केंद्रीय विद्यालय संगठन,अहमदाबाद संभाग **SET-A**

Kendriya Vidyalaya Sangathan, Ahmedabad Region

कक्षा दसवीं प्री-बोर्ड II परीक्षा 2025-26

Pre -Board II Examination 2025-26 for Class X

SUBJECT: SCIENCE (086)

M.M.: 80 **Time: 3HRS**

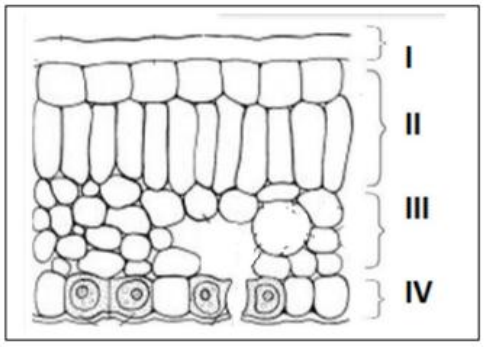
General Instructions:

(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.

(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.

Section – A

1. In the given transverse section of the leaf identify the layer of cells where maximum photosynthesis occurs. 1



(a) I, II (b) II, III (c) III, IV (d) I, IV

2. Which of the following statement(s) is (are) true about respiration? 1
   i. During inhalation, ribs move inward and diaphragm is raised
   ii. In the alveoli, exchange of gases takes place i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from blood,into alveolar air
   iii. Haemoglobin has greater affinity for carbon dioxide than oxygen
   iv. Alveoli increase surface area for exchange of gases

   (a) (i) and (iv) (b) (ii) and (iii)
   (c) (i) and (iii) (d) (ii) and (iv)

3. There was a cerebellar dysfunction in a patient. Which of the following activities will get disturbed in this patient as a result of this? 1
   a) Salivation c) Hunger control
   b) Posture and balance d) Regulation of blood pressure

4. Name the endocrine gland which maintains the basal metabolic rate of the body 1
   (a) Thyroid (b) Pituitary (c) Pancreas (d) Testes

5. If a tall pea plant is crossed with a pure dwarf pea plant then, what percentage of F1 and F2 generation respectively will be tall? 1
   (a) 25%, 25% (b) 50%, 50% (c) 75%,100% (d) 100%, 75%

6. In 1987, an agreement was formulated by the United Nations Environment Programme (UNEP) to freeze the production of "X" to prevent depletion of "Y". "X" and "Y" respectively referred here are: 1

a) Ozone; CFCs
b) CFCs; rays UV
c) CFCs; Ozone
d) UV rays; Diatomic oxygen

7. Which of the following is not a role of decomposers in the ecosystem? 1

a) Natural replenishment of soil.
b) Enrichment of oxygen in atmosphere.
c) Waste decomposition.
d) Break-down of dead remains

The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by 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

8 **Assertion:** Height in pea plants is controlled by efficiency of enzymes and is thus genetically controlled. 1

Reason: Cellular DNA is the information source for making proteins in the cell.

9 **Assertion:** Biodegradable substances result in the formation of compost and natural replenishment. 1

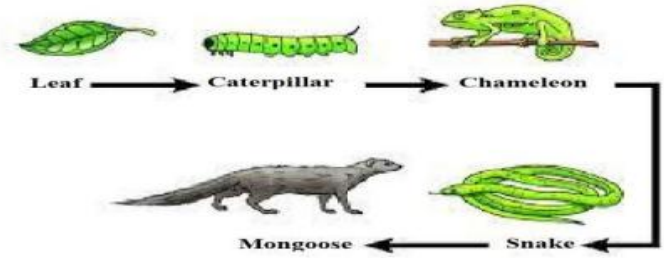
Reason: It is due to breakdown of complex inorganic substances into simple organic substances

10 Two green plants are kept separately in oxygen free containers, one in the dark and the other in continuous light. Which one will live longer? Give reasons. 2

OR

Why do arteries have thick and elastic walls whereas veins have valves?

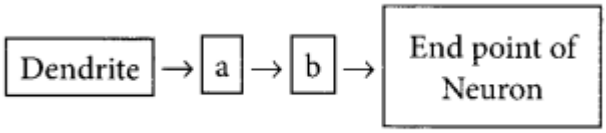
11 Study the food chain given below and answer the questions that follow: 2



a) If the amount of energy available at the third trophic level is 100 joules, then how much energy will be available at the producer level? Justify your answer.
b) Is it possible to have 2 more trophic levels in this food chain just before the fourth trophic level? Justify your answer.

12 How is the mode of action in beating of the heart different from reflex actions? Give two examples. 2

13 (a) Name one gustatory receptor and one olfactory receptor in human beings. 3
(b) Write a and b in the given flow chart of neuron through which information travels as an electrical impulse.



14 **A**. In a family of four individuals, the father possessed long ears and the mother possessed short ears. If the parents had pure dominant and recessive traits respectively and F1 individual is married to an unrelated individual of the same genotype, then calculate the ratio of genetic makeup of F2 generation. Show a suitable cross. 3

B. If father had short ears and the mother had long ears, and both the parents are homozygous for the allelic pair of genes, then what effect it will have on the ratio of genetic makeup in F2 generation, if F1 individual is married to an unrelated individual of the same genotype.

15 Human digestive system is a tube running from mouth to anus. Its main function is to breakdown complex molecules present in the food which cannot be absorbed as such into smaller molecules. These molecules are absorbed across the walls of the tube and the absorbed food reaches each and every cell of the body where it is utilised for obtaining energy. 4

(a) Name the glands present in the buccal cavity and write the components of food on which the secretion of these glands act upon.

(b) Two organs have a sphincter muscle at their exit. Name them.

(c) What will happen if:

(i) mucus is not secreted by the gastric glands.

(ii) Villi are absent in the small intestine.

OR

(c) "Bile juice does not contain any enzyme, yet it has important roles in digestion." Justify the statement.

16 Given below are certain situations. Analyze and describe its possible impact on a person: 5

a) Testes of a male boy are not able to descend into scrotum during his embryonic development.
b) Vas deferens of a man is plugged.
c) Prostate and seminal vesicles are not functional.
d) Egg is not fertilised in a human female.
e) Placenta does not attach to the uterus optimally.

OR

a) A doctor has advised Sameer to reduce sugar intake in his diet and do regular exercise after checking his blood test reports. Which disease do you think Sameer is suffering from? Name the hormone responsible for this disease and the organ producing the hormone.
b) b) Which hormone is present in the areas of rapid cell division in a plant and which hormone inhibits the growth?

Section – B

17 On placing a copper coin in a test tube containing green ferrous sulphate solution, it will be observed that the ferrous sulphate solution 1

a) turns blue, and a grey substance is deposited on the copper coin.
b) turns colourless and a grey substance is deposited on the copper coin.
c) turns colourless and a reddish–brown substance is deposited on the copper coin.
d) remains green with no change in the copper coin.

18 How will you protect yourself from the heat generated while diluting a concentrated acid? 1

a) By adding acid to water with constant stirring.
b) By adding water to acid with constant stirring.
c) By adding water to acid followed by base.
d) D. By adding base to acid with constant stirring.

19 An element with atomic number_____ will form a basic oxide. 1

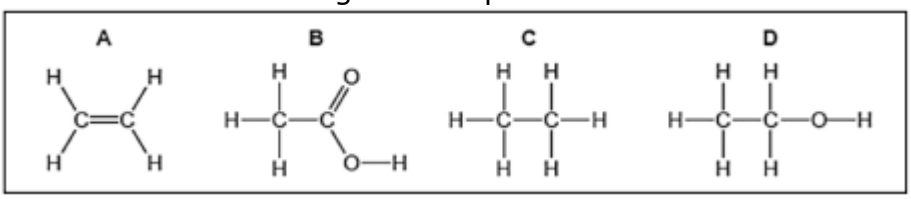
a) 7 (2,5) b) 17 (2,8,7) c) 14 (2,8,4) d) 11 (2,8,1)

20 Identify 'p', 'q' and 'r' in the following balanced reaction Heat 1

p Pb (NO3)2(s) ------> q PbO(s) + r NO2(g) + O2(g)

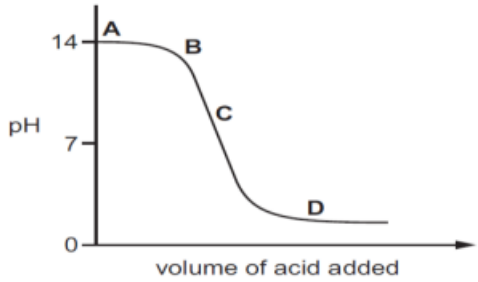
a) 2,2,4
b) 2,4,2
c) 2,4,4
d) 4,2,2

21 The formulae of four organic compounds are shown below. Choose the correct option 1



(a) A and B are unsaturated hydrocarbons
(b) C and D are saturated hydrocarbons
(c) Addition of hydrogen in presence of catalyst changes A to C
(d) Addition of potassium permanganate changes B to D

22 The graph given below depicts a neutralization reaction (acid + alkali → salt + water). The pH of a solution changes as we add excess of acid to an alkali. 1



Which letter denotes the area of the graph where both acid and salt are present?

a) A
b) B
c) C
d) D.

23 Reema took 5ml of Lead Nitrate solution in a beaker and added approximately 4ml of Potassium Iodide solution to it. What would she observe? 1

a) The solution turned red.
b) Yellow precipitate was formed.
c) White precipitate was formed.
d) The reaction mixture became hot.

The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by 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.

24 **Assertion:** Fresh milk in which baking soda is added, takes a longer time to set as curd. 1

Reason: Baking soda decreases the pH value of fresh milk to below 6.

25 Show the formation of ionic bond in $MgCl_2$. 2

26 The given reaction shows one of the processes to extract the metals like Iron and Manganese. 3

MnO_2 (s) + Al(s) → Mn(l) + Al_2O_3(s) + Heat

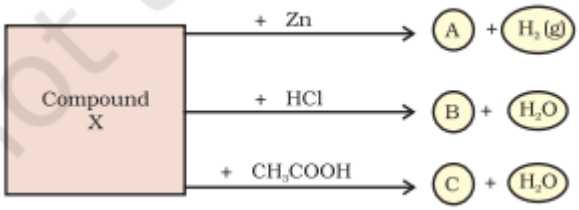
a) Give reason why the above reaction is known as a thermite reaction.
b) Identify the substance oxidised and reduced in the above reaction.
c) Give a reason why Aluminium is preferably used in thermite reactions.

27 i) 3

ii)

Identify the types of reaction mentioned above in (i) and (ii).
Give one example for each type in the form of a balanced chemical equation

28 Identify the compound X on the basis of the reactions given below. Also, write the name and chemical formulae of A, B and C. 4



29 Shristi heated Ethanol with a compound A in presence of a few drops of concentrated sulphuric acid and observed a sweet smelling compound B is formed. When B is treated with sodium hydroxide it gives back Ethanol and a compound C. 5
(a) Identify A and C
(b) Give one use each of compounds A and B.
(c) Write the chemical reactions involved and name the reactions.

OR

(a) What is the role of concentrated Sulphuric acid when it is heated with Ethanol at 443 K. Give the reaction involved.
(b) Reshu by mistake forgot to label the two test tubes containing Ethanol and Ethanoic acid. Suggest an experiment to identify the substances correctly? Illustrate the reactions with the help of chemical equations

Section – C

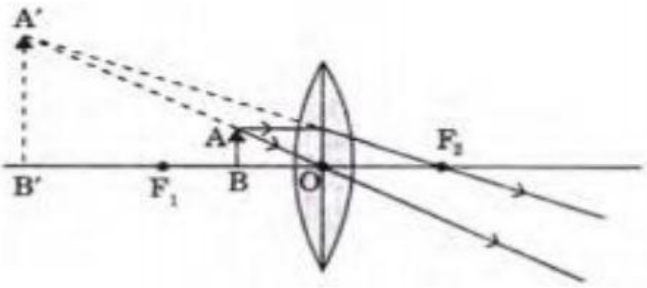
30 If a virtual, erect and enlarged image is formed by a lens, then which of the following options are correct? 1
A. It is a concave lens and the object is placed between pole and focus.
B. It is a convex lens and the object is placed between focus and centre of curvature.
C. It is a convex lens and the object is placed between pole and focus.
D. It is a concave lens and the object is placed between focus and centre of curvature.

31 Out of all colours making the white light, which one will deviate the most while it passes through a prism? 1
A. Red. B. Violet. C. Blue. D. Green.

The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by 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

32 **Assertion**: Sky appears blue in the day time. 1
Reason: White light is composed of seven colours.

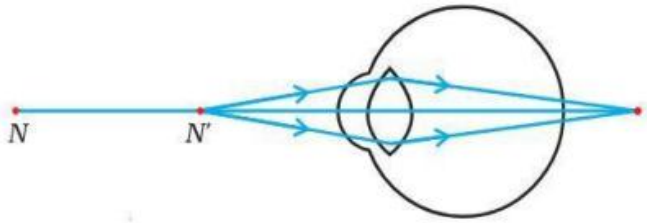
33 2



The above lens has a focal length of 10 cm. The object of height 2 mm is placed at a distance of 5 cm from the pole. Find the height of the image.

34 State the law that explains the heating effect of current with respect to the measurable properties in an electrical circuit. 2

35 A. What is the fundamental difference between hypermetropia and myopia in terms of the optical experience of a person? 3
B. The diagram below shows a special case of an eye defect.
(i) What is the defect that is shown in the figure?
(ii) State one cause for such a defect?
(iii) Explain with reason if a concave lens can be used to correct the defect.



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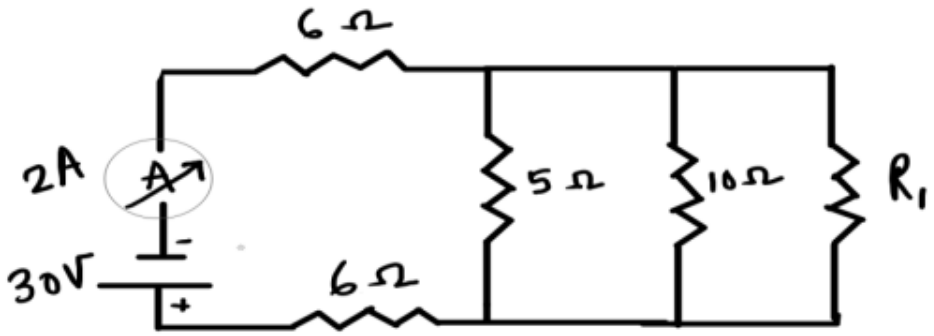
For visually impaired students
A. What is the fundamental difference between hypermetropia and myopia in terms of the optical experience of a person?

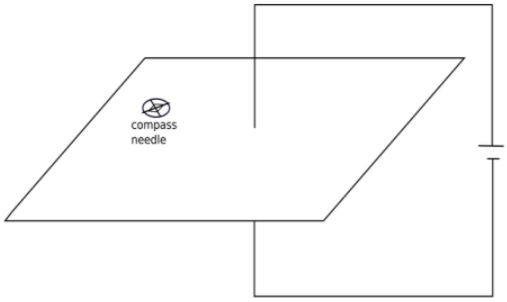
B. What are the causes of myopia in the human eye?

36 3



In the above circuit, if the current reading in the ammeter A is 2A, what would be the value of R1?

37 3



Mona was doing an experiment with a magnetic compass and a straight Current -carrying wire. She observed that as she moved the compass away from the current-carrying wire, the deflection of the compass needle reduced.
A. Explain why the deflection of the compass needle reduced as Mona moved away the compass needle from the current carrying wire.
B. Mention one thing that could have changed in the circuit of the wire that could increase the deflection of the needle.
C. Explain with reason what will be the direction of the magnetic field associated with the wire for the case described by the above figure.

For visually impaired students
A. Explain why the deflection of the compass needle reduced as Mona moved away the compass needle from the current carrying wire.
B. Mention one thing that could have changed in the circuit of the wire that could increase the deflection of the needle.
C. Explain with reason how the direction of the magnetic field associated with the wire changes if the polarity of battery reversed.

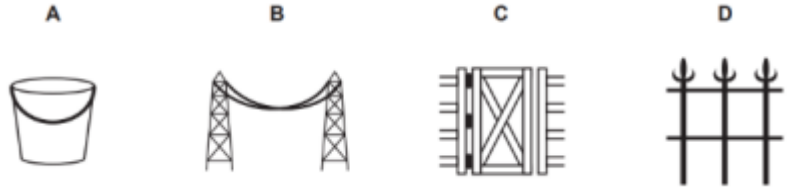
38 Two students decided to investigate the effect of water and air on iron object under identical experimental conditions. They measured the mass of each object before placing it partially immersed in 10 ml of water. After a few days, the object were removed, dried and their masses were measured. The table shows their results. 4

Student	Object	Mass of Object before Rusting in g	Mass of the coated object in g
A	Nail	3.0	3.15
B	Thin plate	6.0	6.33

(a) What might be the reason for the varied observations of the two students?
(b) In another set up the students coated iron nails with zinc metal and noted that, iron nails coated with zinc prevents rusting. They also observed that zinc initially acts as a physical barrier, but an extra advantage of using zinc is that it continues to prevent rusting even if the layer of zinc is damaged. Name this process of rust prevention and give any two other methods to prevent rusting.

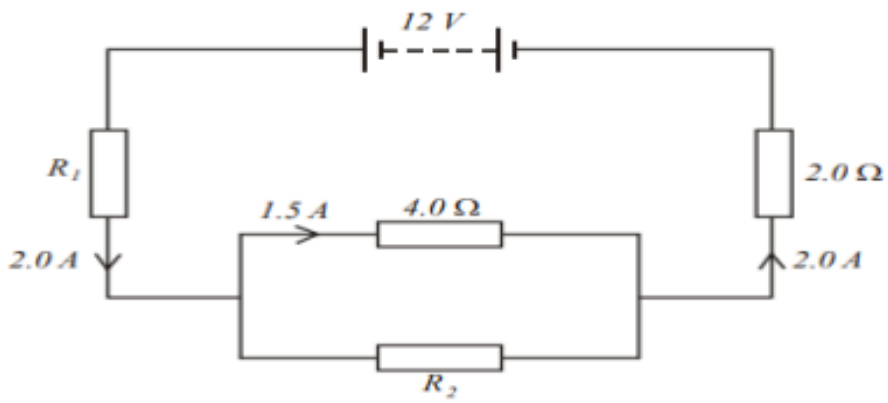
OR

(b) In which of the following applications of Iron, rusting will occur most? Support your answer with valid reason.



39 **Attempt either option A or B.** 5

A.

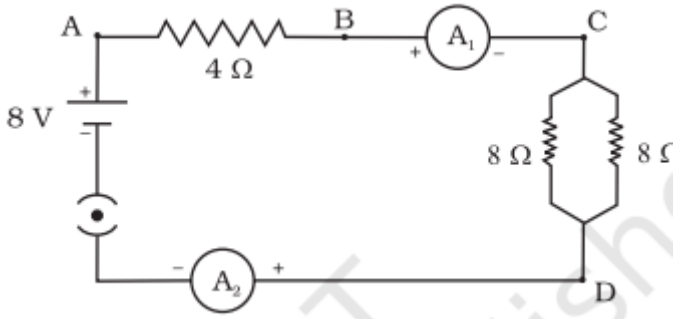


The above circuit is a part of an electrical device. Use the information given in the question to calculate the following.
(i) Potential Difference across R2.
(ii) Value of the resistance R2.
(iii) Value of resistance R1

OR

B.

Find out the following in the electric circuit given in Figure
(a) Effective resistance of two 8 Ω resistors in the combination
(b) Current flowing through 4 Ω resistor
(c) Potential difference across 4 Ω resistance
(d) Power dissipated in 4 Ω resistor
(e) Difference in ammeter readings, if any.



For visually impaired students

A.

(i) State the law and write the formula connecting the electric current flowing through a conductor and voltage applied across it.
(ii) In a household five fans each of 100W are used for 4 hours and an electric press of 500W for 2 hours every day. Calculate the cost of using the fans and electric press for 60 days if the cost of 1 unit of electrical energy is Rs. 6.5.

OR

B.

(i) State Joules law of heating and write its mathematical expression.
(ii) Two resistors of resistances 2Ω and 4Ω are connected in
a) series
b) parallel
with a battery of given potential difference. Compute the ratio of total quantity of heat produced in the combination in the two cases if the total voltage and time are kept the same for both.

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