- This question paper contains 7 printed pages.
- This question paper contains 39 questions.
- Write down the question number before attempting.
- An additional reading time of 15 minutes will be given.

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 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 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.*

COMMON EXAMINATION 2022-23
Class-10 (set 1)
Science (086)

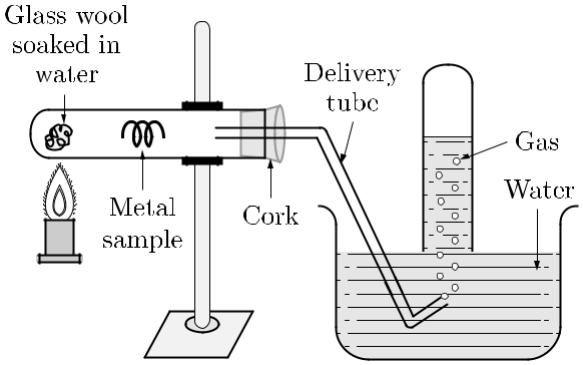
Time Allowed: 3 hours **Maximum Marks:80**

Roll No.: ***Date:*** *--/--/----*

SECTION – A 1 X 20 = 20

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

1.In the following practical set which of the following gas is emitted?



(a)Hydrogen
(b)Carbon monoxide
(c)Carbon dioxide
(d)Nitrogen

2. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of-

(a)a combination reaction
(b)a displacement reaction
(c)a decomposition reaction
(d)a double decomposition reaction

3.Consider the following table:

Substance	**pH**
Lemon	2.3
Battery acid	*x*
Sea water	8.5
Apple	3.1

The value of *x* in above table is:

(a)0
(b)1.3
(c)2.5
(d)1.9

4.The soap molecule has a

(a)hydrophilic head and a hydrophobic tail
(b)hydrophobic head and a hydrophilic tail
(c)hydrophobic head and a hydrophobic tail
(d)hydrophilic head and a hydrophilic tail

5.Which of the following statements about the reaction given below are incorrect?

$2PbO(s) + C(s) \$2Pb(s) + CO_2 (g)$

1.Lead is getting reduced.
2.Carbon dioxide is getting oxidised.
3.Carbon is getting oxidised.
4.Lead oxide is getting reduced.

(a)1 and 2
(b)3 and 4
(c)1 and 3
(d)2 and 4

6.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

7.Identify the basic salt from the following salt?

(a) Na_2CO_3
(b) NH_4Cl
(c) NaNO
(d) KCl

8. In peas, a pure tall (TT) is crossed with a pure short plant(tt). The ratio of pure tall plants to pure short plants in F2 generation is:

(a) 1:3
(b) 3:1
(c) 1:1
(d) 2:1
9. Which of the following statements is correct about receptors?
(a) Gustatory receptors detect taste while olfactory receptors detect smell
(b) Both gustatory and olfactory receptors detect smell
(c) Auditory receptors detect smell and olfactory receptors detect taste
(d) Olfactory receptors detect taste and gustatory receptors smell
10. The characteristic processes observed in anaerobic respiration are
i) presence of oxygen
ii) release of carbon dioxide
iii) release of energy
iv) release of lactic acid
(a) i), ii) only
(b) i), ii), iii) only
(c) ii), iii), iv) only
(d) iv) only
11. Which of the following is an example of genetic variation?
(a) One person has a scar but his friend doesn't
(b) One person is older than the other
(c) Reeta eats meat but her sister Geeta is a vegetarian
(d) Two children have different eye colour
12. The manufacturing of Chlorofluorocarbons free refrigerators is mandatory throughout the world. How does this help prevent ozone depletion?
a) This will help convert oxygen molecules into ozone.
b) This will help convert the CFCs into ozone molecules.
c) This will reduce the production of CFC from oxygen molecules.
d) This will reduce the release of CFCs that reacts with ozone molecules
13. A person cannot see distinctly objects kept beyond 2 m. This
defect can be corrected by using a lens of power:
(a) + 0.5 D
(b) – 0.5 D
(c) + 0.2 D
(d) – 0.2 D
14. If we place the magnetic compass near the north pole of the magnet, which pole of the needle will point towards it?
(a) North pole
(b) South pole
(c) Keep deflecting
(d) None of these
15. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then in parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be:
(a) 1 : 2
(b) 2 : 1
(c) 1 : 4
(d) 4 : 1
16. In an experiment to trace the path of a ray of light through a triangular glass prism, a student would observe that the emergent ray:
(a) is parallel to the incident ray.
(b) is along the same direction of incident ray.

(c) gets deviated and bends towards the thinner part of the prism.
(d) gets deviated and bends towards the thicker part (base) of the prism.

Q. no 17 to 20 are Assertion - Reasoning based questions.
These 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 (A): An equation is the shorthand representation of a chemical reaction.
Reason (R): A chemical reaction is a process in which a chemical substance is transformed into another chemical substance

18. Assertion(A): A geneticist crossed two pea plants and got 50% tall and 50% dwarf in the progeny.
Reason (R): One plant was heterozygous tall and the other was dwarf.

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 increase the rate of growth in root and decrease rate of growth in stem.

20. Assertion: In a series circuit, the current is constant throughout the electric circuit.
Reason**:** All electric devices do not need equal currents to operate properly.

SECTION – B

Q. no. 21 to 26 are very short answer questions **6 X 2 = 12**

21. A metal *A*, which is used in thermit process, when heated with oxygen gives an oxide *B*, which is amphoteric in nature. Identify *A* and *B*. Write down the reactions of oxide *B* with HCl and NaOH.

OR

Aluminium occurs in combined state whereas gold is found in free state. Why?

22. (a)Name the various factors which affect the rate of photosynthesis.
(b) what are peristaltic movements?

23. Name the various cells through which water moves upward to react the leaves.

24. In which chamber of heart is oxygenated and deoxygenated blood found?

25. Genes and chromosomes have similar behaviour. Justify this Statement.

26. Differentiate lens and mirror

OR

Differentiate reflection and refraction of light

SECTION - C

Q.no. 27 to 33 are short answer questions **7 X 3 = 21**

27. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, the colour of the solution fades and a black precipitate is obtained.

a) Name the type of reaction mentioned above.

b) Why does the colour of the solution fade away?

c)Write the chemical name of the black precipitate formed.

28.(a) Arrange the metals Zn, Mg, Al, Cu and Fe in decreasing order of reactivity.
(b) What would you observe when you put
(i) Some zinc pieces into blue copper sulphate solution?
(ii) Some copper pieces into green ferrous sulphate solution.
(c)Name a metal which combines with hydrogen gas. Name the compound formed.

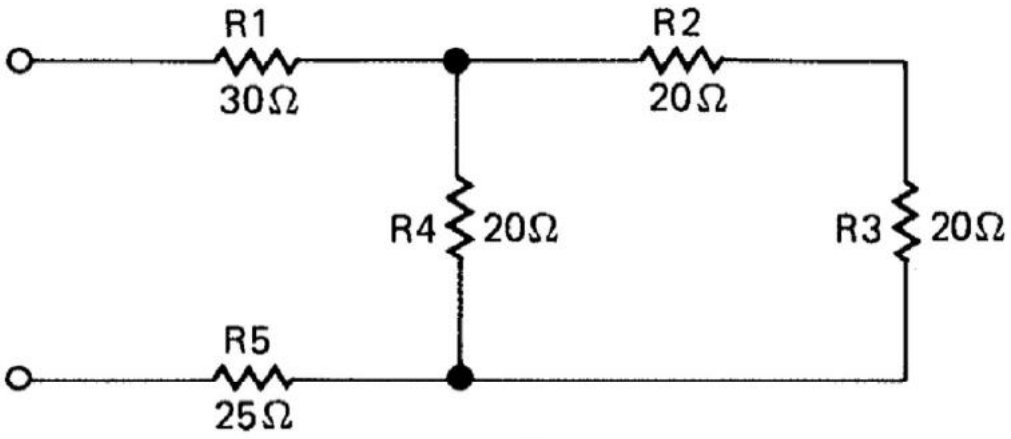
29. A. Draw the longitudinal section of flower and mention the parts.
B. Explain process of digestion in amoeba with diagram
or
C. List the two types of reproduction. Which one of the two is responsible for bringing in more variations in its progeny and how?

30. What is fragmentation in organisms? Name a multicellular organism which reproduces by this method.

31. i) Name the mirror that can give an erect and enlarged image of an object and write its uses.
ii) An object is placed at 20cm in front of a concave mirror of focal length 10cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image?

32. A 14-year-old student is not able to see clearly the questions written on the blackboard placed at a distance of 5m from him.
a) Name the defect of vision he is suffering from.
b) With the help of labelled ray diagrams show how this defect can be corrected
c) Name the type of lens used to correct this defect.

33.Find the equivalent resistance of the following circuit:



SECTION - D

Q.no. 34 to 36 are long answer questions. **3 X 5 = 15**

34. The formula of four organic compounds are given below:

A	B	C	D
C_2H_4	CH_3COOH	C_2H_5OH	C_2H_6

(i) Which one of these compounds *A, B, C* or *D* is a saturated hydrocarbon?
(ii) Identify the organic acid and give its structural formula.
(iii) Which of the above compounds when heated at 443K in the presence of concentrated H_2SO_4 forms ethene as the major product? What is the role played by concentrated H_2SO_4 in this reaction? Also write the chemical equation involved.
(iv) Give a chemical equation when *B* and *C* react with each other in presence of concentrated H_2SO_4. Name the major product formed and mention one of its important uses.

OR

(a) Carry out the following conversions giving complete conditions for the reaction to take place in each case:
(i) Ethanoic acid from Ethanol
(ii) Ethane from Ethene
(iii) Ester from Ethanoic acid and ethanol
(b) Detergents are preferred over soaps. Why? (Give one reason)

35. A.(a) How does Mendel's experiment show that traits may be dominant or recessive?
(b) How traits get expressed from parents to offsprings? Explain with an example.

OR

B.(a) What is ovulation?

(b) How is it beneficial for the foetus to have a circulatory system that is not directly attached to the circulatory system of mother?

(c) What changes occur at the time of birth?

36. i) State one main difference between A.C and D.C. Why A.C is preferred over D.C for long range transmission of electric power? Name one source each of D.C and A.C

ii)When does an electric short circuit occur?

SECTION - E

Q.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. 3 X 4 = 12

37. A metal carbonate *X* on heating with an acid gives a gas which when passed through a solution *Y* gives the carbonate back. On the other hand, a gas *G* that is obtained at anode during electrolysis of brine is passed on dry *Y*, it gives a compound *Z*, used for disinfecting drinking water.

(i) Identify *X*, *Y*, *G* and *Z*.

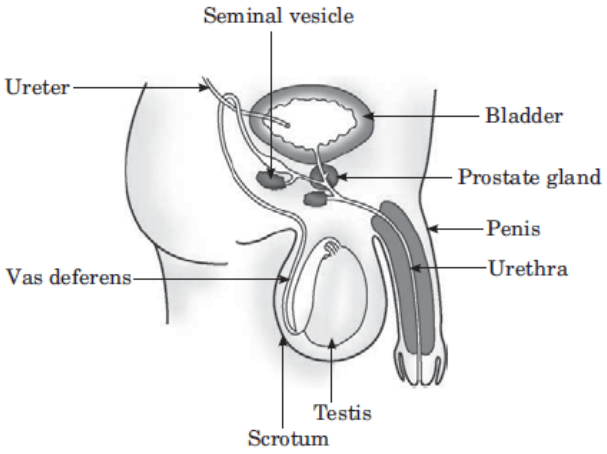
(ii) What is the nature of the gas evolved when *X* is heated?

(iii) Write the reaction involved in the formation of *G*?

OR

(iv) Write the reaction involved when *G* reacts with *Y*.

38. The male reproductive system consists of portions which produce the germ-cells and other portions that deliver the germ-cells to the site of fertilisation. Testes are located outside the abdominal cavity in scrotum because sperm formation requires a lower temperature than normal body temperature. It also has a role of secretion of male sex hormone which brings changes in appearance seen in boys at the time of puberty. Vas deferens unites with a tube coming from urinary bladder. Urethra is a common passage for sperms and urine. Prostate gland and seminal vesicles add their secretions so that sperms are now in fluid.



Human-male reproductive system

i)Name the sex hormone associated with males.

(a) Testosterone

(b) Progesterone

(c) Oestrogen

(d) None of these

ii)Which of the following statements is incorrect?

(a) Sperms are present in a fluid

(b) Fluid provides nutrition to sperms

(c) Fluid makes easier transportation of sperms

(d) Fluid helps to bind the sperms together

iii)Testes are located outside the abdominal cavity in scrotum because
(a) sperms formation requires higher temperature than body temperature
(b) sperms formation requires lower temperature than body temperature
(c) it is easier to transport sperms from the scrotum
(d) None of these

(iv) Which of the following statement is incorrect?
(a) Sperms and urine has a common passage from urethra.
(b) Sperms have long tail that helps them to move forward.
(c) Sperms contain genetic material.
(d) Sperms formation requires 1–3°C higher temperature than normal body temperature.

39. White light is a mixture of seven colours is violet, indigo, blue, green, yellow, orange and red. Every colour has its own characteristic wavelength. Different colours with their wavelengths are given below in the table.

S.No	Colour	Wavelength
1	Red	7900 Å
2	Orange	6000 Å
3	Yellow	5800 Å
4	Green	5400 Å
5	Blue	4800 Å
6	Indigo	4500 Å
7	Violet	4000 Å

The phenomenon of splitting white light into seven colours when it passes through a glass prism is called dispersion of white light.

(i) Name the phenomenon occurring in nature due to dispersion of light.
(ii) Light of two colours A and B pass through a glass prism. 'A' deviate more than B from its path of incidence. Which colour has a higher speed in the prism?
(iii) Choose the correct option.
(a) Each colour of light travels with same speeds in a given medium.
(b) Each colour of light travels with different speeds in a given medium.
(c) Only red colour of light travels with fast speed in a given medium.
(d) All of the above.
(iv) The speed of light depends upon:
(a) frequency
(b) wavelength
(c) density
(d) none of the above

_____The End_____