

Mid Year Examination - 2015

Science I

Grade 11

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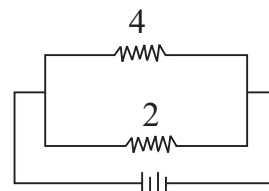
Time: 01 Hour

Name/ Index No.

• Answer all the questions.

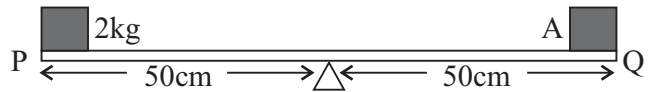
- 01 Cuticle of cockroach is made up of,
(1) Chitin (2) Calcium (3) Cutin (4) Feathers
- 02 Consider the statements given below.
A - has only one cotyledon in seed.
B - has a fibrous root system
C - presence of flower with 4 or multiples of 4 petals.
Features of a monocotyledon plant are,
(1) A and B (2) B and C (3) A and C (4) A, B, and C
- 03 A characteristic that can be seen in algae is,
(1) can be seen in aquatic environment (2) has no nuclear membrane
(3) being autotrophic (4) being mono - cellular or multi - cellular
- 04 Select the answer with components contain in urine of a healthy person,
(1) urea, protein, ammonia, water (2) urea, uric acid, water, salt
(3) urea, albumin, salt, water (4) urea, glucose, water, salt
- 05 Enzymes contain in pancreatic juice are,
(1) pepsin, Lypase, Tripsin (2) renin, amylaze, lypase
(3) pepsin, maltose, tripsin (4) amylaze, lypase, tripsin
- 06 Contraction and relaxation of blood vessels is controlled by,
(1) cerebrum (2) cerebellum
(3) medulla oblongata (4) autonomous nervous system
- 07 Plant which shows self - sterility as an adaptation for pollination.
(1) nutmeg (2) coconut (3) tridax (4) passion fruit
- 08 What is the group of elements with lower boiling points ?
(1) alkaline metals (2) metalloid (3) nobal gases (4) non-metals
- 09 A_ZX A and Z respectively are,
(1) A - mass number Z - Atomic number
(2) Z - mass number A - atomic number
(3) A - number of nurtons Z - number of protons
(4) A - number of nutrons + electrons Z - number of protons
- 10 periodic table as a classification of elements was presented by,
(1) Gregor Medndal (2) Dimitri Mendeleen (3) Galileo Galilei (4) Goldstein
- 11 Mollecular with tripple covalent bonds is,
(1) H₂O (2) O₂ (3) N₂ (4) CO₂
- 12 What is the chemical compound from the following having 98 relative atomic mass ?
(1) HCl (2) NH₄NO₃ (3) NO₂CO₃ (4) H₂SO₄
- 13 If formula of oxide of element X is X₂O₃, the formula of hydroxide of X is,
(1) X(OH)₂ (2) X₂(OH)₃ (3) X(OH)₃ (4) XO₃H

- 14 What is the balanced chemical equation with chemical combination reaction ?
- (1) $\text{Zn}_{(s)} + \text{CuSO}_{4(aq)} \rightarrow \text{ZnSO}_{4(aq)} + \text{Cu}_{(s)}$ (2) $\text{CaCO}_{3(s)} \rightarrow \text{CaO}_{(s)} + \text{CO}_{2(g)}$
 (3) $\text{Mg}_{(s)} + \text{O}_{2(g)} \rightarrow \text{MgO}_{(s)}$ (4) $\text{Fe}_{(s)} + \text{S}_{(s)} \rightarrow \text{FeS}_{(s)}$
- 15 An observation can be seen when an air bubble comes up from the bottom of a pond is,
- (1) volume of air bubble is increasing when it comes up.
 (2) mass of air bubble is decreasing.
 (3) volume of air bubble is gradually decreased when air bubble comes up.
 (4) cannot say anything.
- 16 Jak-latex cannot be removed from water. But can be removed easily by using kerosene oil. What are equal in polar properties from the solvents and solute used here ?
- (1) water, Jak latex (2) Jak latex, Kerosene oil
 (3) Kerosene oil, water (4) water, kerosene oil, Jak latex
- 17 One of inorganic non-polar solvent is,
- (1) Ethanol (2) Carbon disulphide
 (3) Carbon tetrachloride (4) liquid ammonia
- 18 It is mentioned on a label of a bottle of glucose solution as $40\text{gdm}^{-3}(\text{W/V})$. This means,
- (1) 40 g of glucose contains in 1000cm^3 of solution.
 (2) 40 g of glucose contains in 100cm^3 of solution.
 (3) 400 g of glucose contains in 1000cm^3 of solution.
 (4) 40 g of glucose contains in 10000cm^3 of solution.
- 19 If concentration of a solution when dissolves n number of moles in V amount of volume of solvent is C, then
- (1) $C = nv$ (2) $C = v/n$ (3) $C = nv^2$ (4) $C = \frac{n}{V}$
- 20 By taking 2 equal masses of CuSO_4 crystals and powder separately dissolve them in two equal volume of water until the two solutions are saturated. Here,
- (1) dissolved masses are equal.
 (2) mass of dissolved CuSO_4 powder is greater than that of CuSO_4 crystals.
 (3) mass of dissolved CuSO_4 crystals is greater than that of CuSO_4 powder.
 (4) Any of the above
- 21 Followings are several characteristics of a metallic element.
- A Shiny nature is not easily noticed, easily tarnished.
 B Density is less than that of water.
 C Reacts with water rapidly.
- This metal can be,
- (1) Cu (2) Mg (3) Ca (4) Na
- 22 An element which used in vulcanizing of rubber is,
- (1) S (2) Na (3) C (4) P
- 23 What is the equivalent resistance of A and b resistors in the circuit given below. ?
- (1) 6π
 (2) $\frac{3}{4}\pi$
 (3) $\frac{4}{4}\pi$
 (4) $\frac{4}{2\pi}$



24 Value of A to keep PQ rod in equilibrium state in the figure given here is,

- (1) 2kg
- (2) 100N
- (3) 10N
- (4) 2N



25 What is formed by convergent rays fall onto a plane mirror?

- (1) a virtual image
- (2) a real image
- (3) does not form an image
- (4) an image at infinity.

26 Select the most suitable answer related with light spectrum.

- (1) It happens when a light ray travels from a light medium to a dense medium
- (2) It happens because of refraction of light.
- (3) It happens when entering a light ray to a glass prism which comes from air.
- (4) It happens because of dispersion when entering each colour of white light to a dense medium.

27 1 killowatt hour is,

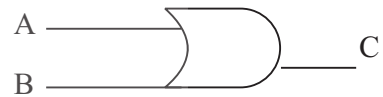
- (1) 3.6×10^2 J
- (2) 3.6×10^4 J
- (3) 3.6×10^6 J
- (4) 3.6×10^8 J

28 Not a factor which affects for the resistivity of a conducting wire is,

- (1) resistance of wire
- (2) length of the wire
- (3) area of cross section of wire
- (4) current flows through the wire.

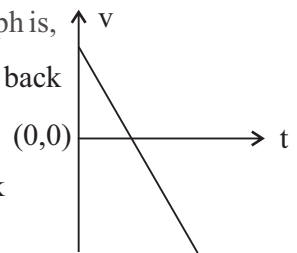
29 The figure on right shows a,

- (1) OR gate
- (2) AND gate
- (3) analogous amplifier
- (4) NOT gate



30 Figure shows a velocity - time graph. The motion suitable for this graph is,

- (1) motion of an object fallen from above to the ground and rebound back
- (2) motion of an object shot upward from the ground.
- (3) motion of an object shot upward and reaches the ground back
- (4) falling an object to the ground.



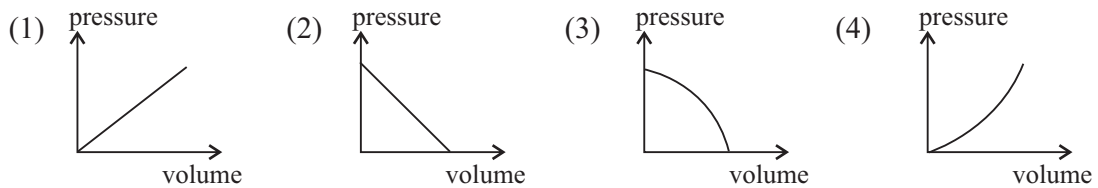
31 Select the relation which represents velocity ratio of a simple machine,

- (1) $\frac{\text{load}}{\text{effort}}$
- (2) distance moved by load x distance moved by effort
- (3) $\frac{\text{distance moved by load}}{\text{distance moved by effort}}$
- (4) $\frac{\text{distance moved by effort}}{\text{distance moved by load}}$

32 An instance with the minimum risk form lightning is,

- (1) being in a play ground
- (2) bathing in a take
- (4) working in a paddy field
- (4) traveling in a motor car

33 Volume of a closed system is decreased by keeping temperature at constant. What is the graph which shows variation of volume and pressure of it correctly ?



34 According to Fleming left hand rule, direction of force acts on a wire which kept in a magnetic field when current flows through it is given by,

- (1) fore-finger (2) middle finger (3) tiny finger (4) thumb

35 Following are 3 statements given about electroplating.

- A- The metal use to electroplate is the anode.
 B- Use the ornament as the cathode which should be electroplated.
 C- H_2 gas release at anode,

True statements form the above are,

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

36 Through the disposal of garbage by classifying,

- A- recycling process of garbage will be easier.
 B- each type of garbage can be removed in suitable manner.
 C- uses of polythene can be minimized.

Correct statement/s from the above is/are,

- (1) A (2) A, B (3) A, C (4) B, C

37 What is the amount of heat needed to increase temperature of copper sphere of 500 g from $30^\circ C$ to $60^\circ C$? (Specific heat capacity of $Cu = 400 J kg^{-1} K^{-1}$)

- (1) $500 \times 400 \times 30^\circ C$ (2) $\frac{500}{1000} \times 400 \times 30^\circ$
 (3) $500 \times 1000 \times 6^\circ C$ (4) $\frac{500}{100} \times 400 \times 60$

38 Number of diodes in a circuit which is used for full wave rectification of a alternating current is,

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

39 What is the method which is contributing for highly making uses of energy more efficiently in these days ?

- (1) uses of CFL bulbs in order to filament bulbs.
 (2) uses of fluorescent bulbs in order to filament bulbs.
 (3) uses of LED bulbs in order to filament bulbs.
 (4) does not use any type of bulbs to get light.

40 The most inappropriate statement about the kidney disease spread rapidly in Sri Lanka is,

- (1) Kidney disease is a non-communicable disease.
 (2) Many patients are in agricultural areas in Northern and Eastern provinces.
 (3) Concentration of fluoride of water is in a high value and entering heavy metals in pesticides into the body.
 (4) Number of patients in Nuwara Eliya is high.

(2x40 = 80 marks)

Mid Year Examination - 2015

Science II

Grade 11

විද්‍යාව II

Time: 03 Hours

Name/ Index No.

Part - A - Structured Essays

• Answer all questions on this paper itself.

01 A Dengue hemorrhagic diseases can be considered as the most harmful disease for men from communicable diseases in Sri Lanka. It seems that

(1) Name two species of mosquito which are transmitting dengue. (02 m.)

1.

2.

(2) Mention 2 reasons which cause for reporting many dengue patients from western province. (02 m.)

1.

2.

(3) What is the group of micro-organisms that causative agent of dengue belongs to? (01 m.)

.....

(4) Mention a bio control system to eradicate mosquitoes. (01 m.)

.....

(5) What is the change takes place in blood composition at dengue hemorrhagic stage. (01 m.)

.....

(6) Mention the influence of that change to the body. (01 m.)

.....

B Use of motor boats are not allowed in fisheries at small lakes. Reason for this is to avoid the harm for aquatic organisms and bund of lake. Canoes with paddles are mostly used for this.

(1) What is the law relevant to the motion of a canoe when it travels using a paddle? (01 m.)

.....

(2) Write down that law. (02 m.)

.....

.....

(3) Mention 2 destructions happen for small lakes because of using motor boats. (02 m.)

.....

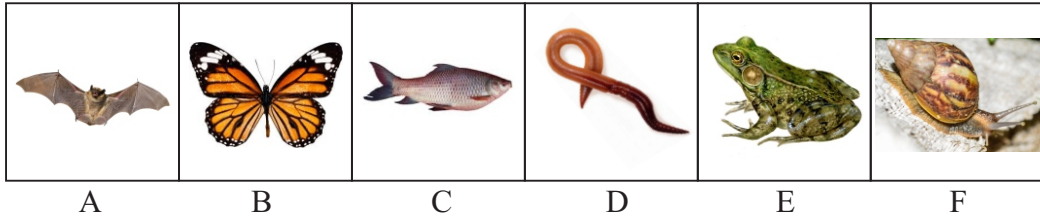
(4) Because of fuels used in motor boats

(a) Mention a destruction happens for fish living in lakes, (01 m.)

.....

(b) Mention a harmful gas collected to the atmosphere around the lake.
(01 m.)

02 A Followings are pictures of several vertebrates and non-vertebrates.



Write the suitable English letter of the animal at the characteristics given below.

- (1) Possess gills for respiration
- (2) skin is covered by hairs.
- (3) Possess jointed limbs.
- (4) aspirators at two ends of the body.
- (5) posses a soft body with a muscular foot. (05 m.)

B Following diagrams are of three plants grow in a cool wet environment. From those three plants,

(1) What is the fern ?

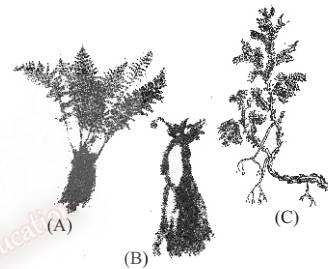
.....

(2) What is the Lycophyta plant?

.....

(3) What is the method of propagation of plant C ?

..... (03 m.)



C (1) Mention 2 differences between a plant and an animal cell (02 m.)

.....

(2) Name an organelle of a plant cell can be observed by a light microscope.
 (01 m.)

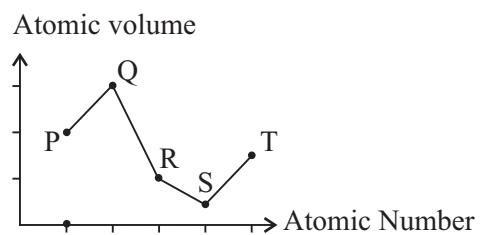
(3) What is the known as a tissue ? (02 m.)

.....

(4) Name a simple tissue and a complex tissue can be seen in plants. (02 m.)

.....

03 A Following diagram is a graph which shows atomic volume and the atomic number of 5 successive elements in periodic table. Q is the element with the highest atomic radius in 3rd period.



(1) Define the word "Atomic Volume."

.....

 (02 m.)

(Given symbols are not the standard symbols.)

(2) What is the unit of atomic volume ? (01 m.)

.....

(3) What is the standard symbol of the element with the smallest atomic radius from the elements given in graph. (01 m.)

.....

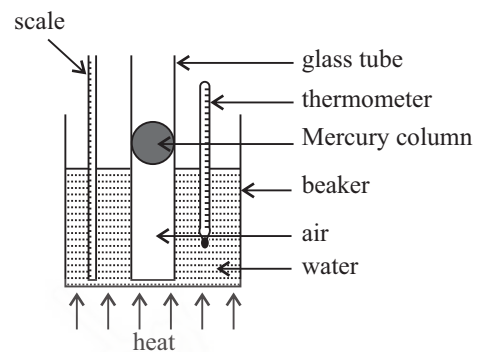
(4) What down electronic configuration of element Q. (02 m.)

.....

(5) Write down the balanced equation for the reaction of element S with O_2 (03 m.)

.....

B The diagram shows a set of apparatus prepared by a group of students to test laws about behaviour of a gas.



(1) What is the law tested at this experiment? (03 m.)

.....

(2) Write that law. (02 m.)

.....

.....

(3) Which of two factors to be kept at constant which affect to the behaviour of a gas? (02 m.)

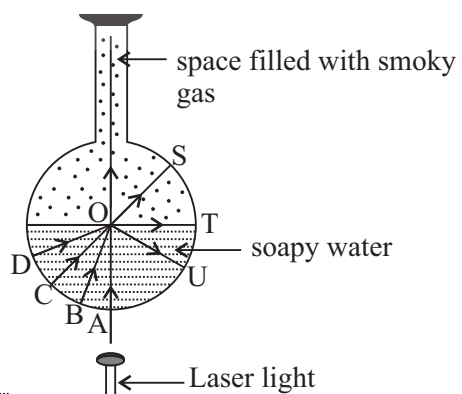
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(4) What is the observation can be taken related to the mercury column when increasing temperature? (01 m.)

.....

.....

04 A The diagram shows a closed apparatus prepared by filling half of a round bottom flask with soapy water. And the other half is filled by smoky gas. Laser beams are entered into this at A, B, C, D places.



(1) Name the ray which travels form water to air without changing its path. (01 m.)

.....

(2) What is the incident ray used to get OS ray ? (01 m.)

.....

(3) What is the ray travles after refracting the ray CO ? (01 m.)

.....

(4) What is the reflected ray of the above diagram? (01 m.)

.....

(5) How does name the refraction takes place in above (4)? (01 m.)

.....

(6) Write down critical angle of water in terms of given letters. (01 m.)

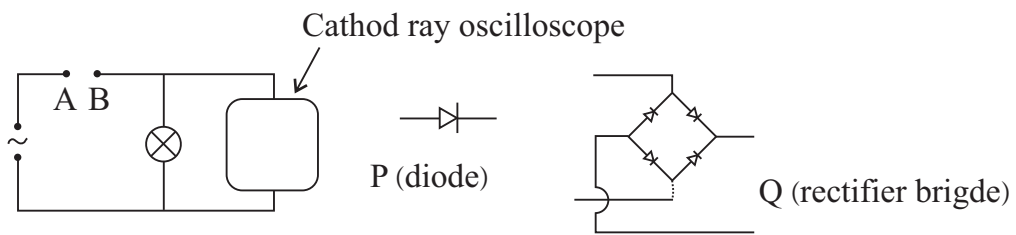
.....

(7) Write down a law of refraction. (02 m.)

.....

.....

B



Draw the shape of the wave can be seen in oscilloscope graphically when connect the single diode to the space AB in the above circuit. (Represent time on x axis and voltage on y axis.) (02 m.)

.....
.....
.....
.....

(2) What is the change happens to alternating current here? (01 m.)

.....

(3) Draw the shape of the wave can be seen on screen of oscilloscope graphically when connect P to above circuit in suitable manner. (02 m.)

(4) What is the change happens to alternating current here? (01 m.)

.....

(5) Name an instrument contains bridge circuit. (01 m.)

.....

Mid Year Examination - 2015
Science II - Continuation

Grade 11

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- Answer 3 questions by selecting one question from each part of Biology, Chemistry and Physics.

Par B - Essays

Biology

05 A Nutrition of all animals is based on the process of producing food in green plants. It is photosynthesis.

(i) Write the process of photosynthesis in plants using a balanced chemical equation. (02 m.)

(ii) If photosynthesis is a industry of production, then name the followings.

(a) raw materials (b) variety of energy used
(c) factory (d) main product (e) by product (03 m.)

(iii) Name a diagram of set of apparatus to be used to collect Oxygen gas removed out at photosynthesis. (03 m.)

(iv) (a) What is the main product of photosynthesis ?

(b) What is the tissue that transports it ?

(c) What is the method of transportation of that matter ? (02 m.)

B Diagram of a part of human digestive system is given below.

(i) Name the parts A, B, C, D. (01 m.)

(ii) Name 2 enzymes secreted by structure B. (02 m.)

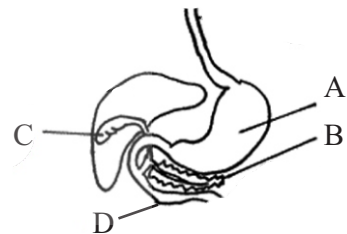
(iii) Mention 2 nutrients digested by those two enzymes you named. (01 m.)

(iv) What is the juice secreted by structure C ? (01 m.)

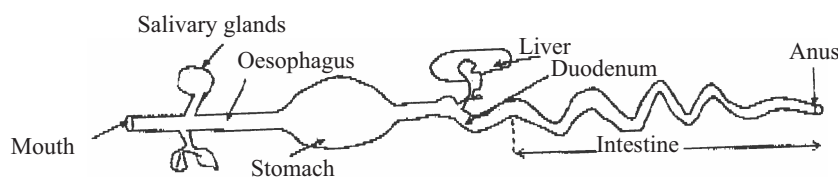
(v) Write down 2 function of juice secreted by structure C. (02 m.)

(vi) Name two enzymes secreted by walls of small intestine. (02 m.)

(vii) What are the vessels that absorb fatty acids and glycerol which are end - products of fat ? (01 m.)



06 A Following is a diagram of a common plan of digestive system of vertebrates.

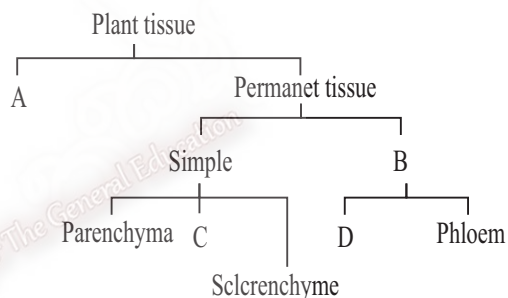


(i) Mention 2 organs of the above system which are related to physical digestion of digestive process of food. (02 m.)

- (ii) Name an enzyme secreted by salivary gland which is connected with digestion of food. (01 m.)
- (iii) What is the structure that the "peristalsis" is taken place? (01 m.)
- (iv) A gland which secrets enzyme essential for digestion of food is not given in above diagram.
 - (a) What is that gland organ? (01 m.)
 - (b) Mention 2 enzymes secreted by that gland. (02 m.)
 - (c) Name the nutrients contain in food which are digested by enzymes you mentioned above. (02 m.)
- (v) Mention two juices secreted by gland after entering food into stomach.(02 m.)
- (vi) What is the disease which is resulted because of not having food for a long time or not having correct food habits? (01 m.)
- (vii) Parts of small intestine are adopted for absorption of simple food. Write 2 special adjustments for that. (02 m.)

B Following is a classification of plant tissues.

- (i) Name the parts A B C D. (02 m.)
- (ii) Write a special characteristic of tissue C. (01 m.)
- (iii) What is the function of tissue E? (01 m.)
- (iv) Tissue E causes for increasing value of wood of dicotyledon plants. What is the reason for that? (01 m.)
- (v) What is the type of cells directly support for transportation of food through phloem tissue? (01 m.)



Chemistry

- 07 A Fire wood is the fuel mostly used by people in rural areas of Sri Lanka. People in urban areas uses LP gas mostly.
- (i) Write 2 reason for using firewood by the people in rural areas mostly. (02 m.)
 - (ii) One of constituent in LP gas is propane. What is the other constituent?(02 m.)
 - (iii) Write down 2 reasons for using LP gas is more profitable than use of firewood. (02 m.)
 - (iv) Write down combustion of propane contains in LP gas with O₂ in a balanced equation. (02 m.)
 - (v) How many moles of O₂ need for the combustion of one mole of propane (C₃ H₁₀) (02 m.)

B Following is a part of periodic table (Here A, B, C, D are not standard symbols.)

(i) Write the symbols of elements belong to A, B, C, D places. (02 m.)

(ii) One student proposed that H in first group can be placed in (viii) group. Write 2 reasons for this. (02 m.)

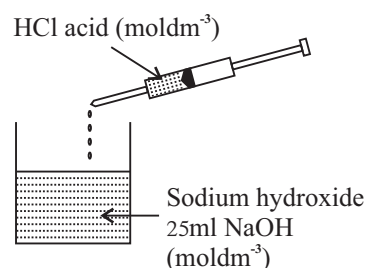
(iii) What is the group of elements in all three physical status solid, liquid and gaseous. (01 m.)

(iv) Name the elements relevant to each state mentioned in above (iii) (03 m.)

(v) Write down the formula of oxide formed by reacting the metal with O_2 (02 m.)

i	ii	iii	iv	v	vi	vii	viii
H		A				B	He
		Al	C		D	Cl	
						Br	
						I	

08 Diagram shows a set of apparatus prepared for experimenting interaction between acids and bases. Here, several drops of Phenolphthelene is added to 25 ml of 1 mol dm^{-3} NaOH in a beaker. Then solution turned to pink colour. After that 1 mol dm^{-3} HCl taken to a cyringer is added into that drop by drop until colour change is occurred. And at one moment whole solution changes into colourless.



(i) What is an acid? (01 m.)

(ii) Explain the reason for changing colour of NaOH solution into pink when phenolphthelene is added. (03 m.)

(iii) What is meant by 1 mol dm^{-3} HCl NaOH? (02 m.)

(iv) (a) Calculate molar mass of NaOH. (Na=23, O=16, H=1) (03 m.)

(b) Calculate the mass of NaOH needed to prepare 250 ml of 1 mol dm^{-3} NaOH solution? (03 m.)

(c) What is the equipment essential when preparing above solution? (01 m.)

(v) At the moment of changing the solution into colourless completely when adding HCl into that,

(a) what is the nature of acid-base solution? (02 m.)

(b) which type of reaction between above NaOH and HCl? (01 m.)

(vi) (a) What is the method used to get a sample of common salt using the product formed at the above reaction? (02 m.)

(b) Mention 2 process of producing large - scale products using the method you mentioned above. (02 m.)

Physics

09 A A van with 1000 kg weight which traveled at 2 ms^{-1} uniform speed on a linear path clashed with a bus came from behind and engine of van was stopped. And with that van moved forward at a velocity of 6 ms^{-1} within one second and came to stationary state within 10 seconds at uniform deceleration.

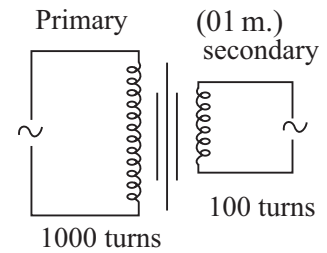
(i) What is the idea given by 2 ms^{-1} uniform velocity of van? (02 m.)

(ii) What is the reason for the deceleration of van? (01 m.)

- (iv) Calculate the deceleration using the graph. (02 m.)
- (v) Calculate the total displacement took place after conflicting two vehicles. (02 m.)
- (vi) Mass of the bus is 4000 kg and it travelled at 5ms^{-1} of uniform velocity.
 - (a) find the momentum of the bus. (01 m.)
 - (b) To which quantity the change of rate of momentum is proportional? (01 m.)
 - (c) What is the law which represents relationship mentioned in (b). (01 m.)

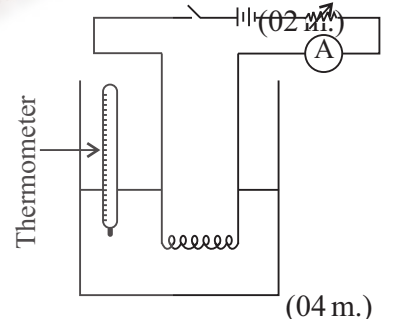
B Following is a diagram of a transformer. Number of turns in primary coil is 1000 and that of in secondary coil is 100.

- (i) Which type of transformer is this? (01 m.)
- (ii) What is the voltage received from secondary coil when supply 12 v of voltage to primary coil. (02 m.)
- (iii) In which coil a larger current flows through? What is the reason for that? (03 m.)
- (iv) What is the coil with wires of larger cross sectional area? (01 m.)
- (v) What is the voltage received from secondary coil when supply 12 V of direct alternating potential difference to the primary coil. (02 m.)
- (vi) Can we get a continuous current from secondary coil when supply a direct current to the primary coil? (01 m.)



10 A Following experiment was done to check about the heating effect of a current.

- (i) What is known as heating effect of a current? (02 m.)
- (ii) Mention 2 observations can be obtained using this apparatus. (02 m.)
- (iii) Write a use of each instrument given below at this experiment.
 - (a) switch
 - (b) Rheostat
 - (b) Ammeter
 - (d) Thermometer
- (iv) What are the factors which affect to the resistance of coil? (03 m.)
- (v) Resistance of above coil is 40π . Voltage supplied is 240 V. calculate the heat energy emitted by the coil. (03 m.)
- (vi) Write the equation for resistance of the coil (R) in terms of length of the wire (L) area of cross section (A) and resistivity is (P) (02 m.)



B Diagram shows a part of a domestic electric circuit.

- (i) What is D? (01 m.)
- (ii) What is the component given as 30 A here? (01 m.)
- (iii) What is the function of that component? (01 m.)
- (v) What is the component to be in this circuit before the component named as

