SHREE RADHEY COACHING CENTER

CLASS 10 - SCIENCE

Test

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
2. Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple-choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.
3. Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.
4. Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.
5. (v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.
6. There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
7. Wherever necessary, neat and properly labeled diagrams should be drawn.

Section A

1. Name the type of reaction : Iron reacts with chlorine to form ferric chloride. **[1]**

   OR

   What is wrong with the following equation?

   $Mg + O \rightarrow MgO$

   Identify the mistake and balance the equation.

2. Balance the chemical equation and identify the type of chemical reaction: **[1]**

   $CaO(s) + SiO_2(s) \longrightarrow CaSiO_3(s)$

3. Acetic acid, when dissolved in water, dissociates into ions reversibly because it is: **[1]**

   a) Weak base b) Strong base

   c) A weak acid d) Strong acid

4. Identify the device used as a spherical mirror or lens in case, when the image formed is virtual and erect in case. Object is placed between infinity and device, image formed is diminished and between focus and optical centre on the same side as that of the object. **[1]**

5. Which phenomenon is responsible for increasing the apparent length of the day by 4 min? **[1]**

6. Name a sodium compound which is used of softening hard water. **[1]**

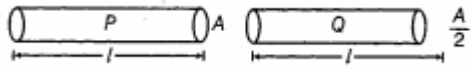
OR

What is an acid ?

7. A current of 0.5 A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of electric charge that flows through the circuit. **[1]**

8. How can it be shown that a magnetic field exists around a wire through which a direct current is passing? **[1]**

9. Out of the two wires P and Q shown below which one has greater resistance? Justify it. **[1]**



OR

An electric bulb is connected to a 220 V generator. The current is 0.50 A. What is the power of the bulb?

10. Does chlorophyll work only under sunlight ? **[1]**

11. What are the adaptation of leaf for photosynthesis? **[1]**

OR

What is the change in color when leaf is boiled with ethanol and treated with iodine solution?

12. In the following food chain, 5 J of energy is available to man. How much energy was available at producer level? **[1]**

Plants → Sheep → Man

OR

What is the source of energy used during photosynthesis?

13. Is visible movement the only defining characteristic of life? **[1]**

14. **Assertion:** $Fe_2O_3 + 2\ Al \rightarrow Al_2O_3 + 2\ Fe$ **[1]**

The above chemical equation is an example of a displacement reaction.

Reason: Aluminium is more reactive than iron, displaces Fe from its oxide.

a) Both assertion and reason are CORRECT and reason is the CORRECT explanation of the assertion.

b) Both assertion and reason are CORRECT but, reason is NOT THE CORRECT explanation of the assertion.

c) Assertion is CORRECT but, reason is INCORRECT.

d) Assertion is INCORRECT but, reason is CORRECT.

15. **Assertion (A):** Garden is an artificial ecosystem. **[1]**

Reason (R): Biotic and abiotic components of the ecosystem are manipulated by humans.

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

b) Both A and R are true but R is not the correct explanation of of the assertion

c) A is true but R is false.

d) A is false but R is true.

OR

Assertion (A): In anaerobic respiration, one of the end product is alcohol.

Reason (R): There is an incomplete breakdown of glucose.

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

b) Both A and R are true but R is not the correct explanation of the assertion.

c) A is true but R is false.

d) A is false but R is true.

16. **Assertion (A):** Variations are seen in offspring produced by asexual reproduction. **[1]**
Reason (R): DNA molecules generated by replication is not exactly identical to original DNA.

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

b) Both A and R are true but R is not the correct explanation of the assertion.

c) A is false but R is true.

d) A is true but R is false.

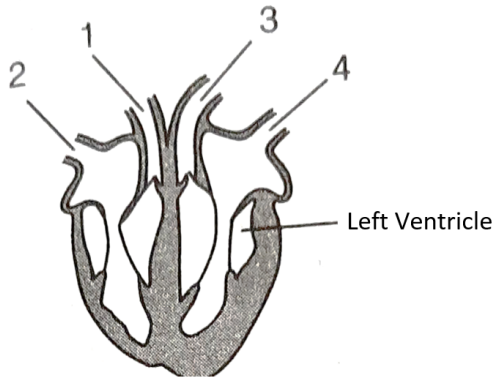
17. **Read the following and answer any four questions:** **[4]**

Sanjay studied about blood circulation in humans. He wanted to observe the flow of blood and was about to cut his finger a bit. He suddenly realized that this could be fatal.

i. What is the correct route for blood flow in a human?

1. left auricle → left ventricle → lungs → right ventricle → right auricle
2. left auricle → left ventricle → right ventricle → right auricle → lungs
3. right auricle → right ventricle → left ventricle → left auricle → lungs
4. right auricle → right ventricle → lungs → left auricle → left ventricle

ii. The diagram shows the vertical section through the heart:



What are the functions of the numbered blood vessels?

	carries blood to body	carries blood to lungs	carries blood from lungs	carries blood from body
(a)	1	2	3	4
(b)	1	3	4	2
(c)	2	4	3	1
(d)	3	1	4	2

iii. The table shows the characteristics of blood in one blood vessel of the body.

oxygen concentration	carbon dioxide concentration	pressure
high	low	high

Which blood vessel contains blood with these characteristics?

a. Aorta

b. Pulmonary artery

c. Pulmonary vein

d. Vena cava

iv. The colour of blood is red due to the presence of

a. Hemocyanin

b. Haemoglobin

c. Chlorophyll

d. Xanthophyll

v. Which of the following chambers of the human heart contain oxygenated blood?

a. Left auricle and left ventricle

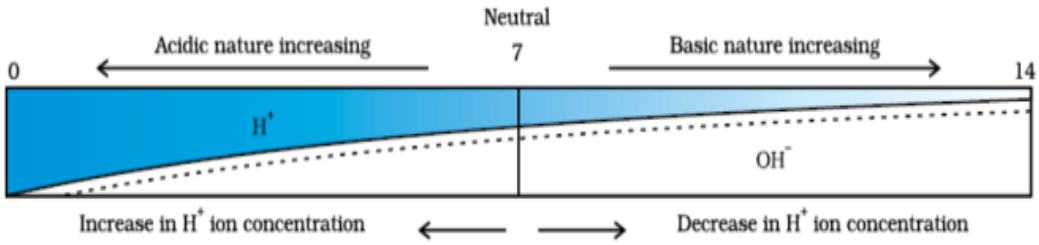
b. Left auricle and right ventricle

c. Right auricle and left ventricle

d. Right auricle and right ventricle

18. **Read the following and answer any four questions:** **[4]**

A scale for measuring hydronium ion in a solution called the pH scale. The pH of a neutral solution is 7. A value of less than 7 on the pH scale represents an acidic solution. As the pH value, increases from 7 to 14 it represents OH- ion concentration in solution i.e a basic solution.



i. Human Body works within the pH range of

a. 7.4 to 8

b. 4.4 to 5.4

c. 7 to 7.8

d. 6.1 to 7

ii. The strength of acid and bases depend on the _____

a. number of H^+ ion produce

b. number of OH^- ion produce

c. both (a) and (b)

d. none of the above

iii. A solution turns red litmus blue, its pH is likely to be

a. 1

b. 4

c. 5

d. 10

iv. Tooth decay starts when the pH of the mouth lower than

a. 7.5

b. 5.5
c. 6.7
d. 8.4

v. The higher the hydronium ion concentration _____ is the pH value.

a. lower
b. greater
c. same
d. zero

19. **Read the following and answer any four questions:** **[4]**

Electric power is the rate of doing work or consumption of energy. Power is given by the rate at which electric energy is dissipated or consumed in an electric circuit. It is also term as electric power. The commercial unit of electric energy is kilo-watt-hours commonly known as a unit.

i. The S.I unit of electric power is

a. Volt
b. Joule
c. Watt
d. Coulomb

ii. An electric heater is rated at 2 KW electrical energy cost 4 per kWh. What is the cost of using the heater

a. ₹ 12
b. ₹ 24
c. ₹ 36
d. ₹ 48

iii. Power may be given by

a. P = VI
b. P = $\frac{I^2}{R}$
c. P = $\frac{V^2}{R}$
d. all of these

iv. 1 Kilowatt is equal to

a. 1000 watts
b. 100 watts
c. 10000 watts
d. 10 watts

v. An electric bulb is connected to a 220V generator. The current is 0.50 A, what is the power of the bulb?

a. 50W
b. 110W
c. 550W
d. 220W

20. **Read the following and answer any four questions:** **[4]**

Metal has various physical properties which include metallic lustre that they have shining surfaces in their pure state. Metal can be easily beaten into thin sheets. They are ductile can drown into wire due to which metal can be given different shapes according to their needs. Metal is a good conductor of heats and has high melting and boiling point.

i. Which of the following is the least reactive metal?
   a. Sodium
   b. Silver
   c. Copper
   d. Lead

ii. The metal which is most ductile _____.
   a. gold
   b. aluminium
   c. copper
   d. magnesium

iii. Which of the following metal exist in a liquid state?
   a. Calcium
   b. Potassium
   c. Mercury
   d. Sodium

iv. Which of the following metal is a poor conductor of heat?
   a. Silver
   b. Copper
   c. Lead
   d. All of these

v. The property of metal can be beaten in thin sheets is called _____.
   a. ductility
   b. malleability
   c. metallic lustre
   d. none of these

Section B

21. Draw a labelled diagram of a cross-section of the leaf. **[2]**

OR

What are the basic requirements for the process of photosynthesis?

22. What are the common features of the respiratory organs in aquatic and terrestrial animals? **[2]**

23. Explain the substitution reaction with the examples. **[2]**

24. A compound X of sodium is commonly used in kitchen for making crispy pakoras. It is also used for curing acidity in the stomach. Identify X. What is its chemical formula? State the reaction which takes place when it is heated during cooking. **[2]**

25. Two friends Kapil and Rohit were studying in the same class. One day Rohit observed that Kapil was having pain in gums during lunch time. Rohit told Kapil that his father was dentist and asked him to visit his father's clinic. Rohit's father examined Kapil with the help of a **[2]**

mirror and advised him not to eat too many chocolates and soft drinks. Kapil follow ed the advise of the doctor and soon he got recovered. After that he starts taking care of his mouth, as he washes his mouth properly after every meal and also starts taking a calcium rich diet. Read the given passage and answer the following questions:

i. Identify the mirror used by the dentist.
ii. Name the phenomenon of light by which doctor is able to exam ine Kapil.
iii. What values are shown by doctor, his son and Kapil?

26. Suppose your parents have constructed a two room house and you want that in the living room there should be a provision of one electric bulb, one electric fan, a refrigerator and a plug point for appliances of power up to 2 kilowatt. Draw a circuit diagram showing electric fuse and earthing as safety devices. **[2]**

27. In evolutionary terms can we say that which among bacteria, spider, fish and chimpanzee has a 'better' body design? Why or why not? **[3]**

OR

Can sexual reproduction lead to the variations in characters, speciation and evolution? Explain.

28. What is primary production? How we are dependent on it? **[3]**

29. Give the chemical equation of photosynthesis. **[3]**

30. In the reaction: **[3]**

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

a. Name the compound
   i. oxidised
   ii. reduced.
b. Define oxidation and reduction on its basis.

31. Ria and Rama are students of Class X. Ria is very much organised and maintained. The teachers love her. She earns a great respect in the class whereas Rama is unorganised and always faces a lot of problems in handling the situations. Read the given passage and answer the following questions. **[3]**

i. In your opinion how does organisation help in daily life?
ii. How can you relate the above fact with the chapter classification of elements?
iii. What is the associated value the learner acquires from the given passage?

32. **[3]**
i. Electropositive nature of the element(s) increases down the group and decreases across the period
ii. Electronegativity of the element decreases down the group and increases across the period
iii. Atomic size increases down the group and decreases across a period (left to right)
iv. Metallic character increases down the group and decreases across a period.

On the basis of the above trends of the Periodic Table, answer the following about the elements with atomic numbers 3 to 9.

a. Name the most electropositive element among them
b. Name the most electronegative element
c. Name the element with the smallest atomic size
d. Name the element which is a metalloid

e. Name the element which shows maximum valency.

33. Draw ray diagrams each showing **[3]**

i. myopic eye and

ii. hypermetropic eye.

34. Write laws of refraction. Explain the same with the help of ray diagram, when a ray of light passes through a rectangular glass slab. **[5]**

OR

A student has three concave mirrors A, B and C of focal lengths 20 cm, 15 cm and 10 cm, respectively. For each concave mirror, he performs the experiment of image formation for three values of object distance of 30 cm, 10 cm and 20 cm.

Give reasons for the following:

i. For the three object distances, identify the mirror which will form an image equal in size to that of object. Find at least one value of object distance.

ii. Out of the three mirrors, identify the mirror which would be preferred to be used for shaving purpose.

iii. For the mirror B, draw ray diagram for image formation for any two given values of object distance.

35. What is placenta? Mention its role during pregnancy? **[5]**

36. What is the pattern of magnetic field pattern due to current carrying conductor. **[5]**

OR

With the help of a labeled circuit diagram illustrating the pattern of field lines of the magnetic field around a current-carrying straight long conducting wire. How is the right-hand thumb rule useful to find the direction of the magnetic field associated with a current-carrying conductor?