

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

Class 10 - Science

Sample Paper - 02 (2022-23)

Maximum Marks: 80

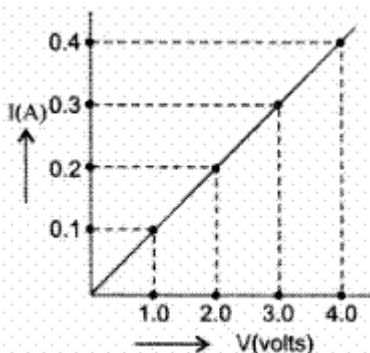
Time Allowed: : 3 hours

General Instructions:

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

- In an experiment to study the dependence of current on potential difference across a resistor, a student obtained the graph as shown in the diagram.



The value of resistance of the resistor is

- 100 ohm
 - 10 ohm
 - 0.1 ohm
 - 1.0 ohm
- If a round, green seeded pea plant (RRyy) is crossed with wrinkled, yellow seeded pea plant (rrYY) the seeds to be produced is F₁ generation will be:
 - Wrinkled and yellow
 - Round and yellow
 - Round and green

UNIQUE STUDY POINT

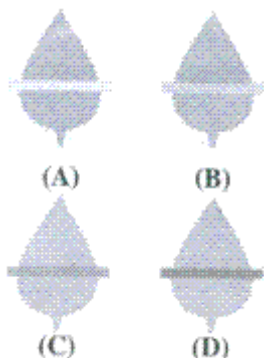
A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

d) Wrinkled and green

3. In an experiment on photosynthesis, students were instructed to cover a portion of a leaf of a destarched potted plant with opaque paper as shown in the figure. "A" covered one of the leaves with red strip, "B" with green, "C" with blue and "D" with black. When the starch test was done on the leaves after 4 hours, the result showed no starch in



- a) any of the covered portions
b) the portion covered with black and blue strips
c) the portion covered with red, green and blue strips
d) the portion covered with green strips
4. What does the tangent at any point on magnetic field lines indicate?
a) direction of magnetic field
b) direction of the force
c) direction of current
d) direction of induced current
5. Which of the following is not a silvery white metal?
a) Al
b) Pb
c) Sn
d) Ag
6. IUPAC name of following compound is:
$$\text{CH}_3 - \text{CH}_2 - \underset{\text{OH}}{\text{CH}} - \text{CH}_3$$

a) 2-butanol
b) Iso-butanol
c) Propanol
d) Butanol
7. Under what soil condition do you think a farmer would spread or treat the soil of his fields with quick lime (CaO) or slaked lime (CaCO₃)?
a) When the pH of the soil increases
b) All of these
c) When the pH of the soil decreases
d) When the nutrients of the soil is lost

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

8. In the list of organisms given below, those that reproduce by the asexual method are

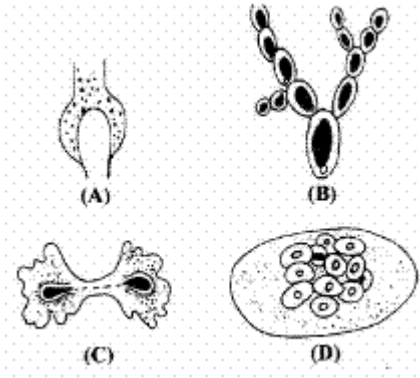
- i. banana
- ii. dog
- iii. yeast
- iv. Amoeba

- a) (i) and (iv)
- b) (ii), (iii) and (iv)
- c) (ii) and (iv)
- d) (i), (iii) and (iv)

9. Salt of a strong base and a weak acid

- a) are basic with $\text{pH} > 7$
- b) are neutral with $\text{pH} = 7$
- c) are acidic with $\text{pH} > 8$
- d) are acidic with $\text{pH} < 7$

10. In which of the following, binary fission observed:



- a) A
- b) D
- c) C
- d) B

11. The maleness of a child is determined by

- a) the Y chromosome in zygote
- b) the cytoplasm of germ cell which determines the sex
- c) the X chromosome in the zygote
- d) sex is determined by chance

12. In an series of resistor circuit when $R_1 = 20$ ohms, $R_2 = 50$ ohms and $R_3 = 40$ ohms then what is the total resistance R ?

- a) 200 ohms
- b) 100 ohms

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

- c) 110 ohms
- d) 140 ohms

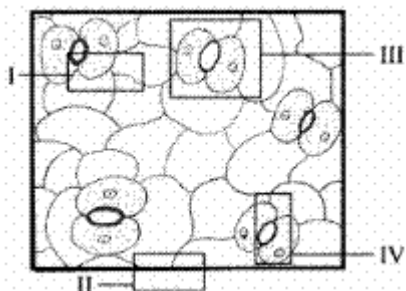
13. A ray passing through the centre of curvature of a concave mirror is inclined at an angle to its principal axis. The angle of reflection for this ray equals:

- a) 0°
- b) $\left(\frac{\alpha}{2}\right)^\circ$
- c) 90°
- d) α°

14. Silver particles become black on prolonged exposure to air. This is due to the formation of

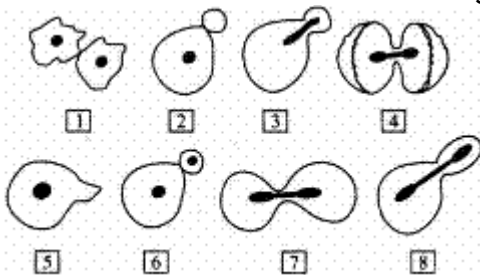
- a) Ag_2O
- b) Ag_3N
- c) Ag_2S and Ag_3N
- d) Ag_2S

15. Shown below are four parts of a slide of an epidermal peel, marked I, II, III and IV. Which part out of these four should be focused under high power to view complete stomata?



- a) II
- b) III
- c) I
- d) IV

16. From the following diagrams, select the correct ones showing stages of binary fission in Amoeba and budding in Yeast in their proper sequence:



- a) 7, 4, 1 and 3, 8, 6
- b) 3, 4, 7 and 2, 8, 6
- c) 5, 1, 4 and 2, 3, 6
- d) 8, 7, 4 and 3, 2, 6

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

17. **Assertion (A):** The magnetic field is stronger at a point that is nearer to the conductor and goes on decreasing on moving away from the conductor.
Reason (R): The magnetic field B produced by a straight current-carrying wire is inversely proportional to the distance from the wire.
- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
18. **Assertion (A):** H_2CO_3 is a strong acid.
Reason (R): A strong acid dissociates completely or almost completely in water.
- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
19. **Assertion (A):** The effect of auxin hormone on the growth of root is exactly opposite to that on a stem.
Reason (R): Auxin hormone increases the rate of growth in root and decreases the rate of growth in stem.
- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.
20. **Assertion (A):** Ecology is study of relationship between living organisms and their environment.
Reason (R): The biotic community and non-living environment of an area function together to form an ecosystem.
- Both A and R are true and R is the correct explanation of A.
 - Both A and R are true but R is not the correct explanation of A.
 - A is true but R is false.
 - A is false but R is true.

Section B

21. What are ill effects of drinking excess of alcohol?

OR

Explain why soaps are not effective cleansing agents in hard water?

22. What is the function of receptors in the body? Think of situations where receptors do not work properly. What problems are likely to arise?
23. What are the ill effects of ozone layer depletion?

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

24. What is ozone hole? What is its significance.

25. A 6 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 25 cm. The distance of the object from the lens is 40 cm. By calculation determine

- i. the position and
- ii. the size of the image formed.

OR

A ray passing through the centre of curvature of a spherical mirror after reflection, returns along the same path. Why?

26. Given a chemical test to distinguish between

- (i) Ethane and ethene
- (ii) Ethanol and ethanoic acid
- (iii) Soaps and Detergents

Section C

27.

- i. Why are the chips packets puffed when we buy them from market?
- ii. Paint is applied on articles made up of iron, why?

28. A pencil when dipped in water in a glass tumbler appears to be bent at the interface of air and water. Will the pencil to be bent to the same extent, if instead of water we use liquids like, kerosene or turpentine? Support your answer with reasons.

29. The embryo gets its nutrition from the mother's blood with the help of special tissue.

- i. What is this special tissue called?
- ii. Give any other function of this tissue apart from one mentioned above.
- iii. Explain the structure of this special tissue.

OR

Rohini's parents received a proposal for her marriage from a boy living in UK. Before everything could get finalised, Rohini asked her parents to ask the boy to get his blood test report.

- i. Do you think it was right on the part of Rohini's parents to do so?

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

- ii. What moral values did Rohini showed?
 - iii. Name the STDs along with their causative organisms.
30. Archana and Anupurna are best friends and they are studying in the same class. Archana was facing difficulty in reading from the blackboard sitting at the last bench. Then, Anupurna wonders why Archana avoids sitting on the last bench. Archana was fond of eating junk foods at lunch time. But Anupurna started sharing lunch with Archana which contains green vegetables and fruits. Archana is now better and also started taking balanced diet. Read the above text and answer the following questions:
- i. Name the eye defect which Archana is suffering from.
 - ii. Name the two possible deformities related to her eye defect.
 - iii. What value is shown by Anupurna?
31. A compound X on heating with excess conc. sulphuric acid at 443 K gives an unsaturated compound Y. X also reacts with sodium metal to evolve a colourless gas Z. Identify X, Y and Z. Write the equation of the chemical reaction of formation of Y and also write the role of sulphuric acid in the reaction.
32. In Mendel's experiment of inheritance in which he took two contrasting characters, i.e. round green and wrinkled yellow seeds,
- i. What was the phenotype of offsprings in F_1 - generation?
 - ii. What was the ratio of offsprings in F_2 - generation?

OR

A man with type A blood has a wife with type B. They have a child with type O blood. Give the genotype of all the three. What other blood groups can be expected in the future offspring of this couple?

33. When one enters a less lighted room from a place of intense light, he is not able to see anything for sometime, but after sometime the things become somewhat visible. Explain how this happens?

Section D

- 34.
- i. Write the electron-dot structures for sodium, oxygen and magnesium.
 - ii. Show the formation of Na_2O and MgO by the transfer of electrons.

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

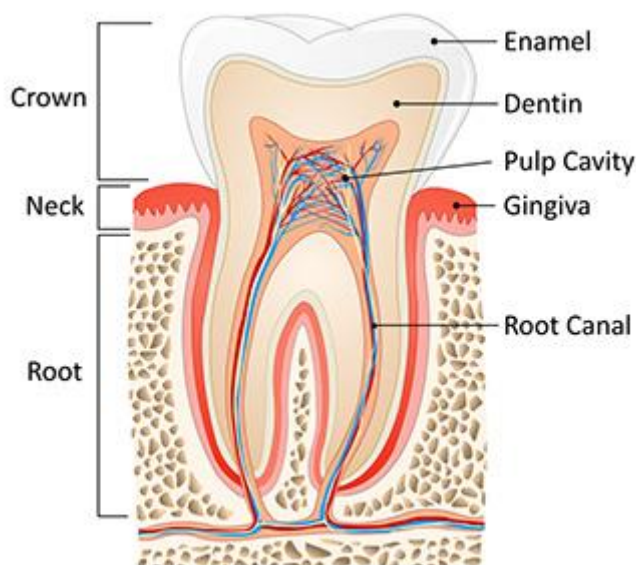
[click to Join USP WhatsApp Group](#)

iii. What are the ions present in these compounds?

OR

Carbon cannot reduce the oxides of sodium, magnesium, and aluminium to their respective metals. Why? Where are these metals placed in the reactivity series? How are these metals obtained from their ores? Take an example to explain the process of extraction along with chemical equations.

35. Given below is a well-labelled diagram of a tooth.



Using the above diagram, answer the following questions:

- Which part of a tooth contains nerves and blood vessels?
- Where is the pulp cavity present?
- How dental caries are formed in the teeth?
- What happens if the teeth are not cleaned regularly?
- How tooth decay can be prevented?

OR

Draw the sectional view of the human heart and label the following parts given below:

- Chamber where oxygenated blood from lungs is collected.
- The largest blood vessel in our body.
- The Muscular wall separating the right and left chambers.

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

iv. The blood vessel that carries blood from the heart to the lungs.

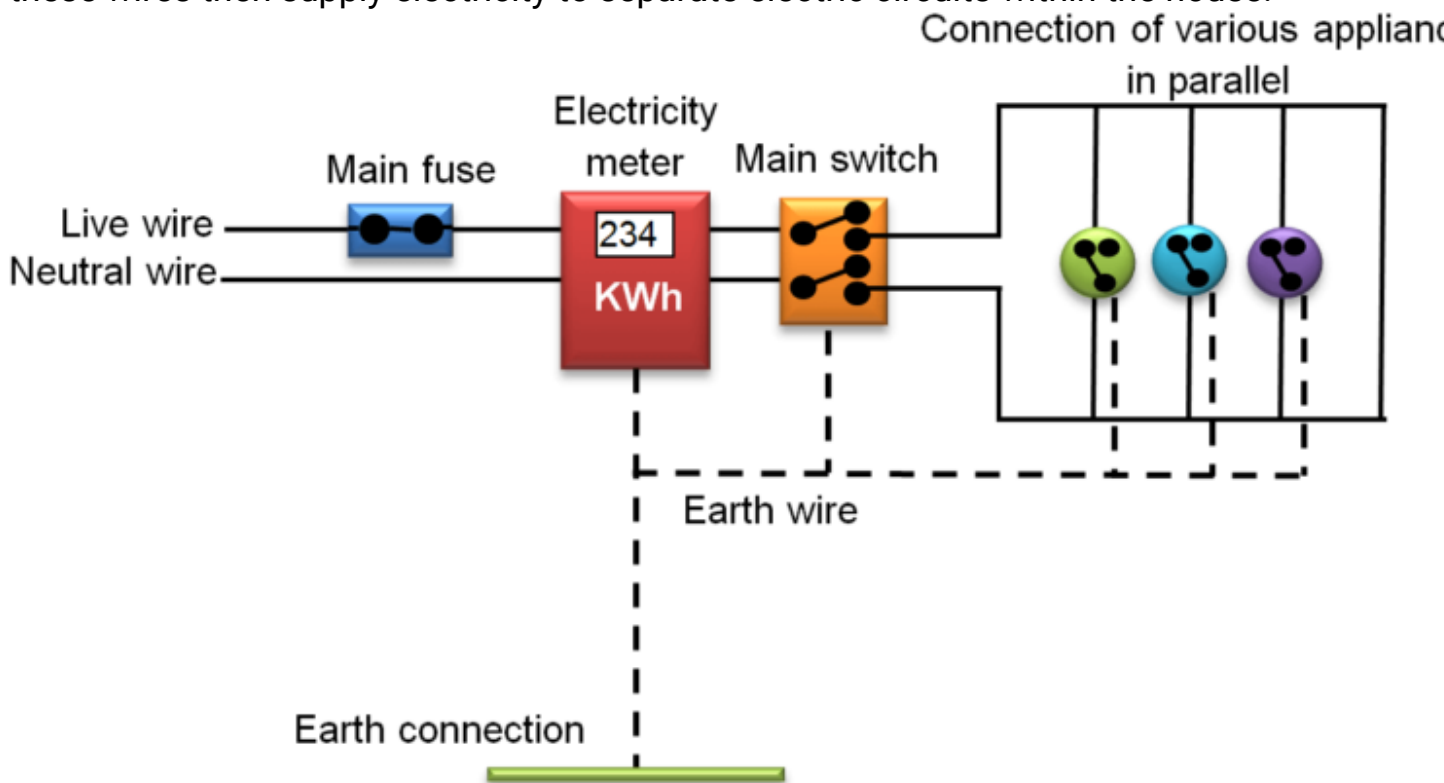
36.

- Name and state the rule to find the direction of force experienced by a current-carrying straight conductor placed in a magnetic field which is perpendicular to it.
- Draw a well labelled diagram of an electric motor.

Section E

37. **Read the text carefully and answer the questions:**

In our homes, either the overhead electric poles or underground cables support the power supply flowing through the mains supply. One of the wires in this supply is covered with insulation in the colour red, and another wire colored black. At the meter board, these wires pass into an electric meter through the main fuse. The main switch, live wire, and the neutral wire are in connection to the line wires in our homes; these wires then supply electricity to separate electric circuits within the house.



- What is the colour of the live wire?
- Where is the fuse placed in the electric supply in the above-given figure?

OR

What is the commercial unit of the power supply?

UNIQUE **STUDY** POINT

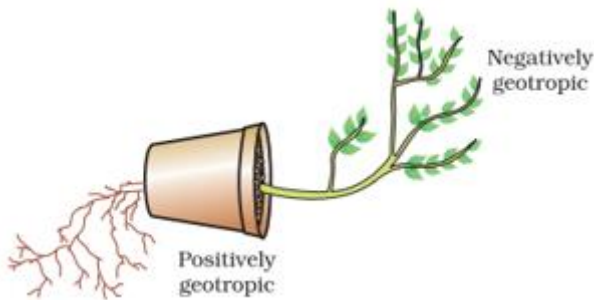
A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

38. **Read the text carefully and answer the questions:**

Environmental triggers such as light, or gravity will change the directions that plant parts grow in. These directional, or tropic, movements can be either towards the stimulus or away from it. So, in two different kinds of phototropic movement, shoots respond by bending towards light while roots respond by bending away from it. How does this help the plant? Plants show tropism in response to other stimuli as well. The roots of a plant always grow downwards while the shoots usually grow upwards and away from the earth. This upward and downward growth of shoots and roots, respectively, in response to the pull of earth or gravity, is, obviously, geotropism. If 'hydro' means water and 'chemo' refers to chemicals, what would 'hydrotropism' and 'chemotropism' mean? Can we think of examples of these kinds of directional growth movements? One example of chemotropism is the growth of pollen tubes towards ovules, about which we will learn more when we examine the reproductive processes of living organisms.



- Where does negative phototropism occur in plants?
- Phototropism in shoots is attributed due to which plant hormone?
- Tendrils exhibit/ twining of tendrils show which type of tropic movement?

OR

If the stem grows towards sunlight and the root grows just opposite to it, then what type of movement of the stem is it?

39. **Read the text carefully and answer the questions:**

The strength of acid and base depends on the number of H^+ and the number of OH^- respectively. If we take hydrochloric acid and acetic acid of the same concentration, say one molar, then these produce different amounts of hydrogen ions. Acids that give rise to more H^+ ions are said to be strong acids, and acids that give less H^+ ions are said to be weak acids. Can you now say what weak and strong

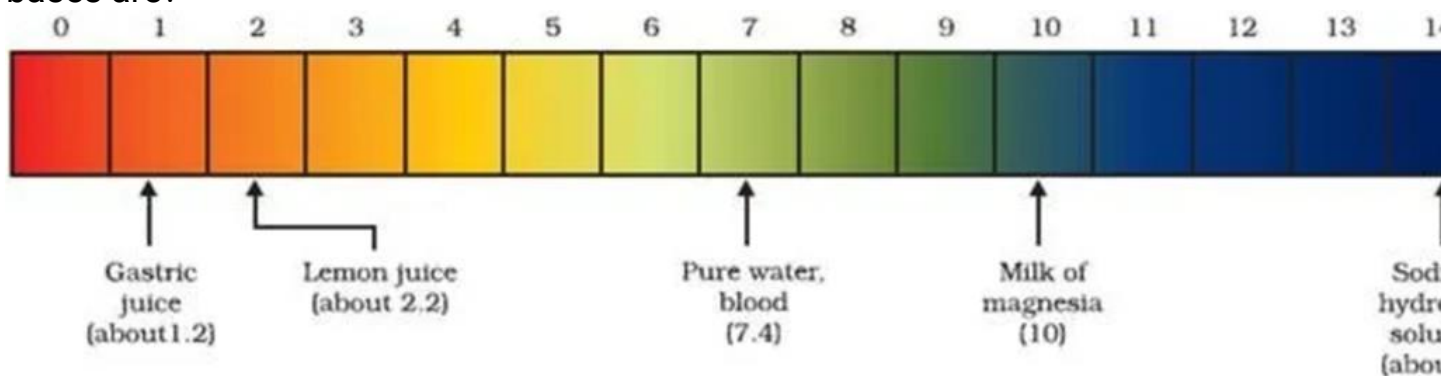
UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

bases are?



- Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd?
- Is Gastric juice a weak acid?
- Milk of magnesia is an acid or base? For what purpose it can be used?

OR

What is the pH value of saliva after the meal?

Class 10 - Science
Sample Paper - 02 (2022-23)

Solution

Section A

1. (b) 10 ohm

Explanation: Slope = $\frac{\text{Change } I}{\text{Change } V} = \frac{0.3 - 0.1}{3.0 - 1.0} = \frac{0.2}{2.0}$

Resistance = Reciprocal of the slope of the graph between V and I.

$$\frac{2.0}{0.2} = 10 \Omega$$

2. (b) Round and yellow

Explanation: Since roundness and yellow colour are shown by capital letters in the genotype so they are dominant traits. We know that only dominant traits are expressed in the F1 generation.

3. (a) any of the covered portions

Explanation: Covered portion of the leaf does not get sunlight irrespective of the colour strip.

4. (a) direction of magnetic field

Explanation: Tangent indicates the direction of the magnetic field. It just an alternative used when compass is not available.

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquetstudyonline.com

[click to Join USP WhatsApp Group](#)

5. (b) Pb

Explanation: Freshly cut solid lead has a bluish-white color that soon tarnishes to a dull greyish color when exposed to air.

6. (a) 2-butanol

Explanation: 2-butanol

7. (c) When the pH of the soil decreases

Explanation: When the pH of the soil becomes acidic, slaked lime or quick lime is added to neutralize the soil.

8. (d) (i), (iii) and (iv)

Explanation: Asexual reproduction is the mode of reproduction in single-parent produces offsprings.

- Amoeba reproduces asexually by binary fission.
- Asexual reproduction occurs in yeast by means of budding and in banana asexual reproduction occurs by the means of vegetative propagation from the stem.
- Dogs reproduced sexually.

9. (a) are basic with pH >7

Explanation: In aqueous medium, a strong base is completely dissociated, but weak acid is not. Hence salt formed is basic. So, its pH >7.

10. (c) C

Explanation: It is Amoeba which undergoes binary fission. Most of the unicellular animals prefer binary fission method for reproduction.

11. (a) the Y chromosome in zygote

Explanation: The maleness of a child is determined by the Y-chromosome in zygote inherited from the father. If X-chromosome is inherited from the father, the zygote will develop into a girl.

12. (c) 110 ohms

Explanation: $R = R_1 + R_2 + R_3$

$$R = 20 + 50 + 40$$

$$R = 110 \text{ Ohms}$$

13. (a) 0°

Explanation: The angle of reflection for the ray passing through the centre of curvature will be 0°. A ray passing through the centre of curvature of a concave mirror is reflected back along the same path.

14. (d) Ag₂S

Explanation: The silver particles react with atmospheric sulphur compounds like H₂S gas and form a black coating of Ag₂S over the surface.

15. (b) III

Explanation: Under higher power, objects appear more magnified.

16. (a) 7, 4, 1 and 3, 8, 6

Explanation: Correct sequence of binary fission in Amoeba and budding in yeast.

17. (a) Both A and R are true and R is the correct explanation of A.

Explanation: The magnitude of the magnetic field is

- Directly proportional to the current I passing through the wire.

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquetstudyonline.com

[click to Join USP WhatsApp Group](#)

- ii. Inversely proportional to the distance r from the wire. The magnetic field is stronger at a point that is nearer to the conductor and goes on decreasing on moving away from the conductor.
18. (d) A is false but R is true.
Explanation: H_2CO_3 carbonic acid is a weak acid.
19. (c) A is true but R is false.
Explanation: A is true but R is false.
20. (a) Both A and R are true and R is the correct explanation of A.
Explanation: Both A and R are true and R is the correct explanation of A.

Section B

21. **Ill effects of drinking excess of alcohol:**
- With increase in its consumption, the body loses its control and gradually one loses one's consciousness.
 - If consumed in large quantities, it may cause death by damaging liver.
 - It causes addiction and makes person dependent on it.
 - Medically, alcohol is an intoxicant. The person loses all sense of discrimination under its influence.
- Therefore, we should all condemn drinking of alcohol on any pretext because once started, it lead to a total disaster.

OR

It is because detergents form lot of lather even with hard water. Hard water contains Ca^{2+} and Mg^{2+} ions which react with soap to form Insoluble salts of calcium and magnesium called scum and soap goes waste. Detergents do not form insoluble compounds with Ca^{2+} and Mg^{2+} ions therefore. These are more effective.

22. Receptors provide information about the external environment so that the brain can instruct a related to organ to take necessary action. Receptors play an important role in our survival. Let us take the example of a person with hearing impairment. Certain ordinary task would be very difficult for that person. For example; while walking on the road, the person needs to hear the sound of vehicles moving near him. Without hearing those sounds, he would not be in a position to move safely on the road.
23. As ozone offers a protective blanket against harmful U.V. radiations, its depletion leads to exposure to harmful U.V. rays.
The ill effects of ozone depletion are:
- Human health:** - (a) It cause skin cancer.
(b) Eye diseases like cataracts. (c) Suppression of the immune system.
 - Agriculture and plant life:** - Growth & leaf development of most plant species decrease abundantly on exposure to high concentration of UV radiations.
 - Marine environment:** - UV radiation filtered through the depleted ozone layer

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquetstudyonline.com

[click to Join USP WhatsApp Group](#)

directly damage.

(a) The photosynthesizing phytoplankton presents in the sea which also help in reducing the global warming.

(b) Young fishes.

(c) Shrimp, crabs larvae and other small animals.

24. During the period 1956-1970 the spring time O₃ layer thickness above Antarctica varied from 280-325 Dobson unit. Thickness was sharply reduced to 225 DU in 1979 and 136 DU in 1985. The decline in spring the time ozone layer thickness is called ozone hole. It was first noted in 1985 over Antarctica.

Cooling of the stratosphere (where ozonosphere is located) will produce bigger ozone hole not only over Antarctica but also over Arctic region. Ozone layer will further thin out from rest of the stratosphere. It will be accompanied by major climatic changes all over the globe. Forests will be wiped out from many places. Radio communications will be disrupted.

25. Here it is given that, height of object, $h_o = 6$ cm
and focal length of lens, $f = 25$ cm
Also distance of object, $u = 40$ cm

i. By using lens formula, we have

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

$$\Rightarrow \frac{1}{v} = \frac{1}{f} + \frac{1}{u}$$

$$= \frac{1}{25} + \frac{1}{(-40)}$$

$$= \frac{8-5}{200} = \frac{3}{200}$$

$$\Rightarrow v = \frac{200}{3} = 66.67 \text{ cm. Hence, image is formed at a distance of } 66.67 \text{ cm behind the lens}$$

ii. Now Magnification = $m = \frac{h_i}{h_o} = \frac{v}{u}$

$$\Rightarrow h_i = \frac{v}{u} \times h_o$$

$$= \frac{200}{3 \times (-40)} \times 6$$

= -10 cm. Hence height of image is -10 cm below the principal axis.

OR

When the ray of light passes through the centre of curvature of the spherical mirror it strikes along the normal that means it is incident on the mirror at 90°. Hence the incident ray coincides with the normal and retraces its path. Therefore the angle of incidence = 0

According to the law of reflection

The angle of reflection = 0

Hence the angle of reflection to become zero degrees

Thus ray of light retraces its path.

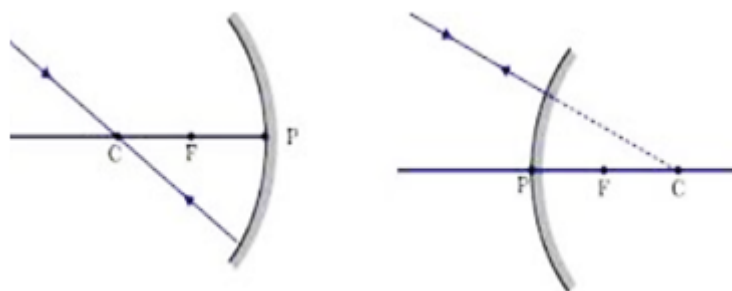
The figure below illustrates the above situation as follows:

UNIQUE STUDY POINT

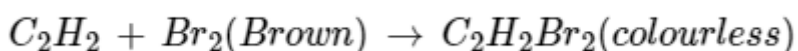
A free Online Educational platform for study materials

www.uniquestudyonline.com

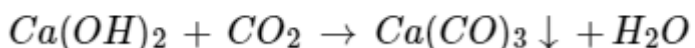
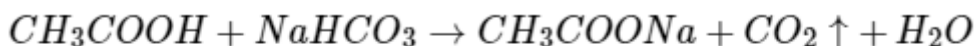
[click to Join USP WhatsApp Group](#)



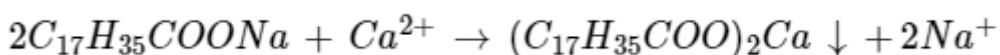
26. (i) **Bromine water test** can be used to test unsaturated hydrocarbons like ethene. Ethene (an unsaturated hydrocarbon) will decolorize the brown colour of bromine water while ethane (a saturated hydrocarbon) will not. Bromine water will remain brown in the presence of ethane.



- (ii) Ethanoic acid gives a brisk effervescence of carbon dioxide with sodium hydrogen carbonate while ethanol does not. The carbon dioxide gas can be tested by passing the gas through freshly prepared lime water.



- (iii) Soaps form a white curdy precipitate or scum with hard water while detergents do not form any precipitate with hard water. Hardness of water is caused by calcium and magnesium salts. Soaps react with calcium and magnesium salts present in hard water to form scum.



Section C

- 27.
- Cooking oil gets oxidized when comes in contact with air and gives a bad smell or turns "rancid". The oxygen present in the chips packet is replaced by flushing nitrogen in the packet, this in turn puffs up the packet.
 - Iron easily reacts with atmospheric oxygen in presence of slight moisture to give iron oxide. In this process of 'corrosion', the outer layer of iron is oxidized and hence sacrificed leading to the shaping of the iron article. To avoid this oxidation, the article is coated with paint so as to make a barrier between the article's surface and atmosphere.

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

28. We know that pencil appears to be bent at the interface of air and water because of refraction of light. The degree of refraction depends on refractive index of a given liquid. Refraction indices of kerosene, water and other liquids would be different. Hence, degree of bend would be different in case of different liquids.

- 29.
- This special tissue that provides nutrition is called the placenta.
 - Besides providing nutrition to the embryo, placenta helps in removing waste products from embryo, it also helps in providing oxygen to the embryo and eliminating carbon dioxide from embryo.
 - The placenta is a disc-like structure that is attached to the wall of the uterus. It is formed by two sets of a minute finger-like process called villi. One set from uterine wall and other set from the embryo. The blood flows through the fine capillaries of the placenta.

OR

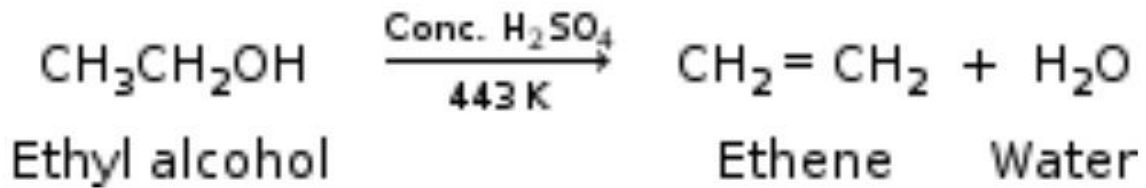
- Yes, it is necessary to go through the blood reports of the boy. It indicates about his physical fitness and ensures that he is free of any STD or venereal disease. It might also rule out chances of certain genetic disorder such as sickle cell anaemia.
 - Rohini is vigilant, cautious, intelligent and sensible.
 - Gonorrhoea caused by *Neisseria gonorrhoeae*, AIDS caused by HIV (Human Immunodeficiency Virus) are two common STDs.)
- 30.
- Archana is suffering from myopia or short-sightedness is a very common eye condition that causes distant objects to appear blurred, while close objects can be seen clearly.
 - The two possible deformities of this defect are
Increase in size of the eyeball.
The decrease in focal length of the eye lens.
 - Anupurna has great concern about the eye problem which Archana was facing. She guided her on how to solve the problem by taking green vegetables and fruits.
31. X is Ethanol (C_2H_5OH), Y is Ethene (C_2H_4), Z is Hydrogen gas (H_2).
Equations of the chemical reaction for formation of Y:

UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)



Role of sulphuric acid: It is used as a dehydrating agent in the above reaction.

32.

- i. All offsprings were round yellow in F_1 - generation
- ii. Round yellow - 9
Round green - 3
Wrinkled yellow - 3
Wrinkled green - 1
Therefore, the ratio of offsprings in F_2 -generation is 9:3:3:1.

OR

- a. Genotypes. Man ($I^A I^o$) Mother $I^B I^o$ and child $I^o I^o$.
- b. Blood group of the future offspring. A type, B type, O type and AB type. It is based on the following cross:

♀ \ ♂	I^A	I^o
I^B	$I^A I^B$	$I^B I^o$
I^o	$I^A I^o$	$I^o I^o$

33. When we are in bright sunlight the aperture of the pupil would be small to regulate the amount of light entering the eye preventing glare, discomfort and damage to eyes. As we enter a dark room less amount of light would enter our eyes due to small size of pupil, and we won't be able to see objects clearly. It takes some time to regulate the size of the pupil through iris. Hence, it requires some time to see things.

Section D

34.

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

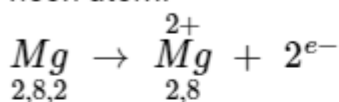
i.

Metal	Symbol	Atomic number	Electronic configuration K, L, M, N	No. of outermost electrons	Electron dot structures
Sodium	Na	11	2,8, 1	1	Na.
Oxygen	O	8	2,6	6	:O::
Magnesium	Mg	12	2,8, 2	2	Mg:

The atomic number of magnesium = 12

Its electronic configuration is K, L, M
 $2, 8, 2$

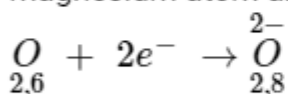
It has two electrons in its outermost shell. So, the magnesium atom donates its 2 valence electrons and forms a stable magnesium ion, Mg^{2+} to attain the electronic arrangement of neon atom.



The atomic number of oxygen = 8

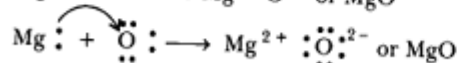
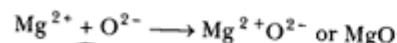
Electronic configuration = K, L
 $2, 6$

It has 6 electrons in its valence shell. Therefore, it requires 2 more electrons to attain the stable electronic arrangement of neon gas. Thus, oxygen accepts 2 electrons donated by magnesium atom and forms a stable oxide ion, O^{2-}



The oppositely charged magnesium ions, Mg^{2+} , and oxide ions, are held together by a strong force of electrostatic attraction to form magnesium oxide compound.

$Mg^{2+} O^{2-}$ or MgO .



MgO is ionic compound.

- iii. The ions present in Na_2O are sodium ions ($2Na^+$) and oxide ion O^{2-} .
 The ions present in MgO are magnesium ion (Mg^{2+}) and oxide ion O^{2-} .

- iii. The ions present in Na_2O are sodium ions ($2Na^+$) and oxide ion O^{2-} .
 The ions present in MgO are magnesium ion (Mg^{2+}) and oxide ion O^{2-} .

OR

Oxides of sodium, magnesium and aluminium are very strong oxides as these metals are very reactive metals, but carbon is not a strong reducing agent and hence carbon cannot reduce the oxide of sodium, magnesium and aluminium to their respective metal.

In the reactivity series, sodium, magnesium and aluminium are placed in the upper portion and they are very reactive in nature and carbon is less reactive.

$K > Na > Ca > Mg > Al > C > Zn > Fe$

UNIQUE STUDY POINT

A free Online Educational platform for study materials

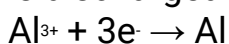
www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

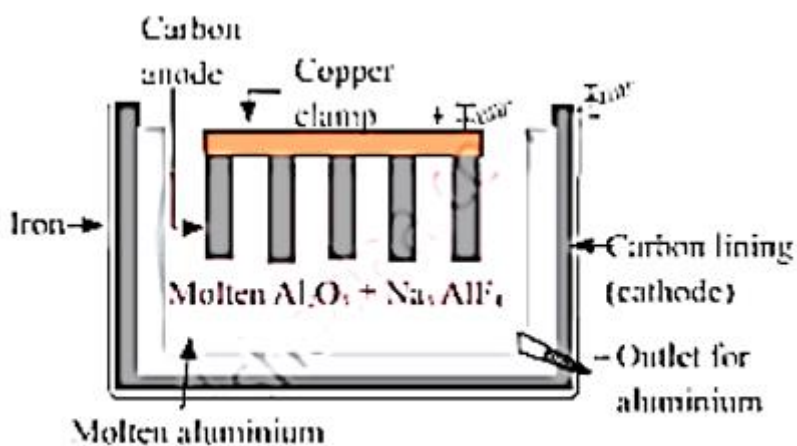
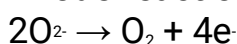
Oxides of reactive metals are directly put into the electrolytic reduction process to obtain the pure metal.

For the oxide of a reactive metal like aluminium oxide, as the metal is already in its oxide state so, it is directly put for the electrolytic reduction process. In this process, graphite electrodes are used as anode and cathode in the electrolytic chamber. Pure aluminium is attracted to the cathode, which is a lining of graphite. The oxygen is attracted to the anode and bubbles through the solution.

Cathode reaction: At the cathode reduction of aluminium takes place and aluminium is discharged



Anode reaction: At the anode oxidation takes place and oxygen gas is evolved.



Electrolytic cell for the extraction of aluminium

35.

- The pulp cavity contains nerves and blood vessels.
- The part of the tooth below the enamel is called dentine inside which is the pulp cavity.
- Dental caries in the teeth are formed due to the action of acid-forming bacteria and improper dental care.
- If the teeth are not cleaned regularly, they become covered with the sticky, yellowish layer of food particles and bacteria cells called dental plaque.
- Tooth decay can be prevented by brushing the teeth regularly as it neutralises the acids.

OR

- The oxygenated blood from the lungs comes back to the left atrium through a pair of the pulmonary vein.
- Aorta is the largest blood vessel in our body.
- The right atrium and left atrium separated by the atrial septum. The right and left ventricle separated by the ventricular septum.
- The pulmonary artery is the blood vessel that carries blood from the heart to the lungs

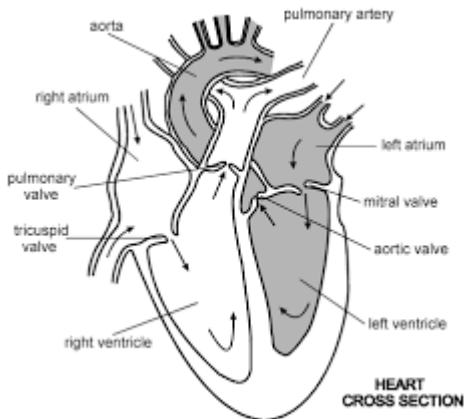
UNIQUE STUDY POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

The sectional view of the human heart is as follows:

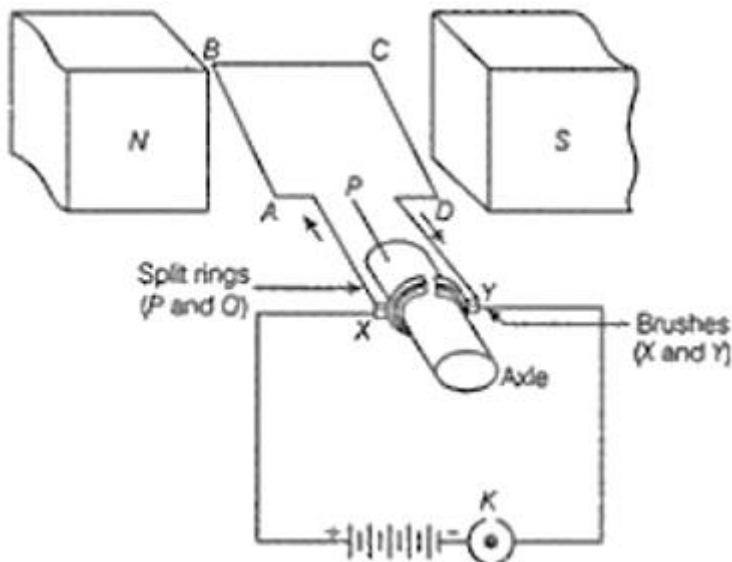


36.

a.

- Fleming's left-hand rule.
- Adjust your hand in such a way that the forefinger points in the direction of magnetic field and the centre finger points in the direction of current, then thumb gives the direction of force acting on the conductor

b. Electric motor.



Section E

37.

- Live wire is of Red colour.
- The fuse is connected in between live wire.

OR

KWh is the commercial unit of power supply.

38.

UNIQUE **STUDY** POINT

A free Online Educational platform for study materials

www.uniquestudyonline.com

[click to Join USP WhatsApp Group](#)

- i. In plants, negative phototropism occurs in roots.
- ii. Phototropism in shoots is attributed due to auxin in plants.
- iii. Tendrils exhibit/ twining of tendrils show thigmotropism movement.

OR

Positive phototropic movement.

39.

- i. The pH of milk is 6. As it changes to curd, the pH will reduce because curd is acidic in nature. The acids present in it decrease the pH.
- ii. Yes, gastric juice is a weak acid.
- iii. Milk of magnesia is a base and it can be used as an antacid.

OR

The pH value of saliva after the meal is 5.8.