

APEEJAY SCHOOL, PANCHSHEEL PARK

CLASS – X

Science (086)

PREBOARD - II EXAMINATION

Name of the students:

Max. Marks: 80

Date:

Time allowed: 3 Hours

General Instructions:

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.
- iv. 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.
- v. 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.
- vi. 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.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section-A

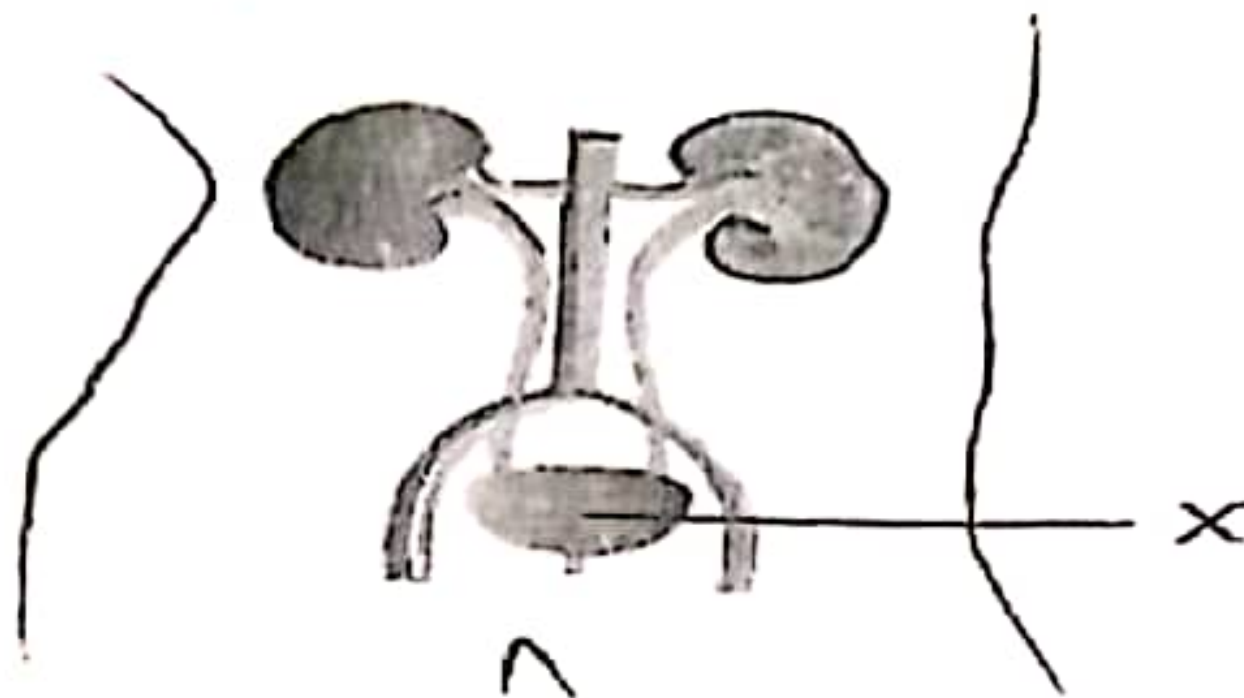
Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

Q. no	Questions	Marks
1.	Which of the following hydrocarbons undergoes Addition reaction? (a) C_2H_2 (b) C_3H_4 (c) C_4H_6 (d) C_5H_{12}	1
2.	In which of the following reaction does a solid get separated from the solution? (a) Neutralization reaction (b) Precipitation reaction (c) Redox reaction (d) Combustion reaction	1
3.	Burning of hydrogen gas in presence of oxygen gas to form water vapor is an example of (a) Combination reaction (b) Exothermic reaction (c) Redox reaction (d) All of these	1
4.	A compound used for whitewashing is (a) Quick lime (b) Slaked lime (c) Limestone (d) Blue vitriol	1
5.	An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be (a) calcium (b) carbon (c) silicon (d) iron	1
6.	10 mL of a solution of NaOH is found to be completely neutralized by 8 mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount HCl solution (the same solution as before) required to neutralize it will be (a) 4 mL (b) 8 mL (c) 12 mL (d) 16 mL	1
7.	Which of the following salts does not contain water of crystallization?	1

- (a) Blue vitriol
- (c) Washing soda

- (b) Baking soda
- (d) Gypsum

8. The image shows the excretory system in humans.



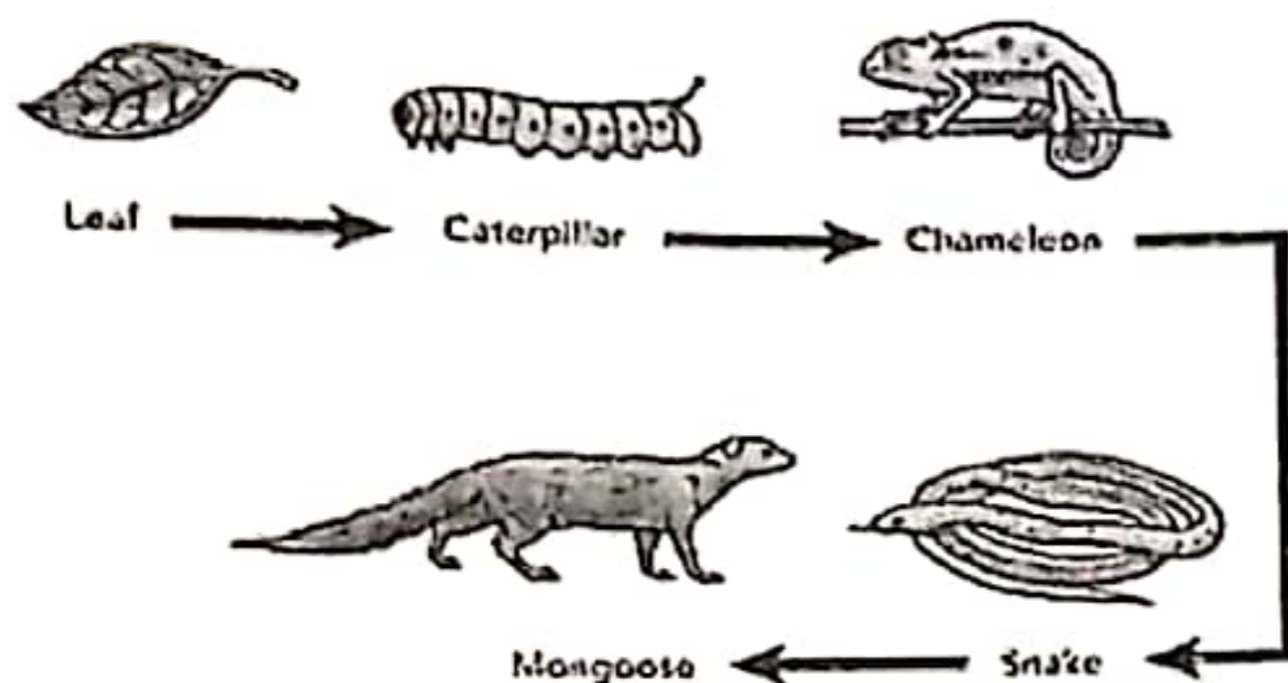
What is the importance of the labelled part in the excretory system?

- (a) It produces urine.
 - (b) It filters waste from the blood.
 - (c) It stores the urine till urination.
 - (d) It carries urine from the kidney to the outside.
9. In plants, the role of cytokinin is
- (a) promoting cell division
 - (b) wilting of leaves
 - (c) promoting the opening of stomatal pore
 - (d) detachment of fruits
10. The time duration from the sowing of seeds to the harvest of crops is critical for agricultural purposes. Based on the information above, select a reason why farmers prefer vegetative propagation for growing crops. 1
- (a) Seedless crops can also be reproduced.
 - (b) Offspring plants are genetically similar to parent plants.
 - (c) Plants grown by vegetative propagation bear fruit earlier.
 - (d) Vegetative propagation does not depend on external agents of pollination.
11. Person X suffers from a condition that affects the normal functioning of the pituitary gland. Which of the following is most likely a direct effect of person X's condition? 1
- (a) Insufficiency of iodine
 - (b) Irregular heartbeat
 - (c) Insufficient growth of the body
 - (d) Inability to regulate blood sugar
12. A plant gets rid of excess water through transpiration. What is the method used by plants to get rid of solid waste products? 1
- (a) Shortening of stem
 - (b) Dropping down fruits
 - (c) Shedding of yellow leaves
 - (d) Expansion of roots into the soil
13. The light enters from air to glass having refractive index 1.5. the speed of light in glass is: 1
- (a) 3×10^8 m/s
 - (b) 2×10^8 m/s
 - (c) 1.5×10^8 m/s
 - (d) 2.25×10^8 m/s
14. The phenomenon of twinkling of stars is due to: 1

- (a) Dispersion
(c) Atmospheric refraction

- (b) Tyndall effect
(d) Reflection

15. In the given food chain, suppose the amount of energy at the fourth trophic level is 5kJ, what will be energy available at the producer level? 1



- (a) 5 kJ (b) 50 kJ (c) 500 kJ (d) 5000 kJ

16. As energy transferred from one trophic level to another, the amount of usable energy
(a) is increased (b) is decreased
(c) remains the same (d) energy is never transferred 1

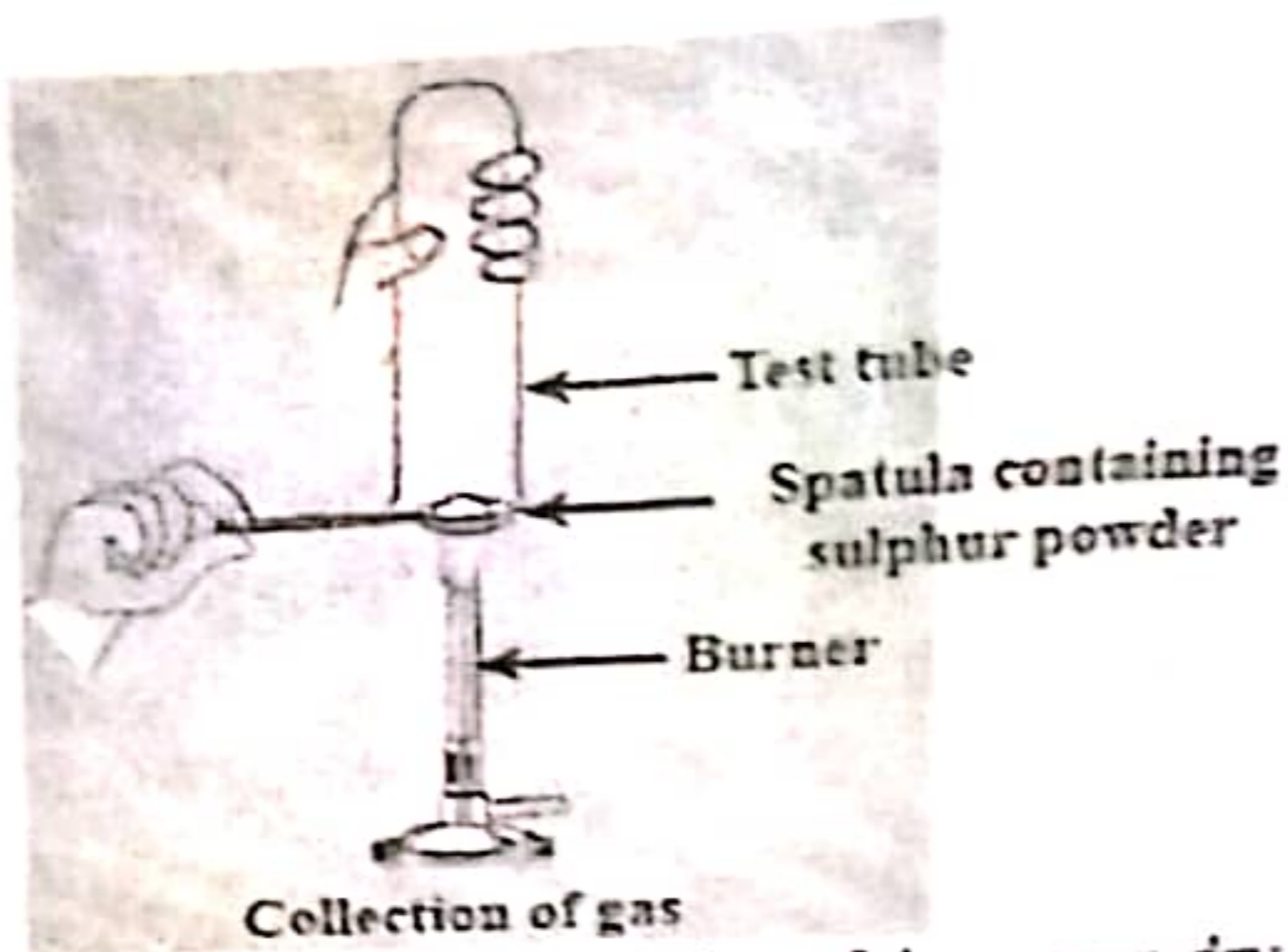
Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R).
Answer these questions selecting the appropriate option given below:
(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true

17. Assertion: Rusting of iron is endothermic in nature. 1
Reason: As the reaction is slow, the release of heat is barely evident.
18. Assertion: HIV/AIDS is a sexually transmitted disease. 1
Reason: Condoms can prevent sexually transmitted disease.
19. Assertion: The strength of the magnetic field produced at the centre of the circular coil increases on increasing the number of turns in it. 1
Reason: The current in each circular turn has the same direction and the magnetic field due to each turn just adds up.
20. Assertion: Biodegradable substances result in the formation of compost and natural replenishment. 1
Reason: It is due to the breakdown of complex inorganic substances into simple organic substances.

Section-B

Question No. 21 to 26 are very short answer questions

21. Riya took Sulphur powder on a spatula and heated it. She collected the gas evolved by inverting a test tube over it, as shown in figure below. 2



- (a) What will be the action of the gas on dry litmus paper and moist litmus paper?
 (b) Write a balanced chemical equation for the reaction taking place in the figure.

22. What happens when
 (a) Bryophyllum leaf falls on wet soil
 (b) On maturation sporangia of *Rhizopus* burst.



In the given figure, label the following parts:-

- (a) Where copper -T is inserted
 (b) Where block is created surgically to prevent fertilization.

OR

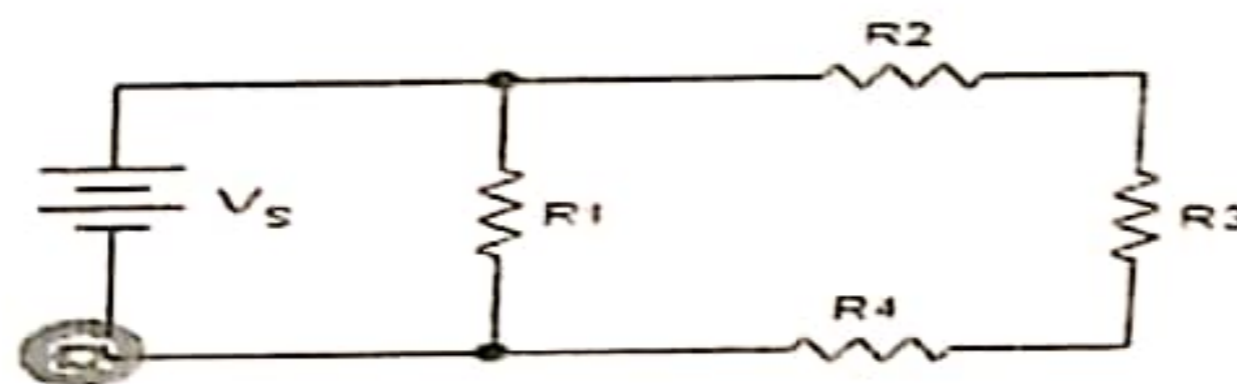
“Use of condom is beneficial for both the sexes involved in a sexual act.” Justify this statement by giving two reasons.

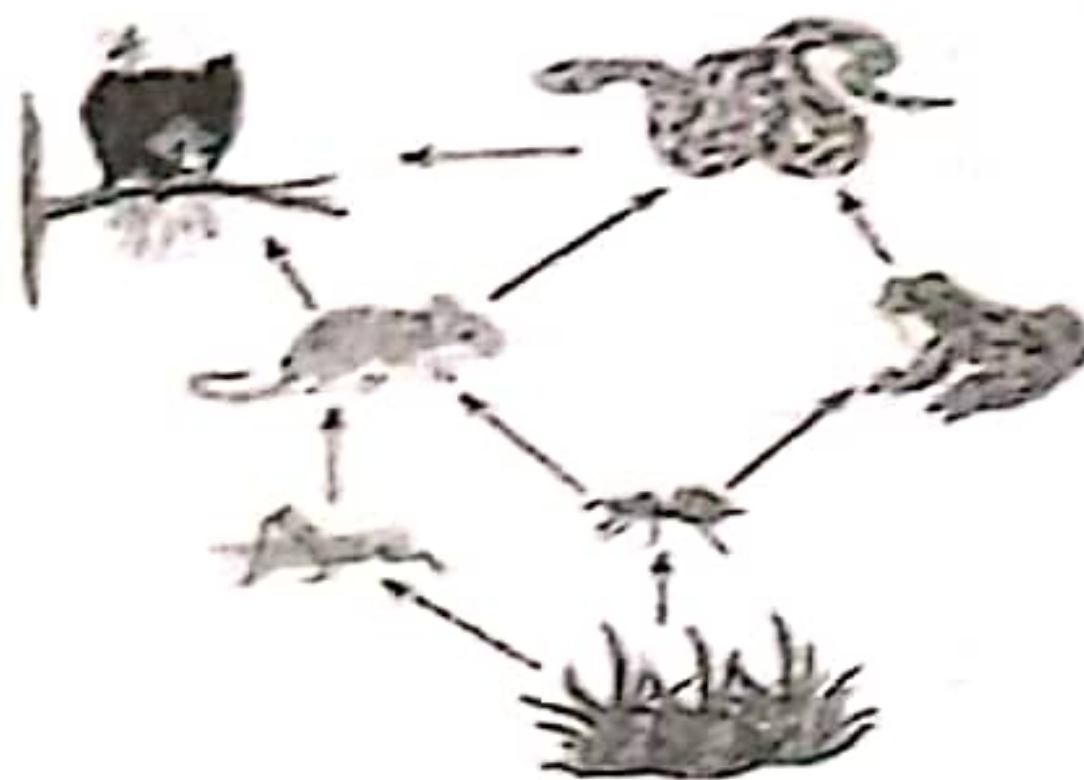
24. What is lateral displacement of light? State the factors affecting it. 2

25. An electric motor takes 5A from a 220V line. Determine the power of the motor and the energy consumed in 2 hours. 2

OR

Calculate the equivalent resistance in the following network when value of R_1 , R_2 , R_3 & R_4 are 4 Ohm, 6 Ohm, 8 Ohm & 2 Ohm respectively, which are connected to 20 V battery.





- (a) Identify and write the food chain from the food web shown, in which the eagle will receive the highest percentage of the energy from the producers.
(b) Which organism will be the most affected when a non-biodegradable pesticide is introduced into the soil? What is the phenomenon responsible for this called?

Section-C

Question No. 27 to 33 are short answer questions

27. Translate a balanced chemical equation with state symbols for the following reactions: 3
(a) Sodium Hydroxide solution in water reacts with Hydrochloric acid to produce Sodium chloride solution and water.
(b) Hydrogen gas combines with nitrogen to form ammonia.
(c) potassium metal reacts with water to give potassium hydroxide and hydrogen gas.

OR

Explain the following terms with examples:

(a) Oxidation reaction

(b) Rancidity

(c) Corrosion

28. Give reasons (any three): 3
(a) Platinum, gold and silver are used to make jewellery.
(b) Sodium, potassium and lithium are stored under oil.
(c) Aluminium is a highly reactive metal, yet it is used to make utensils for cooking.
(d) Carbonate and sulphide ores are usually converted into oxides during the process of extraction. 3
29. Why is iodized salt advisable? Name the disease caused due to deficiency of iodine in our diet and state its one symptom. 3
30. Mendel performed an experiment to study the inheritance pattern of genes. He observed a number of contrasting visible characters controlled in pea plants in a field. When two contrasting pairs of traits were considered simultaneously, only one parental combination appeared in F1 generation. However, in F2 generation, raised by self-pollination, four combinations of traits appeared. 3
(a) What do the F1 progeny of tall plants and round seeds and short plants with wrinkled seeds look like?
(b) Name the recessive traits in the above case.
(c) When F1 plants are self-pollinated, a total 1600 plants were produced. How many

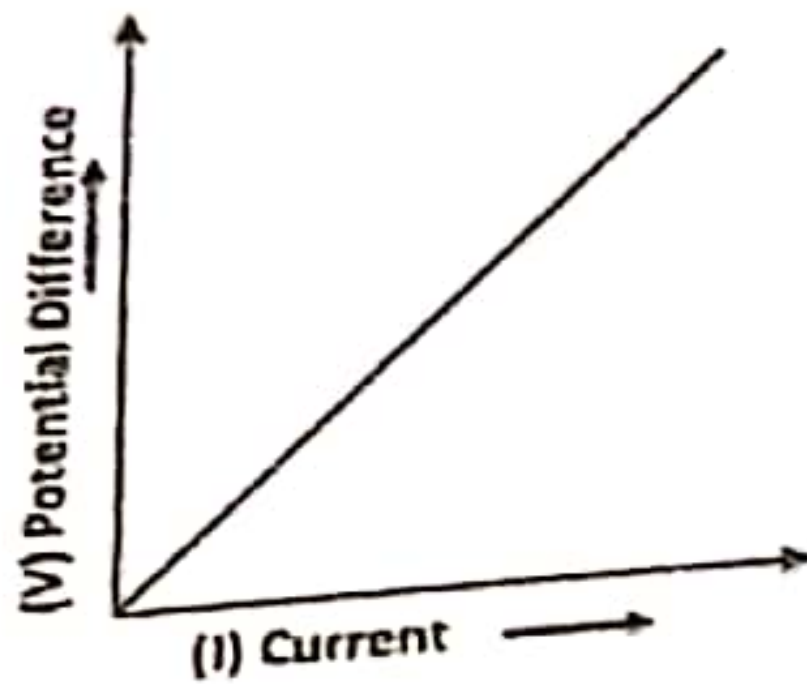
- of these would be
 (i) tall with round seeds
 (ii) short with wrinkled seeds

31. A spherical mirror produces an image of magnification -1.0 on a screen placed at a distance of 30 cm from the pole of the mirror.
 (a) Write the type of mirror used in this case.
 (b) What is the focal length of the mirror?
 (c) What is the nature of the images formed?

OR

An object 5 cm high is placed at a distance of 20 cm in front of a convex mirror with radius of curvature 30 cm. Find the nature, position and size of the image.

32. (a) Write any two characteristics of magnetic field Lines?
 (b) Draw magnetic lines of force around current carrying solenoid showing the direction of poles developed.
33. (a) A current of 10 A flows through a conductor for two minutes.
 (i) Calculate the amount of charge passing through the conductor.
 (ii) If the charge of an electron is 1.6×10^{-19} C, then calculate the total number of electrons flowing through the conductor.
 (b) V-I graph for a conductor is as shown in the figure:



What does the slope of the graph represent?

Section-D

Question No. 34 to 36 are long answer questions.

34. (a) Draw the structures for the following compounds.
 (i) Ethanoic acid
 (ii) Bromopentane
 (b) Give a test that can be used to differentiate between saturated and unsaturated hydrocarbons.
 (c) What will be the structure of the micelle that would be formed if you dissolve soap in a hydrocarbon?

OR

- (a) Draw the electron dot structures for
 (i) Ethanoic acid. (ii) H_2S .
 (b) Distinguish ethanol and ethanoic acid based on their physical and chemical properties (one point for each).
 (c) Why is agitation necessary to get clean clothes?

- (a) Tooth enamel is the hardest substance in our body.
 (i) Name the compound it is made up of.
 (ii) At what pH of the mouth does it get corroded?
 (iii) State the role of bacteria in the mouth. Suggest a method to prevent tooth decay.
- (b) What would be the consequences of deficiency of haemoglobin in our bodies?

OR

Given below is a table representing the characteristics of two fluids involved in the transportation of substances in the human body.

Fluid A	Fluid B
colourless	Coloured
contains less oxygen	contains more oxygen
contains less protein	contains more protein

- (a) Identify fluid A and fluid B
 (b) With the help of a flow chart, describe the movement of fluid A from the intercellular spaces to the main circulatory system.
 (c) What role does fluid A play in the digestion of food in humans?
36. The near point of a person has shifted from 25 cm to 75 cm from his eyes.
 (a) Name the defect of vision the person is suffering from.
 (b) List its two possible causes.
 (c) Calculate the power of the lens needed to correct this defect. Assume that the near point for the normal eye is 25 cm.

5

OR

- (a) Why is a normal eye not able to see clearly the objects placed closer than 25 cm?
 (b) With the help of a diagram, show recombination of the spectrum of white light using prism.
 (c) List two essential conditions for observing a rainbow.

SECTION - E

Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts.
 Internal choice is provided in one of these sub-parts.

37. Samples of four metals A, B, C and D were taken and added to the following solution one by one. The results obtained have been tabulated as follows.

4

Metal	Iron (II) sulphate	Copper (II) sulphate	Zinc sulphate	Silver nitrate
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Use the table above to answer the following questions about metals A, B, C and D.

- (a) Which is the most reactive metal and why?
- (b) What would you observe if B is added to a solution of Copper (II) sulphate?
- (c) Arrange the metals A, B, C and D in the order of decreasing reactivity.

OR

(c) Which one among A, B, C and D metals can be used to make containers that can be used to store any of the above solutions safely?

38.

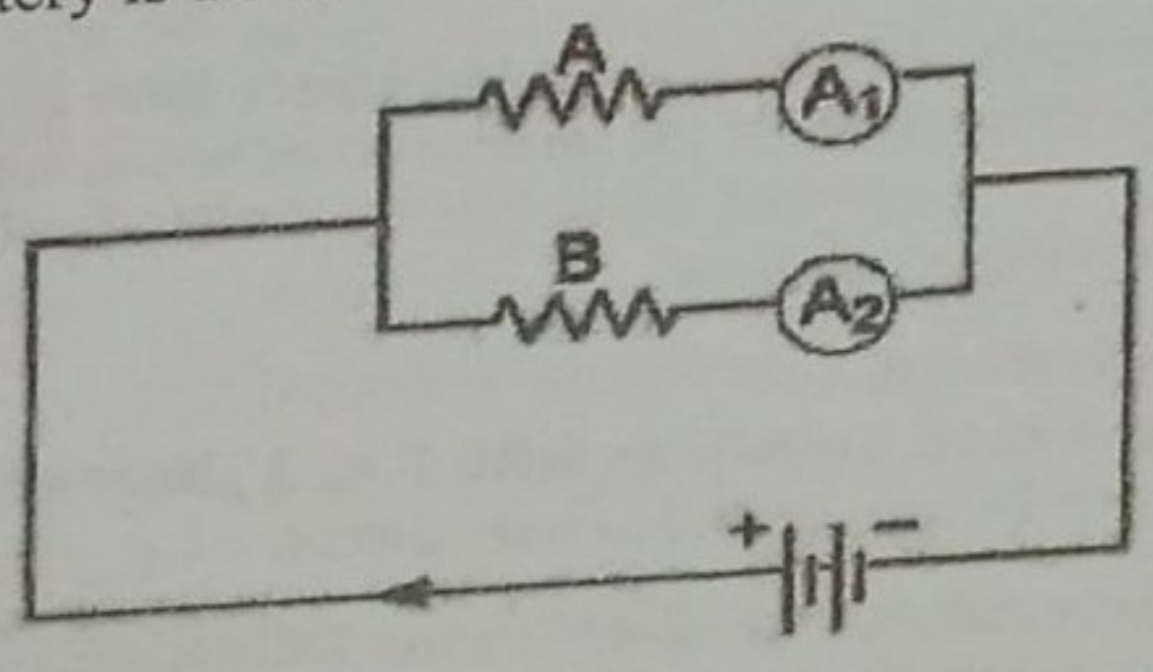
Sex of an individual is determined by different factors in various species. Some animals rely entirely on environmental ones, while in other animals the individual can change sex during their lifetime indicating that sex of some species is not genetically determined. In diploid organisms having separate sexes, a specific pair of chromosomes in each diploid cell determines the sex of individual, all other chromosomes have genes which control the body characters. However, in human beings, the sex of a new born is determined at the time of fertilization when male and female gametes fuse to form zygote.

- (a) Why is an offspring of a human being not a true copy of his parents in sexual reproduction?
- (b) What terms do we commonly use for pair of chromosome that determine the sex and other that bear genes which control somatic characters?
- (c) Citing two examples, justify the statement 'Sex of an individual is not always determined genetically.'

OR

39.

(c) Draw a flow chart to show how sex is determined genetically in human beings. Rahima was investigating a circuit for her school project. She wanted to demonstrate the effect of length on the resistance of a conductor. The following is the given circuit with resistors A and B that are made of the same metal and the same thickness, but 'A' is twice as long as 'B'. The total current in the circuit is 6 A and the Voltage of the battery is 12 V.



- (a) What will be the resistance in the circuit?
- (b) Determine the value of 'A' and 'B'.
- (c) Determine the current in both the ammeters. Will the current in 'A1' and 'A2' be the same? Justify your answer.

OR

(c) Define resistivity. What are the factors which affect the resistivity of a conductor?