

SPECTRA PRACTICE PAPER NO. 4
SPECTRA CLASSES
CLASS 10TH
SUBJECT- SCIENCE

TIME-3HR.

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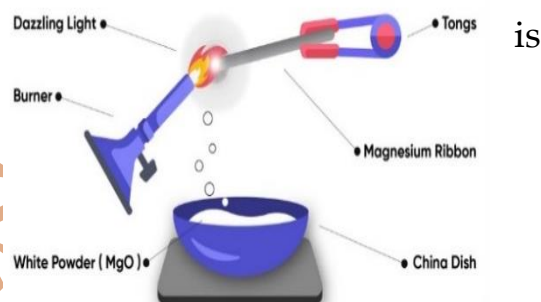
- (d) Citric acid is a strong acid
5. Name the compound used for oxidation of alcohols?
(a) Hot concentrated Sulphuric acid
(b) Alkaline KMnO_4
(c) Nickel in the presence of hydrogen gas
(d) None of the above
6. Which of the following is the correct observation of the reaction shown in the above set up?

(a) Brown powder of Magnesium oxide formed.

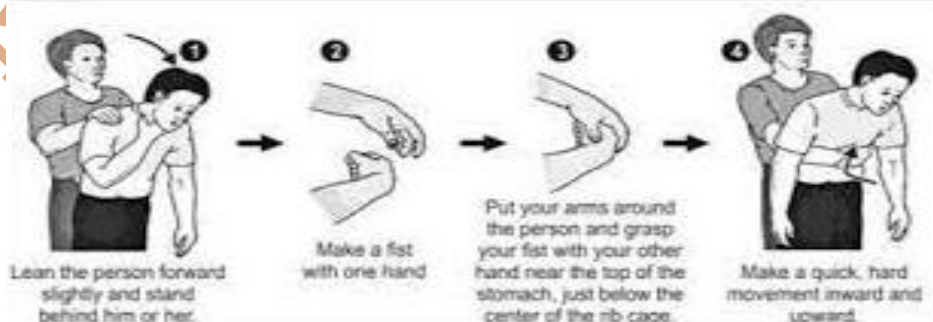
(b) Colourless gas which turns lime water milky is evolved.

(c) Magnesium ribbon burns with brilliant white light.

(d) Reddish brown gas with a smell of burning Sulphur has evolved.



7. Aqueous solution of which of the following is colorless?
(a) FeSO_4 (b) ZnSO_4 (c) $\text{Al}_2(\text{SO}_4)_3$ (d) Both (b) and (c)
8. A person can choke when a piece of food becomes lodged in the windpipe, blocking the flow of air. A first aid procedure to remove the blockage is the Abdominal thrust, formerly known as Heimlich maneuver described below:



By performing this procedure, the piece of food is pushed out of the wind pipe. What caused this to happen?

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- a. Chest expansion
- b. Food pressed out of stomach
- c. Air pressed out of lungs
- d. Upward movement of the wall of food pipe.

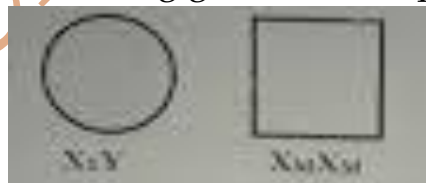
9. Match the following:

Column A	Column B
A. Olfactory receptors	1. Tongue
B. Thermoreceptors	2. Eye
C. Gustatory receptors	3. Nose
D. Photoreceptors	4. Skin

- a. A-1, B-2, C-3, D-4
- b. A-2, B-3, C-1, D-4
- c. A-3, B-4, C-1, D-2
- d. A-4, B-3, C-2, D-1

10. Which of the following is the correct sequence of events of sexual reproduction in a flower?
- a. Pollination, fertilization, seedling, embryo
 - b. Seedling, embryo, fertilization, pollination
 - c. Pollination, fertilization, embryo, seedling
 - d. Embryo, seedling, pollination, fertilization

11. Two individuals are shown using geometric shapes.



Their sex chromosomes are respectively denoted by X^f , X^m and Y . What are the possible combinations of sex chromosomes for their male and female offsprings, respectively?

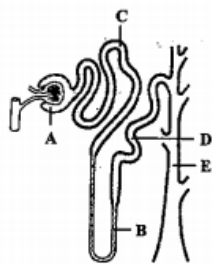
- a. $X^f Y$ and $X^m X^m$
- b. $X^m Y$ and $X^m Y$
- c. $X^m Y$ and $X^m X^f$
- d. $X^f X^m$ and $X^m X^m$

12. Observe the diagram of nephron given below:

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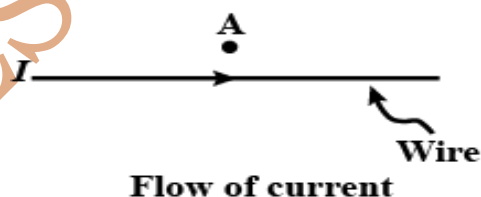
The part which collects the filtrate is represented using which label?

- a. E b. D c. C d. B

13. A metallic wire of resistance 12Ω is bent to form a square. The resistance between the two diagonal points would be-
- (a) 12Ω (b) 24Ω (c) 6Ω (d) 3Ω

14. What is the direction of magnetic field at a point A above the wire carrying current I as shown in figure?

- (a) Out of the page (b) Into the page
(c) Up the page (d) Down the page



15. Rays from the sun converge at a point 15 cm in front of a concave mirror. Where should an object be placed so that the size of the image is equal to the size of the object?
- (a) 15 cm in front of the mirror
(b) 30 cm in front of the mirror
(c) Between 15 cm and 30 cm in front of the mirror
(d) More than 30 cm in front of the mirror
16. According to international convention of colour coding in a wire
- (a) Live is red, neutral is black and earth is green.
(b) Live is brown, neutral is blue and earth is green.
(c) Live is brown, neutral is green and earth is black.
(d) Live is red, neutral is yellow and earth is blue.

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Q 17 to Q 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:** Iron articles are prevented from rusting by coating them with a layer of zinc.

Reason: Zinc reacts with air and moisture to form its oxide layer which protects iron from rusting.

18. **Assertion:** Human brain is divided into three regions - forebrain, mid-brain and hind - brain.

Reason: Involuntary actions such as blood pressure, salivation and vomiting are controlled by the medulla in the hind-brain.

19. **Assertion:** Testes are located in the scrotal sac, outside the abdominal cavity.

Reason: Sperms requires a temperature 2 to 3 °C more than the body temperature for their development.

20. **Assertion:** Alternating current is used in household supply.

Reason: AC electric power can be transmitted over long distances without much loss of energy.

Section-B

21. a. How would you distinguish between baking soda and washing soda by heating?

b. What happens when we add egg shells to nitric acid?

22. Define geotropism. Draw a labelled diagram of a plant showing geotropic movements of tis parts.

OR

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- a. Why is chemical communication better than electrical impulses as a means of communication between cells in a multicellular organism?
- b. Name the disorder caused when there is
- Deficiency of iodine
 - Under-secretion and over secretion of growth hormone.
23. Using a flowchart write down the steps followed during the journey of oxygen rich blood from lungs to various organs of human body.
24. Two pea plants- one with round and yellow seeds and other with wrinkled green seeds produced F_1 progeny with round and yellow seeds. When F_1 plants are self- pollinated, which new combination of characters will be seen in F_2 ? How many seeds with these new combinations of characters will be produced when a total of 320 seeds are produced in F_2 ?
25. a. Why is red used as the stopping light at traffic signals?
b. Two triangular glass prisms are kept together connected through their rectangular side. What will happen to a light beam (white light) which is passed through one side of the combination?
- OR**
- a. A person is suffering from both myopia and hypermetropia. What kind of lenses can correct this defect?
b. A person needs a lens of power +3D for correcting his near vision. Calculate the focal length of the lens required to correct this defect.
26. a. Construct a terrestrial food chain comprising four trophic levels.
b. What will happen if we kill all the organisms at one trophic level? Calculate the amount of energy available to the organisms at fourth trophic level if the energy available to organisms at first trophic level is 50000J.

Section-C

27. a. Enlist the uses of products of chlor-alkali process.
b. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical equation involved along with the type of reaction.

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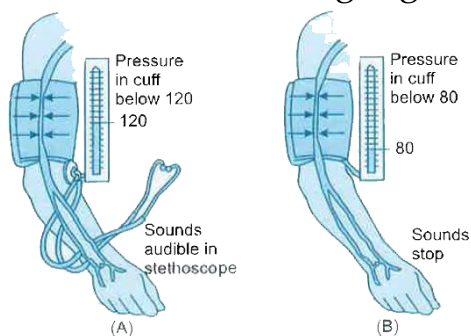
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- c. Write the substance oxidized and substance reduced in thermite reaction.
28. a. Solution A gives pink color when a drop of phenolphthalein is added to it. Solution B gives red color when methyl orange is added to it. What type of solutions are A and B?
- b. State the importance of pH in human body.
- c. Why plaster of paris cannot be employed as drying agent?
29. Observe the images given below and answer the following questions:



- a. What is being shown in the given fig. A and fig. B?
- b. Name the instrument used here. Why is there a difference in the readings shown in fig. A and fig. B?
- c. Discuss some common reasons that may lead to increase in its value.
- OR**
- a. Leaves of a healthy potted plant are coated with Vaseline. Will this plant remain healthy for a long time? Give reasons.
- b. Name the process and type of nutrition found in green plants. Write the chemical equation for the mentioned process.
- c. Mention the events that occur during the above-mentioned process.
30. a. Name the type of mirror used in the following situations. Also support your answer with reason.
- a. Headlights of car
- b. Side/rear view mirror of a vehicle
- b. How will the image formed by a convex lens be affected if the upper half of the lens is wrapped with black paper?

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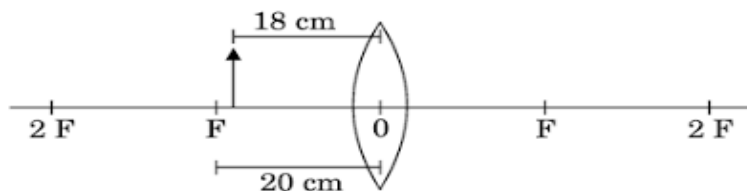
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OR

- a. Complete the following ray diagram to show the image formation for an object AB placed in front of convex lens:



- b. Find the nature and position of the image formed.
- c. Calculate the magnification in the above case.
31. a. What is the role of ciliary muscles in human eye?
b. Why does it take some time to see objects in a dim room when you enter the room from bright sunlight outside?
c. Why do stars appear to twinkle? Explain.
32. a. Draw a pattern of magnetic field formed around a current carrying circular loop.
b. Under what condition is the force experienced by a current carrying conductor placed in a magnetic field maximum?
c. Name and state the rule which gives the direction of force experienced by a current carrying conductor placed in a magnetic field.
33. a. We do not clean natural ponds or lakes but an aquarium needs to be cleaned regularly. Why is it so?
b. List any two practices that can be followed in our homes to dispose-off the waste products.
c. The flow of energy in an ecosystem is always unidirectional. Why?

Section-D

34. a. Carbon cannot reduce the oxides of sodium, magnesium and aluminium to their respective metals. Why?
Where are these metals placed in reactivity series?
- b. Two ores A and B were taken. On heating, A gives CO_2 whereas, ore B gives SO_2 . What steps will you take to Convert them into metals?

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- a. Explain the formation of Mg_3N_2 by transfer of electrons.
- b. A man went to door to door posing as a gold smith. He promised to bring back the glitter on dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled but their weight reduced drastically. The lady was upset but after a futile argument the man beat a hasty retreat. Can you draw the inference about the solution he used?
35. a. Draw a neat and well-labelled diagram of a human female reproductive system.
- b. What would be the ratio of chromosomes number between an egg and zygote?
- c. State the changes that take place in the uterus when:
- Implantation of embryo has occurred.
 - Female gamete/egg is NOT fertilized.

OR

- a. Write one main difference between asexual and sexual reproduction. Which species is likely to have comparatively better chances of survival- the one reproducing asexually or the one reproducing sexually? Justify your answer.
- b. Illustrate the process of spore formation in Rhizopus with the help of suitable diagrams. Name the non-reproductive structures present in Rhizopus.
36. a. Draw a schematic diagram of a circuit consisting of a battery of three cells of 2V each, a 5 Ω resistor, an 8 Ω resistor and a 12 Ω resistor, a plug key all connected in series. Also, place an ammeter to measure the current in the circuit and a voltmeter to measure the potential difference across 12 Ω resistor.
- b. What would be the readings in the ammeter and the voltmeter in the above case?
- c. What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series? (Any 2 points).

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OR

- a. Several electric bulbs designed to be used on a 220V electric supply line, are rated 10W. How many lamps can be connected in parallel with each other across the two wires of 220V line if the maximum allowable current is 5A?
- b. Imagine that you are sitting in a chamber with your back to one wall. An electron beam, moving horizontally from front wall towards the back wall, is deflected by a strong magnetic field to your left side. What is the direction of magnetic field?
- c. List any two ways of increasing the strength of an electromagnet if the material of the electromagnet is fixed.