

CLASS X
SCIENCE (CODE 086)
SAMPLE QUESTION PAPER 2019-20

Time : 3 Hours

Maximum Marks : 80

General Instructions :

- (i) The question paper comprises of three sections-A, B and C. You are to attempt all the sections.
- (ii) All questions are compulsory.
- (iii) Internal choice is given in sections A, B and C.
- (iv) Question numbers 1 and 20 in Section-A are one mark questions.
- (v) Question numbers 21 to 30 in Section-B are three marks questions. These are to be answered in about 50 words each.
- (vi) Question numbers 31 to 36 in Section-C are 5 marks questions. These are to be answered in about 70 words each.

SECTION A

(20 × 1)

- Q1. Ethanoic acid was added to sodium bicarbonate solution and the gas evolved was tested with a burning splinter Which one of the following four observations is correct? [1]
- (a) The gas burns with a pop sound and the flame gets extinguished
 - (b) The gas does not burn but the splinter burns with a pop sound
 - (c) The flame extinguishes and the gas does not burn
 - (d) The gas burns with a blue flame and the splinter burns brightly
- Q2. A colourless sample was tested with a strip of pH paper. The colour of the strip changed to green. The sample should be : [1]
- (a) tap water
 - (b) distilled water
 - (c) sodium hydroxide
 - (d) lemon juice
- Q3. The length of a wire is doubled. By what factor does the resistance change [1]
- (a) 4 time as large
 - (b) twice as large
 - (c) unchanged
 - (d) half as large
- Q4. If a student while studying the dependence of current on the potential difference keeps the circuit closed for a long time to measure the current and potential difference, then [1]
- (a) ammeter's zero error will change
 - (b) ammeter will give more reading
 - (c) voltmeter will show constantly higher readings
 - (d) resistor will get heated up and its value will change
- Q5. A small electric lamp is placed at the focus of a convex lens. When the lamp is switched on, the lens will produce : [1]
- (a) converging beam of light
 - (b) parallel beam of light
 - (c) diverging beam of light
 - (d) diffused beam of light

Q6. Before setting up an experiment to show that seeds release CO₂ during respiration, the seeds should be :[1]
 (a) dried completely (b) boiled to make then soft
 (c) soaked in vinegar (d) kept moist till they germinate

Q7. A well-stained leaf peel mount, when observed under the high power of a microscope, shows nuclei in [1]
 (a) guard cells only (b) epidermal cells only
 (c) guard cells and epidermal cells (d) guard cells, epidermal cells and stomata

Q8. $Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$ [1]
 The above reaction is an example of a :
 (a) combination reaction (b) double displacement reaction
 (c) decomposition reaction (d) displacement reaction

Q9. During germination of seed, water enter in seeds through [1]
 (a) hilum (b) micropyle
 (c) raphe (d) cotyledon

Q10. While determining focal length of a concave mirror, four students P, Q, R and S obtain the image of a distant tree on a screen and make the following observation : [1]
 (A) Image is virtual, erect and small
 (B) Image is real, erect and small
 (C) Image is real, inverted and small
 (D) Image is virtual, inverted and small
 Who has made the correct observation?
 (a) P (b) Q
 (c) R (d) S

Q11. Surface of some metals lose theirwhen kept in air for a long time. [1]

Q12. Carbonic anhydrase regulates the formation of [1]

Q13. Read the following statements and write True or False [1]
 a. Metals can form positive ions by losing electrons to non-metals.
 b. Different metals have same re-activities with water and dilute acids.

Q14. Match the following- [1]

Column I		Column II	
(A)	Parthenocarpy	(p)	Photoperiodism
(B)	Apical dominance	(q)	Development of seed less fruit
(C)	Extreme cold treatment	(r)	Vernalization
(D)	Response to length of the day	(s)	Auxin

Q15. **Assertion** : Respiration in living beings is called exothermic reaction. [1]
Reason : Respiration in living beings involves with absorption of heat energy.
 (a) If assertion is correct and reason is correct explanation of assertion.
 (b) If assertion is true but reason is false.

- (c) If assertion is false but reason is right.
- (d) If both are false.

Q16. **Assertion:** Copper is used to make hot water tanks and not steel.
Reason : Copper is a better conductor of heat than steel and it is fairly resistant to corrosion than steel. [1]

- (a) If assertion is correct and reason is correct explanation of assertion.
- (b) If assertion is true but reason is false.
- (c) If assertion is false but reason is right.
- (d) If both are false.

Q17. Name a device that helps to maintain a potential difference across a conductor. [1]

OR

How much energy is given to each coulomb of charge passing through a 6 V battery? [1]

Q18. Name the part of Bryophyllum where the buds are produced for vegetative propagation. [1]

Q19. What is the mode of nutrition in human beings? [1]

OR

Name the tissue which transports soluble products of photosynthesis in a plant. [1]

Q20. What change in colour is observed when white silver chloride is left exposed to sunlight? What type of chemical reaction is this? [1]

SECTION B

(10 × 3)

Q21. (a) Why metals are not found in their free state generally?
(b) If a strip of aluminium with scratched clean surface is dipped into an aqueous solution of copper sulphate for little time, surface of the strip becomes brownish. What is the reason for this? Write the balanced chemical equation for the reaction. [3]

OR

2 g of ferrous sulphate crystals were heated in a hard glass test tube and observations recorded.

- i. What type of odour is observed on heating ferrous sulphate crystals?
- ii. Name the products obtained on heating ferrous sulphate crystals.
- iii. What type of reaction is taking place. [3]

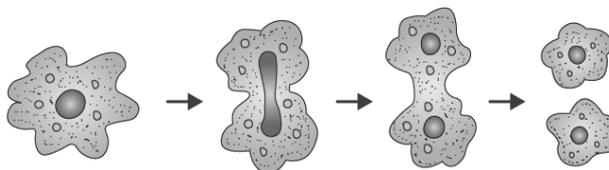
Q22. Out of the elements H(1), Be(4), Na(11) and Mg(12) :
i. Write the pair of elements having similar chemical properties.
ii. State the group number of each pair,
iii. Name one another element belonging to each of these groups. [3]

OR

Calcium is an element with atomic number 20. Stating the reason, answer each of the following questions:

- i. Is calcium a metal or a non-metal?
- ii. Will its atomic radius be larger or smaller than that of potassium with atomic number 19?
- iii. Write the formula of its oxide. [3]

- Q23. How do guard cells regulate opening and closing of stomatal pores? [3]
- Q24. Name the plant growth hormone which is synthesized at the shoot tip. Explain briefly why does a plant shoot bend towards light during its growth. [3]
- Q25. Study the diagram given below:



- Identify the process.
- Which organism uses the above method of reproduction?
- How is the above method different from the process of fragmentation? [3]

OR

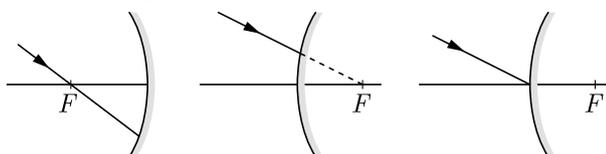
How do organisms, whether reproduced asexually or sexually maintain a constant chromosome number through several generations? Explain with the help of suitable example. [3]

- Q26. What are covalent compounds? Why are they different from ionic compounds? List their three characteristic properties. [3]
- Q27. (a) State the function of ‘a fuse’ in a circuit. How is it connected in the domestic circuit?
 (b) An electric fuse of rating 3A is connected in a circuit in which an electric iron of power 1 kW is connected which operates at 220 V What would happen? Explain. [3]

OR

Write the problems faced in construction of big dams. [3]

- Q28. Why does the sun appear reddish early in the morning? Will this phenomenon be observed by an observer on the moon? Justify your answer with a reason. [3]
- Q29. Suggest three contraceptive methods to control the size of human population which is essential for the health and prosperity of a country. State the basic principle involved in each. [3]
- Q30. Draw the following diagram, in which a ray of light is incident on a concave/convex mirror, on your answer sheet. Show the path of this ray, after reflection, in each case. [3]



SECTION C

(6 × 5)

- Q31. A current of 1 ampere flows in a series circuit containing an electric lamp and a conductor of $5\ \Omega$ when connected to a 10 V battery. Calculate the resistance of the electric lamp. Now if a resistance of $10\ \Omega$ is connected in parallel with this series combination, what change (if any) in current flowing through $5\ \Omega$ conductor and potential difference across the lamp will take place? Give reason. Draw circuit

diagram.

[5]

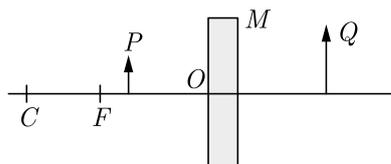
Q32. (a) Define the following terms in the context of spherical mirrors:

- (i) Pole
- (ii) Centre of curvature
- (iii) Principal axis
- (iv) Principal focus

(b) Draw ray diagrams to show the principal focus of a :

- (i) Concave mirror
- (ii) Convex mirror

(c) Consider the following diagram in which M is a mirror and P is an object and Q is its magnified image formed by the mirror



State the type of the mirror M and one characteristic property of the image Q.

[5]

OR

- i. Draw a ray diagram to show the formation of image by a convex lens when an object is placed in front of the lens between its optical centre and principal focus.
- ii. In the above ray diagram mark the object-distance (u) and the image-distance (v) with their proper signs (+ve or -ve as per the new Cartesian sign convention) and state how these distances are related to the focal length (f) of the convex lens in the case.
- iii. Find the power of a convex lens which forms a real, and inverted image of magnification -1 of an object placed at a distance of 20 cm from its optical centre.

[5]

Q33. (a) Draw a neat diagram of an excretory unit of a human kidney and label the following parts.

- (i) Bowman's capsule
- (ii) Renal artery
- (iii) Glomerulus
- (iv) Collecting duct

(b) Give one advantage of having a large number of these highly coiled structures in our kidneys.

(c) Mention any two substances which are selectively reabsorbed as the filtrate flows along the tubular part of this unit.

[5]

Q34. (a) Differentiate between pollen grain and ovule.

(b) State in brief functions of the following parts of the human female reproductive system.

- (i) Ovary
- (ii) Fallopian Tube
- (iii) Uterus

[5]

OR

(a) Differentiate between germination and fertilisation.

(b) State in brief the functions of the following parts of the human male reproductive system :

- (i) Scrotum
- (ii) Testes
- (iii) Vas deferens

[5]

Q35. (a) Give a chemical test to distinguish between saturated and unsaturated hydrocarbon.

(b) Name the products formed when ethane burns in air. Write the balanced chemical equation for the reaction showing the types of energies liberated.

(c) Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction? [5]

OR

Account for the following.

- i. Dry HCl gas does not change the colour of dry blue litmus paper
- ii. Antacid tablets are used by a person suffering from stomach pain.
- iii. Toothpaste is used for cleaning teeth.

[5]

Q36. Translate the following statements into chemical equations and then balance them.

- i. Hydrogen gas combines with nitrogen gas to form ammonia gas.
- ii. Hydrogen sulphide gas burns in air to give water and sulphur dioxide gas.
- iii. Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.
- iv. Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.

[5]

OR

What is galvanised iron? How is iron galvanised? What is the advantage of galvanised iron? How does galvanised iron get its name? State its two uses. [5]

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