

MODEL TEST 2020-21
SUBJECT: SCIENCE (THEORY)
CLASS-X

TIME: 3 HOURS
MAXIMUM MARKS: 80

General Instructions:

- i. The question paper comprises four section A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
- ii. 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. Answer to these should be given in one word or one sentence.
- iii. Section-B question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answer to these questions should in range of 30 to 50 words.
- iv. Section-C question no 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range 50 to 80 words.
- v. Section-D – question 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vi. 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.
- vii. Whenever necessary, neat and properly labeled diagrams should be drawn.

Section A

1. Write the chemical name and chemical formula of the salt used to remove permanent hardness of water.
2. Identify the reducing agent in the reaction:
$$4\text{NH}_3 + 5\text{O}_2 \longrightarrow 4\text{NO} + 6\text{H}_2\text{O}$$
3. List any two observations when Ferrous Sulphate is heated in a dry test tube?

OR

Identify the products formed when 1 mL of dil. Hydrochloric acid is added to 1g of Sodium metal?

4. Why does the Sun appear white at noon?
5. Both a spherical mirror and a thin spherical lens have a focal length of (-)15 cm. What type of mirror and lens are these?
6. Give one use of bleaching powder.

OR

What are acids?

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.
8. Draw the magnetic field lines around a straight current carrying conductor.

9. A battery of 9V is connected in series with resistors of 0.2Ω , 0.3Ω , 0.4Ω , 0.5Ω and 12Ω respectively. How much current will flow through at 12Ω resistor?

10. Veins are thin walled and have valves. Justify.

11. How is the wall of small intestine adapted for performing the function of absorption of food?

OR

Out of a goat and a tiger, which one will have a longer small intestine? Justify the answer.

12. Explain how ozone being a deadly poison can still perform an essential function for our environment.

OR

Give reason why a food chain cannot have more than four trophic level.

13. State the role of pancreas in digestion of food.

14. Assertion: Photosynthesis is considered as an endothermic reaction.
Reason: Energy gets released in the process of photosynthesis.

- 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: Food chain is responsible for the entry of harmful chemicals in our bodies.
Reason: The length and complexity of food chains vary greatly.

- a. Both A and R are true, and R is the correct explanation of the assertion.
- b. Both A and R are true, and 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 geneticist crossed a pea plant having violet flowers with a pea plant with white flowers; he got all violet flowers in first generation.
Reason: White color gene is not passed to next generation

- 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.

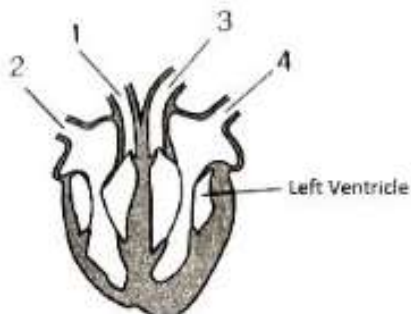
17. Read the following and answer any four questions:

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. 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

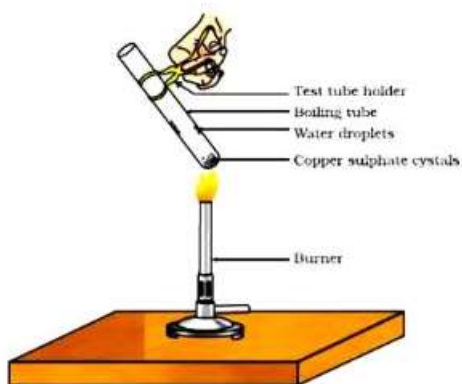
- a. Hemocyanin
- b. Haemoglobin
- c. Chlorophyll
- d. Xanthophyll

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:

Copper sulphate crystal contains water of crystallization when the crystal is heated the water is removed and salt turns white. The crystal can be moistened again with water. The water of crystallization is the fixed number of water molecule present in 1 formula unit of copper sulphate. On heating gypsum at 373K, it loses water molecule and became calcium sulphate hemihydrate



- i. If the crystal is moistened with water colour of crystal reappear
 - a. blue
 - b. green
 - c. black
 - d. pink

- ii. What is the commercial name of calcium sulphate hemihydrate?
 - a. Washing soda
 - b. Bleaching powder
 - c. Plaster of Paris
 - d. Baking soda

- iii. water molecules are present in one formula unit of copper sulphate.
 - a. Five
 - b. Two
 - c. Six
 - d. Seven

- iv. The calcium sulphate hemihydrate is prepared by heating one of the following to a temperature of 100°C. This is.....
 - a. $\text{CaCO}_3 \cdot \frac{1}{2}\text{H}_2\text{O}$
 - b. $\text{CaC}_2 \cdot \frac{1}{2}\text{H}_2\text{O}$
 - c. $\text{CaSO}_3 \cdot \frac{1}{2}\text{H}_2\text{O}$
 - d. $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$

- v. The salt which possesses water of crystalline solution is.....
 - a. baking soda
 - b. gypsum
 - c. washing soda
 - d. bleaching powder

19. Read the following and answer any four questions:

Resistance is the property of a conductor to resist the flow of charges through it. The current which flows through a resistor is inversely proportional to its resistance, If the resistance is double the current get halves. A component of identical size that offers a higher resistance is a poor conductor. An insulator of the same size offers even higher resistance. The resistance of the material depends on various factors. The resistivity of an alloy is generally higher than that of its constituent metal.

i. The resistance of a wire of length 300m and cross-section area 1.0 mm^2 made of material of resistivity $1.0 \times 10^{-7} \Omega \text{ m}$ is:

1. 2Ω
2. 3Ω
3. 20Ω
4. 30Ω

ii. The resistivity of metal depends on:

- a. length
- b. nature of material
- c. area of cross-section
- d. all of these

iii. What happens to the resistance as the conductor is made thicker?

- a. Resistance decreases
- b. Resistance increases
- c. Resistance remains the same
- d. None of these

iv. Metals and alloys' resistivity is in the range.....

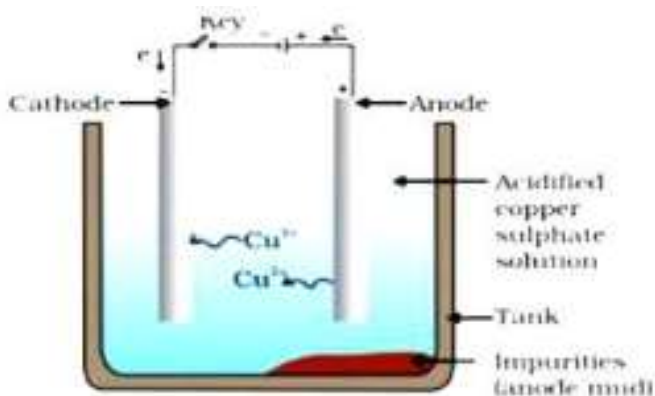
- a. $10^{-10} \Omega \text{ m}$ to $10^{-5} \Omega \text{ m}$
- b. $10^{-8} \Omega \text{ m}$ to $10^{-6} \Omega \text{ m}$
- c. $10^{-10} \Omega \text{ m}$ to $10^{-6} \Omega \text{ m}$
- d. $10^{-9} \Omega \text{ m}$ to $10^{-5} \Omega \text{ m}$

v. Why alloy is commonly used in electrical heating devices like toaster etc?

- a. Alloy oxidize easily
- b. Alloy does not oxidize readily at high temperature
- c. Alloys is a good material
- d. Alloys are easily available

20. Read the following and answer any four questions:

In the electrolytic refining of copper. The electrolyte is a solution of acidified copper sulphate. There are an anode and cathode. Refining is carried out by passing an electric current.



- i. The anode is
 - a. pure strips
 - b. impure copper
 - c. refined copper
 - d. none of these

- ii. Anode mud consists of:
 - a. insoluble impurities
 - b. soluble impurities
 - c. pure metal
 - d. impure metal

- iii. Which of the following are refined electrolytically: (A) Au, (B) Cu, (C) Zn, (D) K
 - a. A and B
 - b. B and C
 - c. A, B and C
 - d. B, C and D

- iv. On passing, electric current Cu is deposited on:
 - a. cathode
 - b. anode
 - c. bottom of cathode
 - d. bottom of anode

- v. Which one of the following four metal would be displaced from the solution of its salt by the other three metal?
 - a. Zn
 - b. Mg
 - c. Cu
 - d. Ag

Section B

21. Bile juice does not have any digestive enzyme but still plays a significant role in the process of digestion. Justify the statement.

OR

In birds and mammals, the left side of the heart are separated. Give reasons.

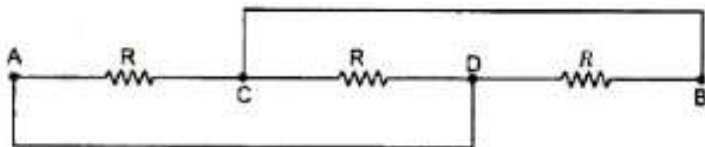
22. State the events occurring during the process of photosynthesis. Is it essential that these steps take place one after the other immediately.

23. What would be the electron dot structure of a molecule of sulphur which is made of 8 atoms of sulphur.

24. With the help of a chemical equation, explain how a soda-acid fire extinguisher helps in putting out a fire.

25. The image formed by a concave mirror is observed to be virtual, erect and larger than the object. Where should be the position of the object? Justify your answer.

26. What is the resistance between A and B in the network shown in the figure



Section C

27. After self-pollination in pea plants with round yellow seed following types of seed were obtained by Mendel:

Seed	Number
Round, Yellow	630
Round, Green	16
Wrinkled, Yellow	202
Wrinkled, Green	64

Analyze the result and describe the mechanism of inheritance which explains these results

OR

In humans there is a 50% probability of the birth of a boy and 50% probability that a girl will be born. Justify the statement on the basis of the mechanism of sex determination in human beings.

28. Give an account of the factors affecting the rate of decomposition.

29. Explain where and how urine is produced.

30. Write the chemical equations for the reactions taking place when

- Magnesium reacts with dilute HNO_3
- Sodium reacts with water
- Zinc reacts with dilute hydrochloric acid

31. Two elements A and B belong to the 3rd period of the Modern Periodic Table and are in group 2 and 13 respectively. Compare their following characteristics in tabular form.

- Number of electrons in their atoms

- ii. Size of their atoms
- iii. Their tendencies to lose electrons.
- iv. The formula of their oxides.
- v. Their metallic character.
- vi. The formula of their chlorides.

32. Why does the size of the atom increase down the group in the Modern Periodic Table.

33. What is Tyndall Effect? Explain with an example.

Section D

34. Find the size, nature and position of the image formed when an object of size 1 cm is placed at a distance of 15 cm from a concave mirror of focal length 10 cm.

OR

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

35. Reproduction is essentially a phenomenon that is not for the survival of an individual for the stability of a species. Justify

36. What is the pattern of magnetic field pattern due to current carrying conductor.

OR

a. Draw magnetic field lines produced around a current carrying straight conductor passing through a cardboard. Name, state and apply the rule to mark the direction of these field lines.

b. How will the strength of the magnetic field change when the point where the magnetic field is to be determined is moved away from the straight wire carrying constant current? Justify your answer.