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இரண்டாம் தவணைப் பரீட்சை - 2025/ Second Term Test - 2025

ශ්‍රේණිය
தரம்
Grade

Grade 11

Science - I

කාලය
நேரம்
Time

1 hour

නම
பெயர்
Name

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சுட்டிலக்கம்
Index No.

- ❖ Answer all questions.
- ❖ Each of the questions from 1 – 40, are given four choices as (1), (2), (3) and (4). Select the correct or the most appropriate answer for each question.
- ❖ Mark a (X) on the circle on the answer script provided to you bearing the number that matches with the number of the option you selected for each of the questions.

01. Following results were obtained when a sample of food is subjected for two laboratory tests.

- Benedict test – Brick red precipitate.
- Biuret test – No change of colour.

What can be the elements present in the above sample of food?

1. C, H, O 2. C, H, O, S 3. C, H, O, N 4. C, H, P

02. What are the main waste products excreted by an organism?

1. Carbon dioxide and water 3. Urea, salts, carbon dioxide and water
2. Urea, salts and water 4. Oxygen and glucose

03. What is the animal group that bats and whales belong?

1. Aves 2. Pisces 3. Reptilia 4. Mammalia

04. How many Mg atoms are present 48 g of magnesium? (Mg= 24)

1. 6.022×10^{23} 2. 12.044×10^{23} 3. 18.066×10^{23} 4. 24.088×10^{23}

05. Which of the following compounds contains covalent bonds while being polar?

1. NH_3 2. CaCl_2 3. CH_4 4. CCl_4

06. Which compound acts as the catalyst in production of ammonia by Haber process?

1. Porous iron 2. Vanadium pentoxide 3. Platinum 4. Nickel

07. Which of the following hybridizations gives the genotype ratio 1:1?

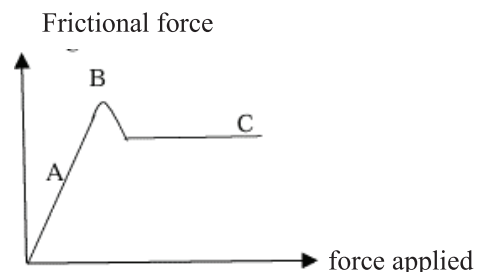
1. $\text{Tt} \times \text{tt}$ 2. $\text{TT} \times \text{Tt}$ 3. $\text{TT} \times \text{TT}$ 4. $\text{tt} \times \text{tt}$

08. Which of the following bulbs that yields equal amount of light has the highest efficiency?

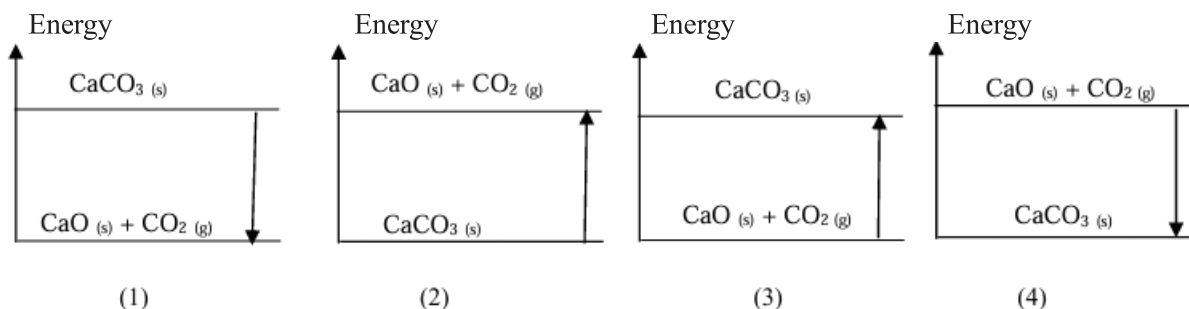
1. Filament bulb 2. Florescent bulbs 3. CFL bulbs 4. LED bulbs

09. The graph given beside illustrates how the frictional force varies when a force is applied on a block of wood kept on a table. How are the frictional forces A, B and C in the graph called?

1. Static, dynamic, limiting 3. Limiting, dynamic, static
2. Static, limiting, dynamic 4. Dynamic, limiting, static



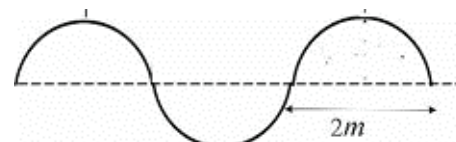
10. The average body temperature of a human is 37°C . What is this temperature in Kelvin scale?
 1. 98.4 K 2. 273 K 3. 300 K 4. 310 K
11. What is the method of heat transmission from the sun to the Earth?
 1. Conduction 2. Convection 3. Radiation 4. Conduction and radiation
12. Which of the following energy diagrams correctly gives the heat change associated with the chemical reaction related to the process of obtaining quick lime (CaO) from limestone?



13. Consider the following statements related to refraction of light.
 A When light refracts from a denser medium to rare medium, light rays bend towards normal.
 B The speed of light is greater in air than in water.
 C During refraction, the frequency of light gets changed.

The correct statement out of those given above is/are,

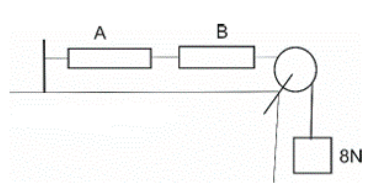
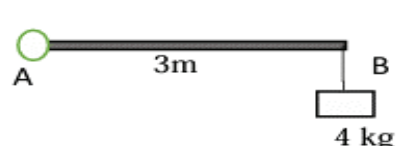
1. Only A 2. Only B 3. Only B and C 4. All A, B and C are true.
14. The metal/s that react/s with cold water is/are,
 1. Sodium 2. Magnesium 3. Aluminium 4. Sodium & Potassium
15. Part of a certain transverse wave is given in the graph drawn beside.
 If it took 3 s to form this portion of the wave, what is the speed of the wave?



1. 2 m s^{-1} 2. 4 m s^{-1} 3. 6 m s^{-1} 4. 8 m s^{-1}
16. An example for a cranial reflex is,
 1. Immediate withdrawal of hand when touching a hot object
 2. Sneezing
 3. Immediate withdrawal of foot when pricking a thorn.
 4. Bending the arm at elbow joint
17. Seedless grapes are abundantly used for production of wine. Which of the following techniques is used for obtaining seedless grapes?
 1. Use of specially prepared chemical fertilizer. 3. Allowing only self- pollination
 2. Carrying out artificial parthenocarp 4. Allowing only cross pollination.
18. A set- up arranged to test for a factor necessary for photosynthesis is given below. Which factor is tested by this set-up?

1. Light 2. Carbon dioxide
 3. Chlorophyll 4. Water



19. The compound that gets precipitated simultaneously with NaCl in a saltern where salt is extracted from sea water is,
 1. CaCO_3 2. MgCl_2 3. CaSO_4 4. Na_2SO_4
20. Which of the following animal group possess cnidocytes?
 1. Cnidaria 2. Mollusca 3. Annelida 4. Echinodermata
21. Always only upright virtual images are formed by,
 1. Plain mirrors, convex mirrors & convex lenses 3. Concave mirrors, convex mirrors & convex lenses
 2. Concave mirrors, convex mirrors & convex lenses 4. Plain mirrors, convex lenses, concave lenses
22. What is the hormone released during an emergency situation to initiate 'fight or flight' reactions?
 1. Insulin 2. Thyroxin 3. Adrenalin 4. Calcitonin
23. What is the reason for abundance of intercalary meristem at the nodes of plants of grass family?
 1. To increase the circumference of the stem 3. To increase the length of internodes
 2. To provide mechanical support 4. To increase the height of the plant
24. Which of the following ions has an equal number of electrons to Mg^{2+} ion?
 1. K^+ 2. Ca^{2+} 3. Cl^- 4. O^{2-}
25. Certain resistor has red, black and brown as the first three colour bands in respective order. What is the value of that resistor? (black = 0, brown = 1, red = 2)
 1. $20\ \Omega$ 2. $200\ \Omega$ 3. $201\ \Omega$ 4. $210\ \Omega$
26. The diagram given besides illustrates how a block of wood floats in water. The upthrust exerted on the object by water is 3 N. If this block of water is put into a container with coconut oil, the upthrust can be, 
 1. 3 N 2. Less than 3 N 3. More than 3 N 4. Cannot be precisely stated.
27. What is the type of electromagnetic waves used for communication via mobile phones?
 1. Radio waves 2. Micro waves 3. Infra-red waves 4. Light waves
28. Two Newton balances namely A and B and each with the mass of 300 g are kept as illustrated and an object with the weight of 8 N is hung to one of them. The readings of A and B Newton balances are respectively, 
 1. 4 N & 4 N 2. 4 N & 8 N 3. 8 N & 8 N 4. 8 N & 11 N
29. How many lone pairs of electrons are there in a molecule of O_2 ?
 1. 2 2. 4 3. 6 4. 8
30. What type of chemical reaction takes place when a piece of Zn is put into a solution of dilute HCl acid?
 1. Chemical combination 3. Single displacement
 2. Chemical decomposition 4. Double displacement
31. AB is a uniform light rod and it is pivoted at end A. A mass of 4 kg is hung at end B. How much is the moment around point A? 
 1. 8 N m 2. 12 N m 3. 80 N m 4. 120 N m

32. Several organelles of a plant cell are given below.

(A) Mitochondrion

(B) Nucleus

(C) Chloroplast

(D) Central vacuole

Out of the above organelles, which organelles can be seen with the light microscope?

1. Only A and B

2. Only B and C

3. Only C and D

4. Only B and D

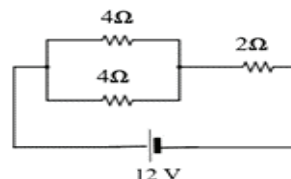
33. What is the resistance between the terminals of the $2\ \Omega$ resistor in the circuit?

1. 2 V

2. 3 V

3. 4 V

4. 6 V



34. Certain solution has H^+ and Cl^- and water molecules. The solution is a,

1. Weak acid

2. Strong acid

3. Weak base

4. Strong base

35. A, B and C are different solutions of acids. Their concentrations are given.

A
1 moldm ⁻³ 50 ml HCl

B
1 moldm ⁻³ 50 ml H ₂ SO ₄

C
1 moldm ⁻³ 50 ml H ₂ CO ₃

The option that gives correct comparison of concentration of H^+ in the acid solutions is,

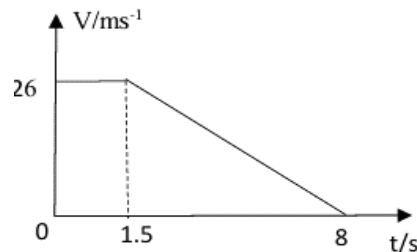
1. $A = B > C$

2. $A < B = C$

3. $A > B > C$

4. $C < A < B$

36. A vehicle traveling in an express way at a velocity of 26 m s^{-1} , took 1.5 s to stop by applying breaks in order to prevent an accident that could have met. Then it decelerated for 8 s and stopped. The velocity- time graph relevant for above description is given besides. How much is the displacement of the vehicle from the moment of seeing the danger to the moment of stopping?



1. 39.5 m

2. 123.5 m

3. 143.5 m

4. 208.5 m

37. The kinetic energy of a motor vehicle that travels at uniform velocity is 50 000 J. Its mass is 1000 kg. What is the velocity of the motor vehicle?

1. 1 m s^{-1}

2. 10 m s^{-1}

3. 50 m s^{-1}

4. 100 m s^{-1}

38. The formula of the compound made by element X with hydrogen is XH_2 . The formula of compound made by element Y with Mg is Mg_3Y_2 . The formula of the compound formed between X and Y is,

1. XY

2. XY_2

3. X_3Y_2

4. X_2Y_3

39. What happens during closure of semilunar valves?

1. Atrial contraction

2. Ventricular contraction

3. Diastole of ventricles and atria

4. Systole of atria and ventricles

40. What is the most adverse and long-term consequence of pollution of coastal ecosystems with plastic?

1. Change of colour of marine water

2. Obstacles caused on fisheries industry

3. Damage the marine organisms and entering into food chains.

4. Increasing the temperature of marine water.

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ශ්‍රේණිය
தரம்
Grade

Grade 11

Science - II

කාලය
நேரம்
Time

3 hours

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பெயர்
Name

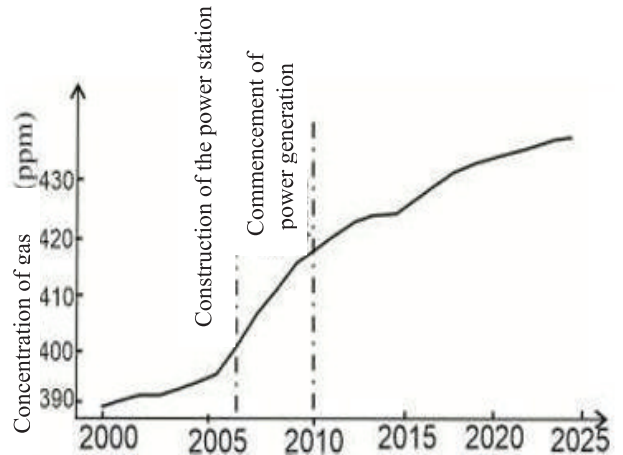
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சுட்டிலக்கம்
Index No.

Additional Reading Time – 10 min

- Write your answers in neat hand writing.
- Answer all four questions in Part -A in the space provided.
- Answer only three questions in Part – B.
- At the end of answering, attach Part A and B together and hand over.
- Use the additional reading time to read, select and prioritize the questions in answering.

Part – A – Structured Essay

01. (A) A picture of a thermal power station in Puttalam, Sri Lanka and a graph showing how the atmospheric concentration of a certain gas varies before and after construction of the power station are given below.



- What is the source of energy used in thermal power stations? Name the main element present in it.
.....
- Describe in brief the way of formation of that source of energy.
.....
.....
- What is the original source of energy of the energy stored in that source?.....
- What is the advantage of construction of the power station near the sea?
.....
.....
- Which special property of water is made use in the power station?
- Name a renewable energy source that has been already used in the area and another renewable energy source that can be used in the area in respective order.

(B) The graph shows how the concentration of a certain gas varies before and after construction of the power station. That gas affects the increase in sea level to a larger extent.

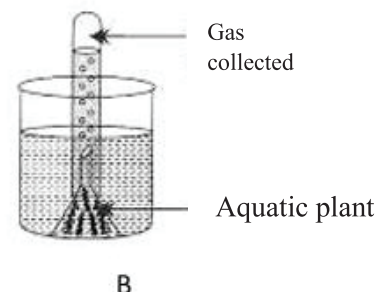
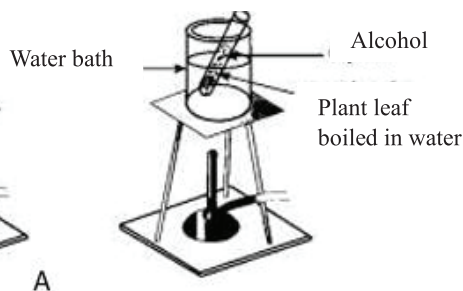
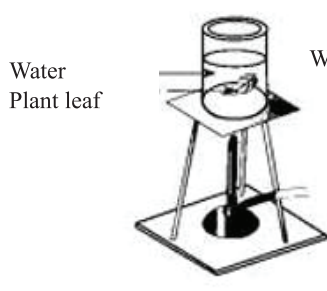
- What can be the gas denoted as X in the graph?
- Write down the balanced chemical equation for the production of that gas in the power station.
.....
- There is a slight decline in the production of that gas in 2015. What can be the reason for it?
.....
- What is the environmental crisis that causes the increase in sea level due to the increase in the concentration of this gas?
- What strategy used to remove this gas from the environment is illustrated in the picture?
.....
- Apart from the gas indicated in the graph, two other gases emitted by the power station cause acid rains. What are those gases?
.....

02. (A) An animal cell drawn based on the observations of electron micrograph is given below.

- Which part maintains the shape of the animal cells?
.....
- Name the structures denoted as P and Q.
P -
Q -
- What is the organelle that can be identified when observed through the light microscope?
- Mention the functions of the following organelle/ structure.
Ribosome -
Nucleus -
- Mention the non- living structure that is not present in this cell but present in the plant cell.
.....



(B) The two diagrams given below depict steps of two experiments related to photosynthesis.



- What is the purpose of doing experiment A?
.....
- Give the reasons for following steps given below in experiment A.
 - Boiling the leaf in water in the first step -
 - Boiling the leaf in alcohol in the second step -
 - Using a water bath in the second step -
- Name the test to identify the gas collected in set-up B and the expected observation.
 - Test -
 - Observation -

- iv. Which factor necessary for the photosynthesis is received by the plant B minimally?
.....
- v. Which factor necessary for photosynthesis cannot be tested in a normal laboratory?
.....

03. (A) Part of the periodic table and the activity series are given below.

			K		L		
					M	N	

Burns in air with a bright white flame.

P
Q
R
S
T
U
V
W

- i. Write down the elements denoted as P and Q in the correct cell of the periodic table.
- ii. Write down the standard symbol of the element denoted as S.
- iii. Select from the periodic table and write down the letter that denotes the element that conducts electricity and shows allotropy.
- iv. Draw the dot-cross diagram of the compound formed between T and N in the square given.
- v. Select and write down the elements that form strong acidic and strong basic oxides out of the elements. Q, S, T, M and N.
- Strong acidic -
 - Strong basic -
- vi. Which element has the higher electronegativity out of the elements L and M?
.....
- vii. Show in a balanced chemical equation how element Q removes an electron to be stable.
.....

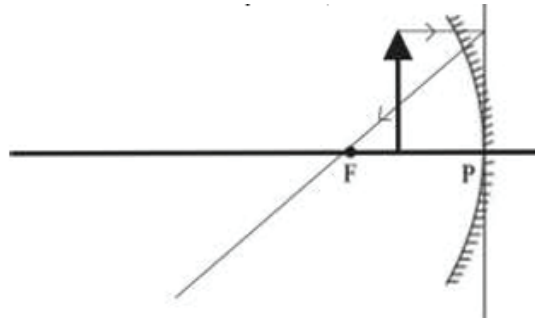


(B) A bottle containing a standard solution of NaCl prepared by a group of students is illustrated below.

- i. Mention one of the essential facts that should be mentioned in the label to be pasted on it.
- ii. Mention two essential equipment necessary for preparation of standard solutions.
.....
- iii. If 29.25 g of NaCl was used for preparation of the solution, what is its concentration? (Na = 23, Cl = 35.5)
.....
.....
- iv. What is the technique used for making the above-prepared solution a homogeneous one?
.....
- v. What is the separation technique used for obtaining pure crystals of NaCl from impure NaCl crystals?
.....
- vi. Give one reason why the concentration of a prepared standard solution can have bit lower value than the due concentration.
.....



04. (A) The path of a light ray emitted by an object kept on the principal axis of a convex mirror in the way that the object distance is less than the focal length is shown below.

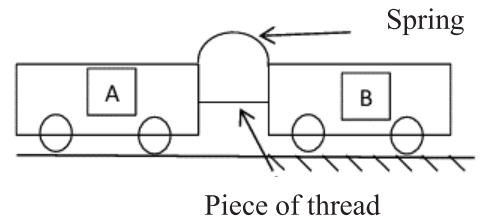


- Mark accurately the center of curvature of the mirror on the diagram given above.
- Draw the other ray essential to construct the image formed by the mirror.
- Draw the image on the diagram.
- Write down two features of the image formed by the mirror.

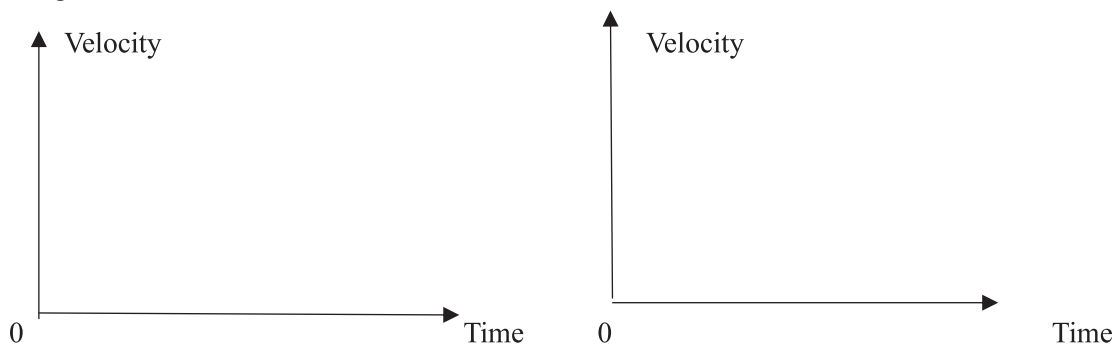
- Mention an instance where above type of image is obtained in day today life.

- (B) A spring is connected between the two identical trolleys A and B and they are also tied with a piece of thread as illustrated. Trolley A is on a smooth surface while trolley B is on a rough surface and the piece of thread is cut at once.

- Which law can be used for describing the direction of motion of two trolleys.
- What can be said about the initial velocities of the two trolleys at the instance of detaching the piece of thread?



- Which trolley travels a longer distance?
- Draw the velocity – time graphs relevant for motion of the two trolleys on the axes given below. No need of indicating the direction of motion.



- When following changes are done to trolley B, how does the distance traversed by it change?
 - Decreasing the mass -
 - Decreasing the surface area of wheels. -
- A small mass which was in trolley A moved away vertically upwards when it was moving. Will it again fall on to the trolley? If not, will it fall on the smooth surface? Give reasons for your answer.

.....

.....

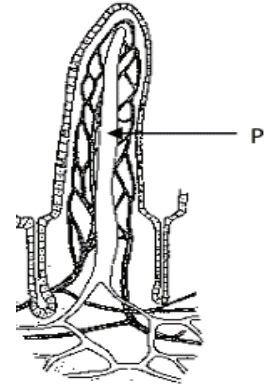
.....

Part – B – Semi Structured Essay

- Answer only three questions selecting from question No. 5, 6, 7, 8 and 9.

05. (A) A diagram of a villus in the small intestine of human digestive system which is adapted for efficient absorption of end products produced during the process of food digestion is illustrated below.

- Name the vessel P in this diagram.
- Mention a digestive end product absorbed in to blood capillaries.
- Explain in brief how this adaptation in small intestine helps in efficient absorption.
- Mention an enzyme present in intestinal juice that is secreted by the wall of the small intestine.
- Which blood vessel carries digestive end products to the liver for storage?
- Describe in brief how the blood glucose level is brought back to the set point in an instance of increase in its level.

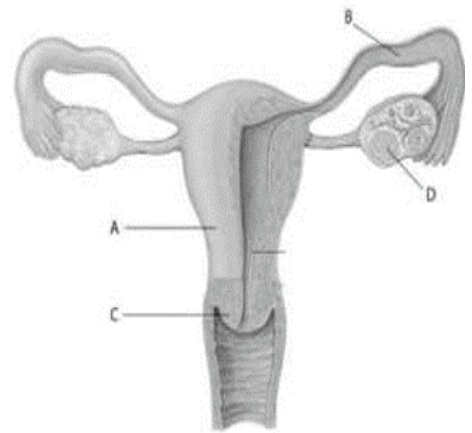


(B) The process of production of energy with glucose which is a digestive end product and oxygen in living cells is known as respiration.

- Mention a type of muscles that contract during external respiration of humans.
- What is the respiratory surface of humans?
- One of the significant features of respiratory surfaces is having high surface area.
 - What adaptation of human respiratory surface increases the surface area of it?
 - Mention a significant feature of a respiratory surface other than the high surface area.
- Write down the balanced chemical equation for the process of production of energy in body cells.

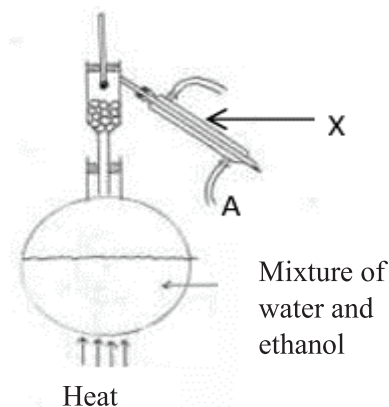
(C) A rough sketch of human female reproductive system is illustrated below.

- Name parts A and D of the diagram.
- Mention a hormone produced by D and a hormone that regulates the functions of D that is secreted by another site.
- Between what phases is A in the instance of ovulation?
- Show in a Punnett square how male and female children are born during reproduction in humans.



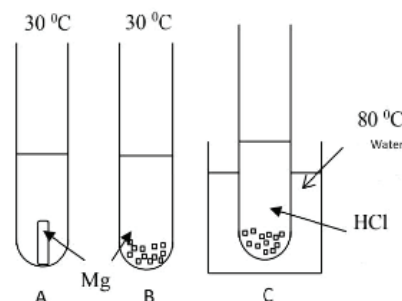
06. (A) The diagram given below illustrates a set-up arranged to separate water and ethanol from a mixture.

- What is the technique of separation of components using this set up called?
- What is the reason for fixing a thermometer to this set up?
- If to separate components with this technique, which property should be present in the components?
- If a mixture having two components with the boiling points 72°C and 78°C , can they be separated by this technique? Give reasons for your answer.
- What is the name of device X?
- What is the reason for inserting water at end A of the device X?

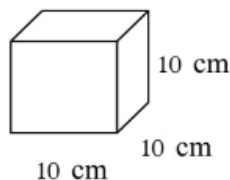


(B) A set-up arranged by a group of students to test for two factors affecting rate of reaction using a solution of HCl with the concentration of 1 mol dm^{-3} is illustrated below.

- What is the observation that can be used for identifying the rate at which reactions occur?
- Mention a factor that is kept constant throughout the experiment.
- Which factor affecting rate of reaction is tested in set-up A and B?
- In which set-up is the highest rate of reaction?
- Write down the balanced chemical equation for the reaction shown by magnesium metal in set-up B.
- What type of chemical reaction is it?
- Draw the energy level diagram related to the reaction occurs in set-up C.
- Certain component produced by set-up B acts as a combustible substance. Write down a test to identify it and its observation.
- When the resulting solution after the reaction in set-up B is heated, a white crystalline substance is remained. Mention one of the characteristic features of it and the type of bond present in it.



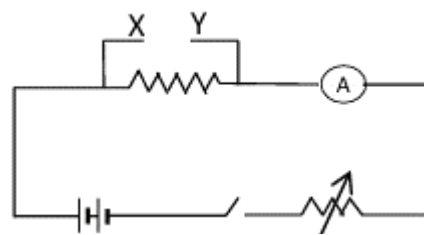
07. (A) A cubic block of wood brought by a student for demonstrating Archimedes' Principle has the side length of 10 cm. Its mass is 800 g. The density of water used for the activity is 1000 kg m^{-3} and the acceleration due to gravity is 10 m s^{-2} .



- What is the weight of the block of wood?
- Find the density of wood that the block is made of.
- Will the block of wood sink or float in water? Give reasons for your answer.
- What is the upthrust exerted on block of wood when it is put in water?
- Suggest a method two make the block of water half immersed and floats in water.

(B) An incomplete circuit arranged by a group of students to test for the relationship between current and potential difference is illustrated below.

- i. Mention the devices used for measuring following quantities.
 - a) Current
 - b) Potential difference
- ii. What is the device that should be connected between terminals X and Y?
- iii. What is the device used for regulating the current in the circuit?
- iv. Which factor should be kept constant at each instance of obtaining the readings?
- v. What strategy is used for making the above-mentioned factor constant?
- vi. Draw a rough sketch of the graph obtained after plotting readings of the potential difference versus current obtained during the experiment.
- vii. When the switch is closed at one instance, the readings of potential difference and current are 12 V and 2 A respectively. Calculate the total resistance of the circuit at that instance.

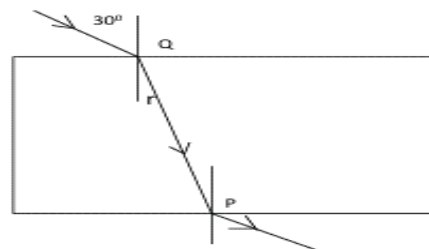


08. (A) Grouping organisms on the basis of characteristics they share in common is known as classification.

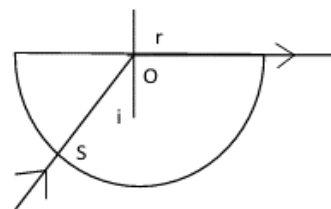
- i. Mention an advantage of grouping animals.
- ii. Mention a drawback of artificial classification.
- iii. The scientific name of human is written as Homo sapiens. Rewrite it accurately according to the standards of international nomenclature of organisms.
- iv. Write down an example for organism bearing each of the following characteristics.
 - a) An organism with diploblastic soft body
 - b) Long slender vermiform body which is divided into equal segments internally and externally.
 - c) Possess a glandular wet skin
- v. Production of new generation of offspring from existing generation of organisms is known as reproduction.
 - a) Mention a difference between sexual and asexual reproduction.
 - b) Describe in brief how sexual reproduction is important for evolution.

(B) The diagram illustrates how a light ray coming from air passes through a block of glass.

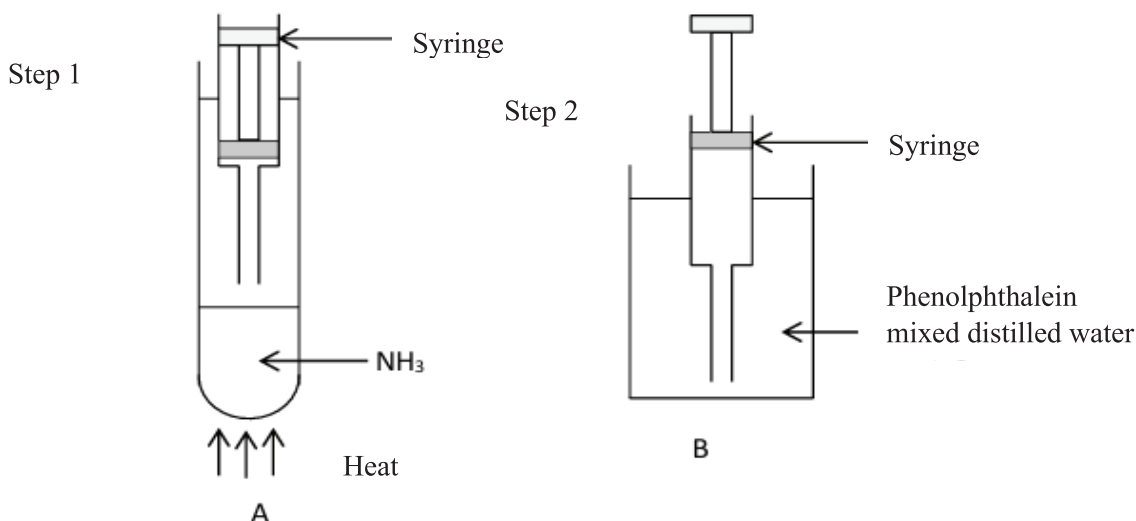
- i. What is called the phenomenon that the light ray subjects at point Q?
- ii. Is the angle of refraction at P greater or less than 30° ? Explain your answer.
- iii. When the angle of incidence at point Q is increased gradually, what happens to the value of angle r?



- iv. Instead of the block of glass, a glass device with the shape of hemisphere with the center O is used. The diagram illustrates how a light ray passed through it.
 - a) How is the angle of incidence called at the instance where angle of refraction in air becomes 90° ?
 - b) Why doesn't light ray bend at point S?
 - c) How will the value of angle r change when the value of angle i is being gradually increased?
 - d) Mention two instances where above-mentioned phenomena is used in everyday life?



09. (A) **“Let us carry out experiments with the minimum use of chemicals.”** A group of students carried out following experiments on par with the above statement.



- (a) What is the observation that can be made while heating the set-up A beneath it?
(b) What is the reason for above observation?
- (a) As you think, what will be the observation in set-up B?
(b) explain the reason for that observation.
- Which observation made it possible to identify NH₃ as a base?
- Apart from identifying NH₃ as a base, another physical property of it can be identified by this experiment. What is it?
- What is the special term used for introducing bases with the above- mentioned property?
- Mention an indicator suitable for identifying whether ammonia is a weak base or a strong base.
- What type of bonds are present in ammonia gas?
- State the nature of ammonia on the basis of whether organic or inorganic or whether polar or non-polar.
- Draw the dot-cross diagram for a molecule of NH₃

(B) A kettle used for domestic purposes contains 1.5 kg of water.

- How much heat is necessary for increasing the temperature of water from 30 °C to 100 °C? (The specific heat capacity of water is 4200 J kg⁻¹ °C⁻¹)
- When the temperature of water in the kettle is increased from 30 °C to 100 °C, how much heat is absorbed by the kettle? (The heat capacity of the kettle is 160 J °C⁻¹)
- If an immersion heater of 100 W is used for heating above amount of water, how much time is taken for it?
- A student suggested that it is more suitable to heat water with immersion heater rather than using the kettle.
 - Do you agree with it?
 - Give reasons for your answer.
- In order to prevent heat loss from the kettle to the external environment following strategies are used.
 - Closing the kettle with a lid.
 - Polishing the outer surface of the kettle well.

State the method of heat transfer controlled in each of above strategies.