the maximum displacement soon?

.....

- (iii) What is the time period that B stops after reaching the maximum displacement?

.....

- (iv) (a) What is the displacement of A after completing 7 seconds of starting the motion?

.....

- (b) Mention his location after moving another second from that place.

.....

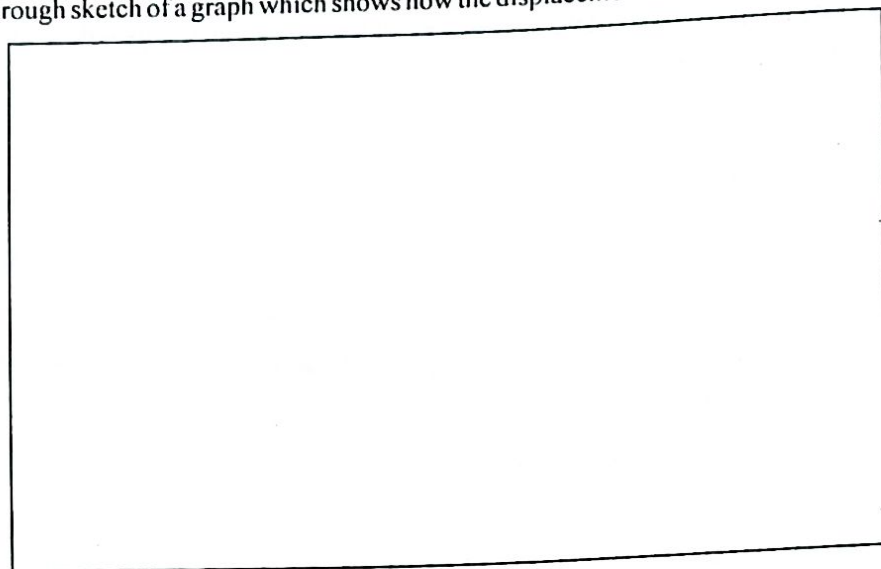
- (v) (a) What is the distance travelled by B within 8 s?

.....

- (b) According to it, calculate his average speed.

.....

- (vi) Draw a rough sketch of a graph which shows how the displacement of A changes with time.



- (vii) What is the rate of change of displacement of A within the first 3 seconds?

- (04) (A) Atom is known as the building unit of matter. It has been discovered that there are several particles in an atom. They are known as sub atomic particles. Elements are made out of relevant atoms to them.

- (i) Mention the international symbols for the elements shown below.

(a) Carbon - (b) Sodium -

- (ii) How an aluminium atom is represented is shown below.



- (a) Mention what are shown as 27 and 13 here respectively.

.....

- (b) In the Al atom,

- (1) Mention the number of protons and neutrons present in the nucleus respectively?

.....

- (2) How many electrons are there in the atom?

.....

- (3) Mention how there electrons are arranged in energy levels. (electronic configuration)

.....

- (4) According to the above answer, mention to which period and group does the element Al belong in the periodic table.

.....

- (B) Many elements exist as chemical compounds by combining with other elements. These elements combine with others balancing their valencies.

- (i) Mention the elements present in these compounds.

(a) Sodium Chloride -

(b) Calcium Oxide -

(c) Di hydrogen Oxide (water) -

(d) Carbondioxide -

- (ii) The valencies of Al and O respectively are 3 and 2. Write the formula of the compound made by combining Al and O.

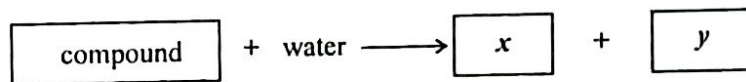
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PART - B (ESSAY)

(05) This table shows percentages based on masses of several elements present in the human body.

element	percentage based on mass %
O	65
C	18
H	10
N	03
others	x

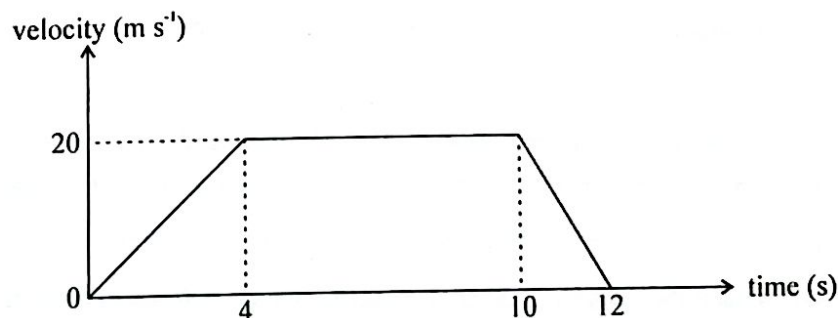
- (i) Mention the value of x.
- (ii) Mention the most common 2 elements out of the elements mentioned as others.
- (iii) (a) Mention the 2 main organic compounds that contain C, H, O and N.
(b) According to the composition of elements, what is the main difference of these two compounds?
(c) Write a function done by 2 organic compounds mentioned in part (a) each.
- (iv) (a) Name an inorganic compound that contains element C and a chemical compound that contains H in the human body.
(b) Mention 2 properties of the compound you mentioned which contains the element H that contributes for the maintenance of life.
- (v) (a) Mention the organic compound that can be identified by the sudan III solution.
(b) The reaction relevant to the hydrolyzation of the above compound is shown below.



Name the compounds obtained as x and y.

- (c) Write a significance of the compound mentioned in part (a) that helps for the survival of life.

(06) The velocity time graph of an object which started its motion at rest and travelled along a straightline is shown below. Answer the questions relevant to the graph.



- (i) Explain the motion of the object briefly.
- (ii) (a) Define the word "acceleration".

- (b) Find the acceleration of the object between 0s - 4s.
- (c) If the mass of the object is 27kg, calculate the unbalanced force that is acted on the object.
- (iii) (a) What is the velocity of the object at 6th second?
- (b) What is the distance travelled (displacement of the object) by the object within 4s - 10s?
- (iv) Momentum can be obtained by this equation. $\text{Momentum} = \text{Mass} \times \text{Velocity}$. If so, in which time period is the momentum of the object decreased gradually?
- (v) What is the mean velocity of the object within 0s - 4s?
- (vi) Mention the time period that the object travelled according to the Newton's first law.

(07) The diagram below shows an incomplete chart of the periodic table. Answer the questions given below using it.

H							He
Li	(I)	(II)	C	(III)	(IV)	F	Ne
Na							
K							

- (i) Write the symbols relevant for the elements shown as (I), (II), (III) and (IV) in sequence.
 - (ii) Why are Li and Na categorized under the group (1)?
 - (iii) Mention a similarity and a difference between the elements Li and C.
 - (iv) What is the speciality of the elements He and Ne relative to the other elements?
 - (v) Out of the elements Li, C, F and Ne mention the element with the highest electro negativity and the element with the highest first ionization energy respectively.
 - (vi) Mention the formula of the compound made by reacting C and H. Show in a diagram how atoms are arranged in a molecule of it.
 - (vii) The first ionization energy of K relative to Li is high or low? Explain the answer.
 - (viii) Write the symbols of 2 gaseous elements that can be used to fill weather balloons.
- (08) (A) A coconut from a coconut tree detaches from the stalk and falls vertically down. It takes 4s. (Consider the acceleration due to gravity is 10 m s^{-2} and air does not create any resistance)
- (i) Draw a rough velocity - time graph for the motion of the coconut.
 - (ii) (a) What is the velocity of the coconut at the moment it detaches from the stalk?
 - (b) What is the velocity of the coconut at the moment it touches the ground?
 - (c) What is the height of the object?
 - (d) Describe simply how the displacement of the coconut changes at each second relative to the place it attaches to coconut tree.

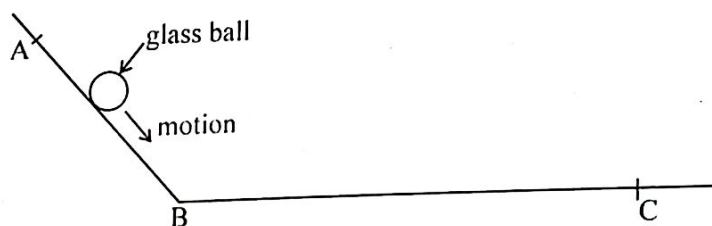
- (B) (i) Mention 2 characteristics possessed by monocotyledonous plants that can be seen in the coconut tree.
- (ii) (a) What is the most common organic compound that can be seen in the coconut tree?
 (b) Mention the main biological molecule that the above compound belongs to.
- (iii) Mention the natural agent that helps to disperse coconuts.
- (iv) Name two main bio molecules present in the edible part of a coconut.

(09) (A) Uses of 4 elements are explained below.

- A - Used as a raw material in the production of ammonia industrially.
 B - Used in Vulcanizing rubber.
 C - Used to produce Calcium Carbide.
 D - Used in the production of street lamps with a yellow glow.

- (i) Identify the elements A, B, C and D and name them.
 (ii) Write 2 observations obtained when the element D reacts with water.
 (iii) What is the other element which is not given above that should be heated with the element C to produce Calcium Carbide?
 (iv) (a) Mention another use of the element A.
 (b) Write the electronic configuration of A.
 (c) Mention to which group in the periodic table does A belong.

(B) A smooth glass ball placed on a smooth plane is released from A. It comes to B and move passing C.



- (i) What is the velocity of the glass ball at the moment it is released?
 (ii) Explain the motion of the glass ball in these instances.
 (a) When it is moving from A to B.
 (b) When it is moving from B to C.
 (iii) Show in a Velocity-time graph the motion explained in part (ii).
 (iv) Explain how the momentum of the glass ball changes in the instances below.
 (a) When moving from A to B.
 (b) When moving from B to C.