2019 Integrated Science Past Questions – Paper One

1. Steel is an alloy of iron and

A. aluminium
B. carbon
C. silicon
D. gold

2. An atom that has lost one or more electron(s) is called

A. a molecule
B. a proton
C. an ion
D. a negative particle

3. In all machines, the efficiency is

A. always 100 %
B. less than 100%
C. more than 100%
D. always 0%

4. In electronic circuits, LEDs are used to indicate the absence or presence of

A. voltage source
B. p-n junction
C. electric current
D. emitter and collector

5. Which of the following statements about the scientific method is/ are correct? It provides

I. logical procedure for arriving at knowledge
II. knowledge that can be verified
III. knowledge that can never be changed

A. I only
B. I and II only
C. I and III only
D. II and III only

6. Which of the following substances is a compound?

A. Hydrogen
B. Nitrogen
C. Oxygen
D. Water

7. Which of the following source(s) of energy is/are renewable?

I. Solar
II. Crude oil
III. Wind

A. I only
B. I and II only
C. I and III only
D. I, II and III

8. The pressure in fluids

A. increases with depth
B. decreases with depth
C. acts upwards at any point
D. acts differently in all directions

9. Which of the following chemical equations is balanced?

$A.\ N_2 + H_2 \rightarrow NH_3$

$B.\ N_2 + 3H_2 \rightarrow NH_3$

$C.\ N_2 + 3H_2 \rightarrow 2NH_3$

$D.\ N_2 + 3H_2 \rightarrow NH_3$

10. Lime juice tastes sour because it is

A. acidic
B. alkaline
C. basic
D. salty

11. A metal black has a mass of 1.0 kg. What is the volume of the block if its density is $10\ kgm^{-3}$?

A. 0.01 m^3
B. 0.10 m^3
C. 1.00 m^3
D. 10.00 m^3

12. It is easier to move a heavy load with a crowbar when the

A. effort distance is shorter than the load distance
B. effort distance is longer than the load distance
C. effort distance of distance equal to the load distance
D. effort is equal to the load

13. Benedict's solution was added to a mixture in a test tube and it turned brick red when heated. The mixture is likely to contain

A. glucose
B. vitamin
C. can start a motion
D. can change the direction of a moving

14. Chlorine gas is an example of

A. an atom
B. an element
C. a compound
D. a molecule

15. Which of the following statements about a force are correct? It

I. is measured in newtons
II. is measured in newton-metre
III. can start a motion
IV. can change the direction of a moving body

A. I and II only
B. I and III only
C. I, III and IV only
D. I, II, III and IV

16. Kerosene is able to reach the other end of a wick by

A. diffusion
B. suction pressure
C. capillary action
D. osmosis

17. Which of the following processes is used to separate insoluble solids from liquids?

A. Sublimation
B. Filtration
C. Evaporation
D. Crystallization

18. Which of the following chemical compounds is used in removing hardness in water?

A. NaCl
B. NaOH
C. Na_2CO_3
D. $NaHCO_3$

19. When a thermometer is put in hot water, the mercury level rises because the mercury increases in

A. density
B. mass
C. volume
D. weight

20. The workdone when a force moves a body through a distance of 12 m is 720 J. The force applied is

A. 8640 N
B. 732 N
C. 708 N
D. 60 N

21. Which of the following compounds is neutral to litmus paper?

A. HCL
B. H_2O
C. NaOH
D. KOH

22. A balanced diet is one which is made up of

A. right proportions of protein, carbohydrates and oils
B. equal amounts of protein, carbohydrates and oils
C. enough water and iodated salt
D. vegetables, fruits and water

23. The ovule in a flower develop to form the

A. fruit
B. leaf
C. seed
D. stem

24. Water drains faster through sand than clay because

A. sand particles are rougher
B. sand contains more air space
C. clay particles are smother
D. clay particles are bigger

25. The best method of checking erosion on a slope is

A. cover cropping
B. mixed contains
C. contour ploughing
D. mulching

26. The housefly is an agent for the spread of

A. cholera
B. malaria
C. measles
D. tuberculosis

27. Which of the following substances are carried by the blood?

I. Nutrients
II. Urine
III. Oxygen
IV. Carbon dioxide

A. II and III only
B. I, II and IV only
C. I and III only
D. I, III and IV only

28. Which of the following statements about a plant cell is correct? It

A. does not have a nucleus
B. contains large vacuoles
C. is surrounded by the cell membrane only
D. does not have a definite shape

29. The study of the soil profile of an area helps the farmer to

A. control weed growth
B. determine the soil temperature
C. determine the types of crop to grow
D. know the pesticides to use

30. The term leaching in soils refers to

A. accumulation of organic matter
B. decomposition of plant materials fixation
C. fixation of nitrogen
D. removal of soil nutrients by water

31. How many stages does the mosquito go through in its life cycle of development?

A. 1
B. 2
C. 3
D. 4

32. Which of the following enzymes helps in the digestion of protein in the human stomach?

I. Proteases
II. Amylase
III. Lipase

A. I only
B. II only
C. I and II only
D. II and III only

33. Kidneys absorb water from the bloodstream humans through the process of

A. diffusion
B. egestion
C. osmosis
D. assimilation

34. An example of soil macro-nutrients is

A. copper
B. calcium
C. phosphorus
D. potassium

35. The vegetable crop that staking during its growth is

A. sweet pepper
B. garden eggs
C. tomatoes
D. hot pepper

36. The function of the white blood cells in human is to

A. produce haemoglobin
B. produce digestive enzymes ensure blood clot during an injury
C. ensure blood clot during an injury
D. produce antibodies to fight disease causing organisms

37. The carpel of a flower is made up of the following parts except

A. filament
B. ovary
C. style
D. stigma

38. A food web shows how

A. food produced by plants is distributed to other parts of the plant.
B. an organism protects itself in its environment
C. organisms depend on one another for shelter
D. food produced by green plants is distributed among organisms in a community

39. Balanced ration enables animals to

A. increase infertility rate
B. maintain normal growth
C. increase meat production
D. maintain energy level of work animals

40. Cultural practices are activities undertaken on a farm

A. after harvesting and before processing
B. before maturity and after harvesting
C. after planting and before harvesting
D. before transplanting seedlings

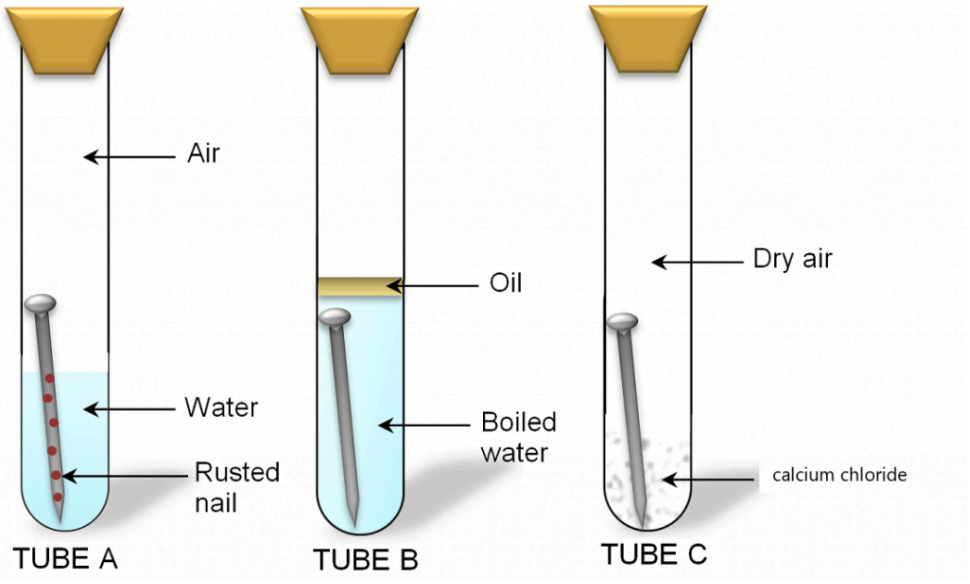
Objective Answers

1. B. carbon
2. C. an ion
3. B. less than 100%
4. C. electric current
5. B. I and II only
6. D. Water
7. C. I and III only
8. A. increases with depth
9. C
10. A. acidic
11. B. 0.10 m^3
12. B. effort distance is longer than the load distance
13. A. glucose
14. D. a molecule
15. C. I, III and IV only
16. C. capillary action
17. B. Filtration
18. C. Na2CO3
19. C. volume
20. D. 60 N
21. B. H_2O
22. A. right proportions of protein, carbohydrates and oils
23. C. seed
24. B. sand contains more air space
25. C. contour ploughing
26. A. cholera
27. D. I, III and IV only
28. B. contains large vacuoles
29. C. determine the types of crop to grow
30. D. removal of soil nutrients by water
31. D. 4
32. A. I only
33. C. osmosis
34. C. phosphorus
35. C. tomatoes
36. D. produce antibodies to fight disease causing organisms
37. A. filament
38. D. food produced by green plants is distributed among organisms in a community
39. B. maintain normal growth
40. C. after planting and before harvesting

2019 Integrated Science Past Questions – Paper Two

1. (a) In an experiment, the surfaces of three iron nails were cleaned dry and placed in three separate test tubes A, B and C as shown in the diagram.

Study the diagram carefully and answer the questions that follow



After three days the nail in test tube A was found to have rusted while the nail in test tubes B and C did not rust.

(i) Suggest and aim for the experiment.
(ii) Why was the water in test tube B boiled?
(iii) State the function of the oil on top of the water in test tube B.
(iv) What is the purpose of the calcium chloride in test tube C?
(v) Why did the nail in Test A rust?
(vi) Why did the nail in test tube
(α) B did not rust?
(β) C did not rust?
(vii) From the experiment, explain why oil is applied on the surface of a metal to prevent rusting.

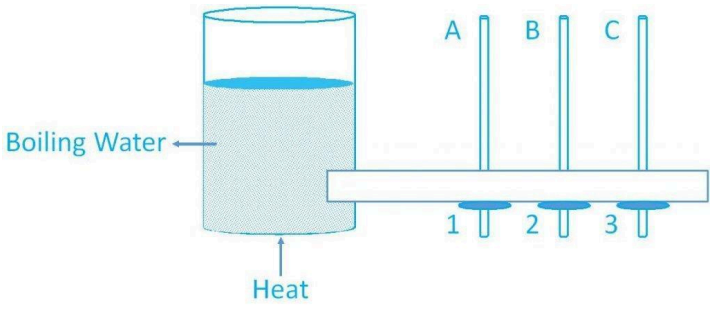
(b) In an experiment, the following activities were carried out on two green leaves A and B. Leaf A was taken from a plant placed in the sunlight for some time while leaf V was taken from a plant placed in a dark cupboard for 24 hours.

Activity.
I.Leaves dipped in boiling water for 1 minute
II. Leaves dipped in warm alcohol
III. Leaves washed in cold water
IV. Leaves dipped in iodine solution

After dipping in the iodine solution, it was observed that leaf A changed colour. Study the activities carefully and answer the questions that follow.
(i) Suggest an aim for the experiment.
(ii) Explain briefly why each of the following activities were carried out:
(α) I
(β) II
(γ) III
(iii) State the colour change of leaf A.
(iv) Explain why leaf A changed colour?
(v) Why is it necessary to de-starch the plant before starting the experiment?
(vi)From the above experiment, what conclusions(s) can be drawn.

(c) You are provided with two dry soil samples A and B, a measuring cylinder, beakers, funnels, filter paper, beam balance, stop watch and water.
With the aid of a labelled diagram, describe an experiment to find out which of the two soil samples can hold more water.

(d) The diagram below is an illustration of an experiment that was carried out. In the experiment three pins 1, 2 and 3 were fixed with candle wax onto a metal bar and one end of the bar was heated by means of boiling water. A, B and C are the thermometers inserted in holes along the bar to measure the temperatures at the various points.
Study the diagram carefully and answer the questions that follow.

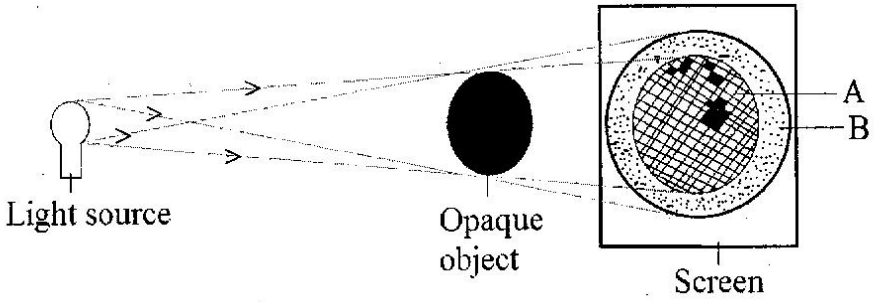


(i) Suggest an aim for the experiment?
(ii) What is the temperature of the boiling water?
(iii) State the observations that would be made about the pins 1, 2 and 3.

(iv) State the observations that would be made about the temperatures
Recorded by the thermometers A, B and C.
(v) State how heat from the sun is transmitted to the earth.

2. (a) (i) What is food chain?
(ii) Why is the plant in any food chain referred to as the producer?
(iii) What is the term given to the other organisms that depend directly or
indirectly on the producers for food.

(b) The diagram below is an illustration of the picture obtained on a screen when an opaque object is placed in the path of a light source.
Study the diagram and answer the questions that follow.



(i) Name each of the shadows that is cast on the screen;
(α) A;
(β) B

(ii) What does the shadow of the object cast on the screen illustrate?

(c) Describe briefly how a sample of pure sugar could be obtained from a mixture of sugar and sand.

(d) State three ways by which soil can be conserved.

3. (a) A body of mass 100 kg is raised to a height of 2m above the ground.
(i) State the name of the energy possessed by the object by reason of its new position.

(ii) Calculate value of this energy.
[g=10 ms-2]

(b) (i) What is matter?
(ii) State two of the states of matter.

(c) (i) Describe the nature of loamy soil.
(ii) Name any two plant nutrients.

(d) (i) State one causative organism for each of the following diseases:
(\alpha) cholera ;
(\beta) tuberculosis.

(ii) State one method of prevention of cholera.

4. (a) Explain briefly why a tomato plant is likely to wilt if too much fertilizer is applied.
(b) State the dangers involved in each of the following activities in the laboratory:
(i) eating or drinking water in the laboratory.
(ii) Walking barefooted;
(iii) washing hands with unknown liquid in a beaker.

(c) A child is found not to be able to see at night.
(i) what deficiency disease may the child be suffering from?
(ii) what food nutrient is the child lacking?
(iii) State three sources of food substances that can provide the nutrient that child lacks.

(d) (i) What is a force?
(ii) Explain briefly why a driver a could not stop a car on a slippery section of a road when he applied the brake.

5. (a) Describe briefly how the volume of an irregular shaped lead ball could be measured.

(b) State three characteristics of living things.

(c) (i) what us pollution?
(ii) Name one air pollutant .

(d) State three factors which influence vegetable crop production.

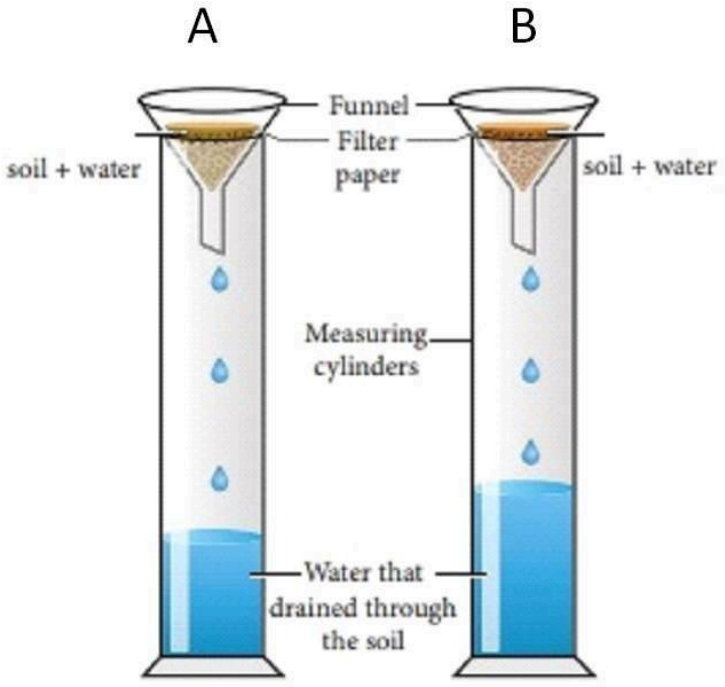
Paper 2 Answers

1a . (i) An experiment to determine the conditions necessary for rust.
(ii) To remove oxygen
(iii) To prevent air from from entering the water / To seal out air
(iv) To absorb moisture
(v) It rusted due to the presence of air and water
(vi)
(α) The nail in Test B did not rust because it was exposed to only water/moisture.
(β) The nail in Test C did not rust due to the absence of water/moisture

(vii) To Seal out air or to prevent air from getting into contact with the metal.

1b. (i) To demonstrate that sunglig is necessary for photosynthesis
(ii) (α) I – To kill living cells
(β) II – To remove chlorophyll
(γ) III – To soften the leaf and wash off alcohol
(iii) Leaf A turned turned blue-black
(iv) The color change exhibited was due to the presence of starch.
(v) To remove any existing starch from the leaves.
(vi) The experiment demonstrates that without sunlight, photosynthesis cannot occur.

1c.



(i) Equal quantities of soil samples of A and B are taken using the beam balance and then transferred into separate funnels each fitted with filter papers.
(ii) The funnels are mounted over a measuring cylinder and equal volumes of water is poured into each funnel.
(iii) The setups are allowed to stand until water drains completely in each setup.
(iv) The soil sample within the setup where the least water was drained into the measuring cylinder is the soil which holds more water (Setup A).

1d. (i) To show that heat is transferred through metals by conduction.
(ii) 100 degrees celsius.
(iii) The pins eventually fall off as the wax melts.
(iv) The temperature at A would be the highest, followed by B and then C.
(v) Heat is transmitted by the sun to the earth by radiation.

2. (a) (i) A food chain is a linear sequence of organisms through which nutrients and energy pass as one organism eats another.
(ii) Plants are primary producers because they produce their own food.
(iii) Consumers

(b) (i) (α) A – Umbra
(β) B – Penumbra

(ii) It illustrates that light travel in a straight line

(c) (i) Add water to the mixture of sand and sugar and stir vigorously.
(ii) Filter the mixture using a filter paper.

(iii) Heat the filtrate to evaporate the water.
(iv) Pure sugar is obtained after all the water evaporates.

(d) Afforestation, addition of manure,planting cover crops,crop rotation and mulching.

3. (a)(i) Potential energy

(ii) Potential Energy (P.E) = mass x gravity x height = 100 x 10 x 2 = 2000 J

(b) (i) Matter is anything that has weight and occupies space or matter is anything that has mass and takes up voulume.
(ii) solid, gas and liquid.

(c) (i) Loamy soil normally contains equal parts of clay, silt, and sand and large quantities of organic matter and nutrients.
(ii) Nitrogen , potassium, Phosphorus,Calcium,Iron & Magnesium.

(d) (i) (\alpha) cholera – Vibro Cholerae
(\beta) tuberculosis – Mycobacterium tuberculosis or tubercle bacillus

(ii) 1. Eating Hot foods
2. Washing hands with soap and under running water.
3. Proper disposal of faecal matter
4. Keeping the environment clean

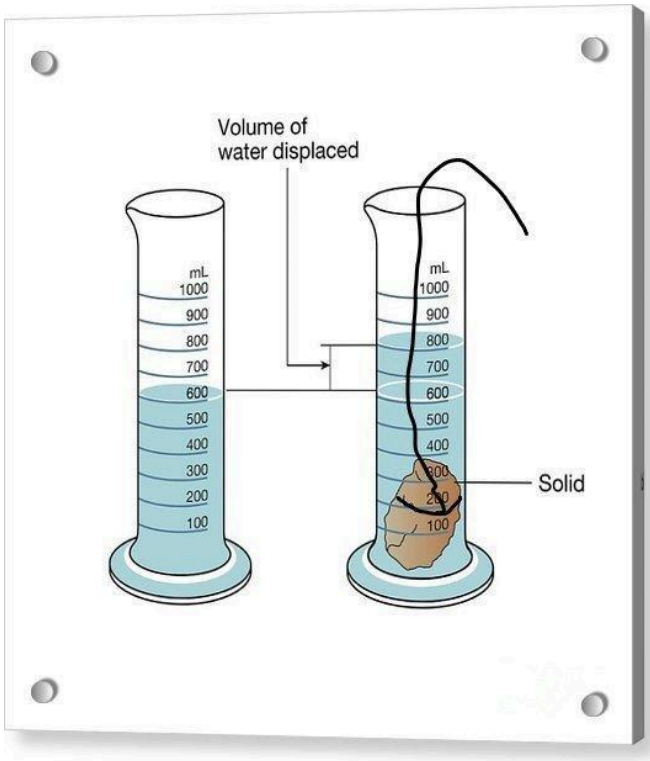
4. (a) Tomato plant is likely to wilt if too much fertilizer is applied due to the high increment of soil concentration. This causes the loss of water by action of osmosis.

(b)(i) eating or drinking water in the laboratory – Accidental ingestion of poisonous susbstances.
(ii) Walking barefooted – Injury by broken bottles or pins/ Slipping / Injury by spilled acids.
(iii) Skin irritation/corossion/burns

(c) (i) Night Blindness
(ii) Vitamin A
(iii) Tomatoes / Egg / Liver / Green leafy vegetables / cod Liver oil / Carrot

(d) (i) Force is a push or pull.
(ii) This is due to the lack of friction between the car types and the road which is caused by the presence of water on the road surface.

5.



(i) Fill the measuring cylinder with ample water.
(i) Record the volume as V1
(ii) Tie a thread to the irregular shaped lead ball and gently dip into the cylinder with water.
(iii) Record the new Volume (V2)
(iv) Calculate the difference in volumes (V2 – V1) as V3.
(v) V3, as calculated, is the volume of the irregular shape lead ball.

(b) Reproduction, growth, respiration and feeding.

(c) (i) Pollution is the introduction of harmful substances into the environment.
(ii) smoke, dust, fumes.